<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>8:00 am to 8:30 am</td>
<td>Registration</td>
<td>Main Entry</td>
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<td></td>
<td>Continental Breakfast</td>
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<tr>
<td>8:30 am to 8:45 am</td>
<td>Welcome</td>
<td>Auditorium</td>
</tr>
<tr>
<td></td>
<td>Lauren DiMarino, DO, FACP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Program Chair/Program Director Internal Medicine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Residency Geisinger Medical Center</td>
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<tr>
<td></td>
<td>David George, MD, FACP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Governor, PA-ACP Eastern Region</td>
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<tr>
<td></td>
<td>Dan Dometita, DO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Chair of the Doctor’s Dilemma Competition</td>
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<tr>
<td>8:45 am to 10:15 am</td>
<td>Poster Sessions and Judging</td>
<td>Multipurpose Rooms 1,2,3</td>
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<tr>
<td>10:15 am to 11:00 am</td>
<td>Oral Presentations</td>
<td>Auditorium</td>
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<tr>
<td>11:00 am to 11:45 am</td>
<td>Doctor’s Dilemma – Round 1 (Preliminaries)</td>
<td>Intermediate Rooms 1, 2, 3, 4</td>
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<td>11:45 am to 12:30 pm</td>
<td>Lunch</td>
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<td>Program Directors Meeting</td>
<td>Executive Board Room</td>
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<tr>
<td>12:30 pm to 1:15 pm</td>
<td>Doctor’s Dilemma – Round 2 (Semi-finals)</td>
<td>Intermediate Rooms 1, 2</td>
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<tr>
<td>1:15 pm to 1:45 pm</td>
<td>Awards Presentations</td>
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<td></td>
<td>David George, MD, FACP</td>
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<tr>
<td></td>
<td>- ACP Professionalism Awards</td>
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<td></td>
<td>Lauren DiMarino, DO, FACP</td>
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<tr>
<td></td>
<td>- Poster/Podium Awards</td>
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<tr>
<td>1:45 pm to 2:30 pm</td>
<td>Doctor’s Dilemma – Final</td>
<td>Auditorium</td>
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<tr>
<td>2:30 pm</td>
<td>Departure</td>
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</table>
Many Thanks to Our Outstanding Program Committee!

Lauren DiMarino, DO, FACP
2016 Program Chair

Dan Dometita, DO
2016 Chair of the Doctor’s Dilemma Competition

Denise Keyser
Program Coordinator

Sharon Fahrer
Meeting Manager, PA-ACP

David George, MD, FACP
Governor, Eastern Region
PA Chapter – ACP
A sincere THANK YOU to our reviewers and judges. The PA-ACP and leaders of this competition value you and your generosity!

(Note: Judges are indicated by an asterisk)

Anthony Donato, MD
Benjamin Lloyd, MD
Bokana Milekic, MD
Brian Costello, DO
Camilla Bermudez, MD
Cara Ruggeri, DO*
Cheryl Bloomfield, MD
David Leh, MD
Debra Ryan, MD
Dipti Pancholy, MD
Edward Bollard, MD
Eileen Hennrikus, MD
Eugene York, MD*
Gloria Fioravanti, DO
Gretchen Perilli, MD
Himabindu Lanka, MD
James Phillips, DO
Jennifer Goldstein, MD
John Dahdah, DO*
John Pamula, MD
Joseph Cooper, MD*
Joseph Vadakara, MD*
Kevin Maguire, DO
Lisa Motz, MD*
Mahesh Krishnamurthy, MD*
Mary Harris, MD
Nayanjyoti Kaushik, MD
Nicole Swallow, MD
Qi Shi, MD
Rajinder Pabla-Sahi, MD*
Rajiv Bansal, MD
Richard Snyder, DO*
Robert Pargament, MD*
Ryan Munyon, MD*
Sandy Green, MD
Sarah Luber, DO
Sayed Kazi, MD
Sheela Prabhu, MD
Sonia Dayal, MD*
Sravanthi Ennala, MD
Stacey Smith, MD*
Susan Sefcik, MD
Syam Mallampalli, MD
Thomas Davis, MD*
Thomas Doherty, MD
Violeta Zeykan, MD
Wasique Mirza, MD*
Yehia Mishriki, MD*
Professionalism Award Recipients

**Easton Hospital**
Sunny Petigara, MD

**Geisinger Medical Center**
Christopher Breen, DO

**Guthrie / Robert Packer Hospital**
Muhammad Usman Khan, MD

**Lehigh Valley Hospital**
Michael Jacob Sither, MPH, DO

**Penn State University / Hershey Medical Center**
Richard Koubek, MD

**Pinnacle Health Hospitals**
Jeffrey S. Genda, MD

**Reading Hospital and Medical Center**
Dilli Poudel, MD

**St. Luke’s Hospital**
Abbas Raza, DO

**The Wright Center for Graduate Medical Education**
Pravin Chacko, MD

**York Hospital**
Justin Lodenkemper, MD
2016 Doctor’s Dilemma Teams

Geisinger Medical Center
Faculty Advisor: Dan Dometita, DO
Team Members
Christopher Breen, DO
Juan Delgado, MD
Mobasser Mahmood, MD
Syed Sherazi, MD (alternate)

Guthrie / Robert Packer Hospital
Faculty Advisor: Matt Novak, MD
Team Members
Vishwa Kundoor, MD
Subash Ghimire, MD
Suman Sharma, MD

Lehigh Valley Hospital
Faculty Advisor: Yehia Mishriki, MD
Team Members
Jacob Sither, DO
Rachel Kinney, DO
Bonnie Patek, DO
Areeb Zamir, MD and Mohammad Qasim, MD (alternates)

Penn State University / Hershey Medical Center
Faculty Advisor: Beth Foreman, DO
Team Members
Vignesh Doraismamy, MD
James Suleski, DO
Rick Koubek, MD
Mathew Helm, MD and David Shore, MD (alternates)
Pinnacle Health Hospitals
Faculty Advisor: Sayed Kazi, MD

Team Members
Quan Tran, MD
Julie Worthington, MD
Jeff Genda, MD
Saketram Komanduri, MD (alternate)

Reading Hospital and Medical Center
Faculty Advisor: Anthony Donato, MD

Team Members
Saroj Lohani, MD
Niranjan Tachamo, MD
Sushil Ghimire, MD

The Wright Center for Graduate Medical Education
Faculty Advisor: Qi Shi, MD

Team Members
Pravin Chacko, MD
Gaurav Patel, MD
Chien-Wen Yang, MD
John Sharp, MD (alternate)

York Hospital
Faculty Advisor: Vijay Dontu, MD

Team Members
Hassan Cheema, MD
Asad Almsallam, MD
Nastassia de Souza, MD
Justin Lodenkemper, MD (alternate)
### ORAL PRESENTERS

<table>
<thead>
<tr>
<th>First Name</th>
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<th>Category</th>
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<tr>
<td>Ryan</td>
<td>Mayo</td>
<td>MD</td>
<td>Lehigh Valley Hospital</td>
<td>Clinical Vignette</td>
<td>An unusual case of IgG4 associated Marginal zone B-cell lymphoma presenting as subcutaneous nodules mimicking lipomas</td>
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<td>Rachel</td>
<td>Kinney</td>
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<td>Gamella morbillorum endocarditis: a rare cause of septic shock</td>
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<td>Carl</td>
<td>Shultz</td>
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<td>Geisinger Health System</td>
<td>Clinical Vignette</td>
<td>Pembrolizumab-Induced Adrenal Insufficiency with Empty Sella</td>
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### POSTERS

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<tr>
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<tr>
<td>1</td>
<td>Brianna</td>
<td>da Silva</td>
<td>MD</td>
<td>Easton Hospital</td>
<td>Research</td>
<td>Physician, Heal Thyself: Depression and Burnout in Graduate Medical Education</td>
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<td>2</td>
<td>Marika</td>
<td>Bergenstock</td>
<td>DO</td>
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<td>Improving primary care knowledge of anti-RAAS therapy for proteinuric kidney disease: an educational intervention using a web-based animated video</td>
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<td>Marika</td>
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<td>Acyclovir Neurotoxicity in a Hemodialysis Patient</td>
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<td>Amirahwaty</td>
<td>Abdullah</td>
<td>MD</td>
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<td>Pulmonary Arterial Hypertension in Neurofibromatosis type 1</td>
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<td>Abdul</td>
<td>Aleem</td>
<td>MD</td>
<td>Lehigh Valley Hospital</td>
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<td>Appearances Can Be Deceiving - Colon Cancer Mimicking Ileocolitis</td>
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<td>Jack</td>
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<td>Overshooting the Ninety-Minute Door-to-Balloon Benchmark: The Untimely Management of ST-Elevation Myocardial Infarctions</td>
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<td>Abdullateef</td>
<td>Abdulkareem</td>
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<td>Pulmonary Toxoplasmosis in a Rheumatoid Arthritis patient on methotrexate and steroids</td>
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<td>Nicoleta</td>
<td>Radoianu</td>
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<td>When less is more- Ebstein anomaly</td>
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<td>Andreea</td>
<td>Davis</td>
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<td>Not all Toxic Megacolon is Infective or Inflammatory</td>
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<td>Tombra</td>
<td>Govina</td>
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<td>Thyrotoxicosis with coexistent Graves' disease and Hashimoto’s thyroiditis</td>
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<td>Samer</td>
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<td>Idiopathic Hyperammonemia and Rituximab Therapy</td>
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<td>QI/Patient Safety</td>
<td>The Impact of Code Sepsis on Inpatient Mortality</td>
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<td>Maria Paula</td>
<td>Henao</td>
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<td>Help Me Understand: The Impact of Language and Cultural Barriers on Asthma Control</td>
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<td>Shelina</td>
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<td>A Perfect Storm of “Normal” Labs</td>
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<td>Raghuveer</td>
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<td>Development and Implementation of an Adolescent Transition Readiness Screening Questionnaire for the Primary Care Setting</td>
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<td>Syncopal Episodes of Arrhythmogenic Right Ventricular Cardiomyopathy Masked by Pre-existing Seizure Disorder</td>
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<td>New-onset Ascites in Crohn's Disease: Don't Forget Histo!</td>
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<td>Quality Improvement to Increase Compliance with Diabetic Retinal and Foot Exams in a Primary Care Office</td>
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<td>Raza</td>
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<td>Prompt Renal Biopsy May Improve Morbidity and Mortality in Multiple Myeloma Associated Crystalglobulin Induced Nephropathy</td>
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<td>Crystal</td>
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<td>Non-dermatomal Distribution of Varicella Zoster Virus in the Lower Extremities of an Immunocompromised Patient</td>
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<td>Hemophagocytic Lymphohistiocytosis, An Overlooked Culprit Of Disseminated Intravascular Coagulation</td>
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<td>Guideline-Driven High-Intensity Statin Dose Achievement in Cardiac Rehabilitation Patients</td>
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<td>Antiphospholipid syndrome and acute coronary syndrome: a systematic review</td>
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<td>Refractory Hypokalemia; an atypical presentation in a patient with Pheochromocytoma</td>
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<td>Interventricular Membranous Septal Aneurysm Incidentally Diagnosed during CT Angiography in a Patient with Infrequent Supraventricular Tachycardia</td>
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<td>Danon Disease for the Cardiologist</td>
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<td>Whole Exome Next-Generation Sequencing Identifies Novel Disease Genes In Primary Vascular Aneurysms</td>
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<td>Siddiqi</td>
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<td>Thrombosis of multiple coronary arteries: An atypical case</td>
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<td>Britt</td>
<td>Marshall</td>
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<td>It’s Not Cirrhosis! Chronic Pancreatitis as an Etiology of Ascites in Alcohol Abusers.</td>
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<td>Oluwaseun</td>
<td>Shogbesan</td>
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<td>An Unholy Alliance: “Spotless” Rocky Mountain Spotted Fever and Shigella sonnei Bacteremia</td>
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<td>Nathaniel</td>
<td>McConkey</td>
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<td>Indicators on 12 lead EKG of clinically significant QT abnormalities.</td>
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<td>Rare Fatal Syndrome Masquerading as Unstable Angina</td>
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<td>Deepika Geverchand</td>
<td>Jain</td>
<td>MD</td>
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<td>Clinical Vignette</td>
<td>ADENOVIRUS INDUCED RHABDOMYOLYSIS CAUSING HEMODIALYSIS DEPENDENT ACUTE RENAL FAILURE</td>
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<td>Deepika Geverchand</td>
<td>Jain</td>
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<td>Dust off Huffing: Emerging as a new and cheap form of abuse and a cause of different types of Arrhythmias with Transient multi organ failure</td>
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<td>Hidradenitis Suppurativa Obfuscating Late-Onset Crohn’s Disease</td>
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<td>Diagnosing Yersinia Enterocolitis under the Disguise of Pseudoappendicitis</td>
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<td>Kenneth Snell</td>
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<td>Clinical Vignette</td>
<td>A Heart that has no Fear of Adenosine</td>
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<td>Hong Loan Nguyen</td>
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<td>Med Student</td>
<td>Penn State Hershey Med</td>
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<td>Loperamide -Poor Man’s Methadone or Poor Man’s Misery?</td>
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<td>Hong Loan Nguyen</td>
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<td>Takotsubo Cardiomyopathy-an Atypical Imaging Variant</td>
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<td>Anam Tariq</td>
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<td>A serious unfortunate case of transfusion-related secondary hemochromatosis in a sickle cell patient</td>
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<td>Muhammad Jamal</td>
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<td>QI/Patient Safety</td>
<td>Using a Checklist to Improve Hypertension Control</td>
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<td>Priya Rajagopalan</td>
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<td>Acute Heart Failure Secondary to Isolated Cardiac Sarcoidosis</td>
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<td>Bradley Woodman</td>
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<td>Small Bowel Metastasis of Malignant Melanoma Associated with Painless Hematochezia</td>
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<td>Pragya Shrestha</td>
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<td>Music for the ears: auditory hallucination associated with hearing loss</td>
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<td>Pragya Shrestha</td>
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<td>Research</td>
<td>Preoperative Statin Therapy in Cardiac Surgery and Acute Kidney Injury: A Systematic Review and Meta-Analysis of Clinical Trials</td>
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<td>Sorabh Sharma</td>
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<td>RCVS versus CNS vasculitis- Great Mimickers of Stroke</td>
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<td>Alexander Bruscke</td>
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<td>The Commonwealth Medical College (TCMC)</td>
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<td>Core needle biopsy prior to breast cancer surgery in northeast Pennsylvania: prevalence and barriers to uniform application</td>
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<td>Robert Schreiner</td>
<td>DO</td>
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<td>Lehigh Valley Hospital</td>
<td>Clinical Vignette</td>
<td>Malignant Paraganglioma-associated Takotsubo Cardiomyopathy</td>
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An unusual case of IgG4 associated Marginal zone B-cell lymphoma presenting as subcutaneous nodules mimicking lipomas

Ryan J Mayo, Ranjit R Nair, Shereen Gheith

IgG4 related disease (IgG4-RD) are a rare group of immune mediated disorders -with heterogeneous clinical presentation but share the same pathologic (lymphoplasmacytic infiltration and fibrosis) and serologic (elevated serum IgG4), features. There are few cases of IgG4-RD associated with lymphomas reported in literature.

A 55-year-old female presented with increasing pressure and discomfort from chronic, previously asymptomatic, large, bilateral subcutaneous masses involving all extremities. She reported multiple excisions in the past with a presumable diagnosis of lipomas. Sonography showed soft hypoechoic masses and given her history and physical examination, a diagnosis of lipomas was favored. An excisional biopsy was performed and the pathology showed a hylanized fibroadipose tissue with extensive lymphoid infiltration with associated prominent internodular plasmacytic component, occasional atrophic germinal centers and frequent scattered eosinophils. CD138 stain showed numerous plasma cells with almost 100% IgG4 coexpression. Additional panel of antibodies demonstrated the plasma cells to be kappa-light chain restricted, consistent with a monoclonal plasma cell population and a diagnosis of low grade marginal zone B-cell lymphoma (MZL) was rendered. The demonstration of IgG4 in neoplastic plasma cells suggested an underlying IgG4-RD with progression to MZL.

There are rare reports of MZL arising from IgG4-RD. IgG4-RD presenting as multiple indolent lymphomatous nodules has not been reported in literature. The diagnosis of IgG4-related disease is currently based on certain histologic criteria and is independent of the serologic IgG4 status. The case serves to create awareness about this rare entity and emphasize a low threshold to biopsy, which can lead to successful treatments.
Gamella morbillorum endocarditis: a rare cause of septic shock

Introduction

There are several known risk factors that predispose patients to the development of bacterial endocarditis. Although most commonly caused by staphylococci and streptococci more organisms continue to be discovered. This case presents a patient with native valve endocarditis with no predisposing factors caused by an exceedingly rare microorganism, Gamella morbillorum.

Case description

A 50-year-old male with a history of hypertension presented with 5 days of progressive dyspnea and a dry cough. Physical exam revealed diffuse expiratory rhonchi and a grade 3/6 systolic ejection murmur. The patient had a history of a heart murmur of unknown etiology. Chest CT revealed extensive bilateral pulmonary infiltrates consistent with multifocal pneumonia. He was started on empiric antibiotics with ceftriaxone, azithromycin, and vancomycin with no improvement in his condition. The patient rapidly decompensated from hypoxia and hemodynamic instability during bronchoscopy requiring intubation and vasopressor support and ultimately ECMO for refractory hypoxia. At that time a change in murmur severity was noted. An emergent transesophageal echocardiogram (TEE) revealed endocarditis with severe mitral regurgitation, moderate aortic regurgitation and vegetative lesions. Blood cultures grew Gemella morbillorum in 1 of 4 vials and he was diagnosed with dual-valve endocarditis. He underwent emergent aortic and mitral valve replacement and received 4 weeks of antibiotic therapy with ceftriaxone and gentamicin with full recovery.

Discussion

Although endocarditis is more common in patients with predisposing risk factors, suspicion must remain high in patients not responding to appropriate antibiotic therapy and with changes in the severity of a pre-existing heart murmur.
Pembrolizumab-Induced Adrenal Insufficiency with Empty Sella

Endocrine toxicities have been reported with immune checkpoint inhibitors, monoclonal antibodies targeting immune checkpoint proteins, for the treatment of patients with melanoma and NSCLC. These include ipilimumab targeting cytotoxic T-lymphocyte antigen-4 (CTLA-4) and nivolumab and pembrolizumab targeting programmed death-1 (PD-1). Previous cases have reported pituitary enlargement with varying endocrinopathies.

A 70-year-old woman with recurrent ocular melanoma and liver metastases treated with four months of pembrolizumab (2mg/kg every 3 weeks) presented to the hospital with increasing generalized weakness, lethargy, and altered mental status. Initial workup showed a mixed metabolic acidosis with sepsis secondary to a urinary tract infection. Urine cultures grew Klebsiella sensitive to Ceftriaxone. Antibiotics were started and her mental status improved; however, the generalized weakness and lethargy persisted. On hospital day 6, her 8 a.m. cortisol was 1.9 ug/dL. A Cosyntropin test was performed with the following cortisol levels: 8.7 ug/dL at 30 minutes and 12.3 ug/dL at 60 minutes. Endocrinology was consulted and an ACTH level of 5.9 pg/mL confirmed the diagnosis of secondary adrenal insufficiency. Prior to immunotherapy, her ACTH was 25.8 pg/mL. Because of deep brain stimulation, a pituitary MRI was contraindicated and a sella CT scan was ordered—showing an empty sella. Stress dose hydrocortisone was started and her weakness rapidly improved.

This case illustrates the importance of close monitoring of potential side effects in patients who are being treated with immune checkpoint inhibitors. The onset of these symptoms can occur as early as three months of treatment. Adrenal insufficiency requires prompt recognition and treatment.
Physician, Heal Thyself: Depression and Burnout in Graduate Medical Education

**Background:** Problems regarding physician emotional and personal well-being receive inadequate attention in the current “culture of medicine”. Depression and burnout are associated with increased drug and alcohol abuse, infertility, depersonalization, lack of patient advocacy, and increased medical error. Burnout is defined as a loss of enthusiasm for work, fatigue at the idea of work, and cynicism. US physicians suffer more burnout than any other group of American workers. A recent review estimated that the prevalence of depression or depressive symptoms among resident physicians was 29%. Little has been studied on the effects of burnout and depression in the graduate medical education (GME) cohort.

**Design:** A 21 item questionnaire was emailed to 202 community-based internal medicine residency programs to be completed anonymously. The survey included questions measuring: personal life and habits, burnout, depression, and educational identifiers. As incentive for voluntary participation, respondents were given an option for charity donation paid by our institution.

**Results:** A total of 149 responses were collected from May 16 to June 6, 2016. 71 residents revealed their training program, resulting in 28 identified Internal Medicine programs across 6 regions within the USA. Overall, the rate of depression among residents was 51% and the “burnout rate” was 29%. Residents that screened positive for burnout were more likely to be depressed, and those that screened positive for both burnout and depression were much more likely to regret their decision to become a doctor.

There were many statistically significant associations with depression and burnout. Depression was associated with a lack of trust between residents and not eating dinner, while associations with burnout included a tendency to exercise less as well as not eating breakfast or dinner. Residents positive for burnout and/or depression felt more isolated or less "well-liked" within the program, did not having a close friend in the program, and were less likely to eat lunch. Residents in larger programs (a cohort >37) were more likely to feel isolated yet exhibited more trust in each other; US born residents felt more well liked and they were more likely to trust residents within their program; those with pets were significantly less likely to experience burnout. All p values were < 0.05.

**Conclusion:** Meals, exercise, feeling “well-liked”, friendship, trusting other residents, nation of origin and having a pet were all statistically significantly associated with less depression and burnout. Based on these results, we believe that GME training programs need to explore modification of their curriculum to include resident health and wellness. This should include improved support for meals and healthy eating, a focus on exercise, and an emphasis on social support services to ensure friendships and trust within the residency program. Physician heal thyself: the time is now.
Improving primary care knowledge of anti-RAAS therapy for proteinuric kidney disease: an educational intervention using a web-based animated video

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BACKGROUND: Anti-renin angiotensin aldosterone system (RAAS) therapy is known to slow the progression of proteinuric chronic kidney disease (CKD). Despite such evidence, appropriate utilization of angiotensin converting enzyme inhibitors (ACEI) and angiotensin receptor blockers (ARB) in the primary care setting has been limited. The aim of this study was to investigate the reasons for sub-optimal prescribing patterns and to improve knowledge of anti-RAAS therapy for proteinuric CKD patients in primary care residents.

METHODS: Baseline knowledge and attitudes regarding use of ACEI and ARB in CKD were assessed using an electronic survey. We developed a short (<3 min) video using PowToon (animation video presentation website tool), including core educational concepts regarding use of anti-RAAS therapy for proteinuric CKD. One month after the baseline survey, a link to the video was emailed to General Internal Medicine (GIM) residents at Geisinger Medical Center along with a follow-up survey to determine changes in resident knowledge.

FINDINGS: Out of a total of 69 residents, 20 responded to the survey: 30% PGY 1, 35% PGY 2, and 35% PGY 3, and approximately half (55%) were female. The majority (70%) were US medical graduates, and 60% had completed a nephrology rotation during residency. Main reported barriers to ACEI/ARB use were concerns for hyperkalemia (55%) and blood pressure currently at goal (95%). Few (5%) felt data for efficacy of anti-RAAS therapy were lacking. Of the 20 survey responders, 6 took both pre-/post-intervention surveys and there was a 52% increase in mean percentage of correct survey responses post-intervention. The largest improvement was seen in knowledge of the proteinuria reduction goal in CKD (Table).

<table>
<thead>
<tr>
<th>Survey Content</th>
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<th>Post</th>
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<td>Blood pressure control and proteinuria reduction to slow progression of kidney disease</td>
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<tr>
<td>Verapamil/Diltiazem as second-line anti-proteinuric therapy</td>
<td>17%</td>
<td>100%</td>
<td></td>
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</table>
CONCLUSIONS: Preliminary data show improvement in the general knowledge of treatment of CKD with proteinuria among GIM clinic residents after viewing an educational web-based video. Future investigation will aim to increase rate of utilization of ACEI/ARB in the primary care setting and to increase awareness of their importance in proteinuric CKD, even in normotensive patients.
**Acyclovir Neurotoxicity in a Hemodialysis Patient**  
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**Background:** Acyclovir is a well-tolerated antiviral agent in the majority of patients; however, neurotoxicity has been reported in patients with acute or chronic renal failure. In this report we describe a patient on hemodialysis (HD) with neuropsychiatric symptoms after receiving oral acyclovir.

**Presentation:** A 73 y/o woman with end stage renal disease on HD presented from her nursing home with acute mental status change. Two days earlier she began treatment with 800 mg oral acyclovir twice daily for herpes zoster infection on her right arm. Physical exam revealed an awake patient with audio-visual hallucinations, tremors, and myoclonic jerks. Due to concern for herpes encephalitis patient received 450 mg of IV acyclovir immediately in the emergency room.

**Findings:** Labs showed chronic hyponatremia and minor leukocytosis. CXR revealed small bilateral pleural effusions, CT head was negative for acute abnormalities, and lumbar puncture was benign. Serum acyclovir levels on admission and after 24 h were elevated (3.5 mcg/ml and 10 mcg/ml, respectively). HD was performed the next day and patient showed significant improvement in mental status with resolution of tremors and myoclonic jerks. Serum acyclovir levels decreased to 1.6 mcg/ml after HD.

**Conclusion:** The mechanism of acyclovir neurotoxicity is poorly understood. Acyclovir excretion is predominantly renal and for patients with impaired renal function, or on HD, dose adjustment and careful monitoring for symptoms is necessary to prevent neurotoxicity. The recommended acyclovir dose for dialysis patients is 200 mg twice daily plus 400 mg after each dialysis. In the rare case of acyclovir toxicity, HD effectively eliminates the drug and leads to resolution of symptoms.
Pulmonary Arterial Hypertension in Neurofibromatosis type 1

Pulmonary arterial hypertension (PAH) is a potential but extremely rare complication of Neurofibromatosis type 1 (NF1) and is associated with high mortality rate. This case report illustrates the need to maintain a high index of suspicion in a patient with NF1 who presents with dyspnea of unclear etiology.

A 66 year old woman, never smoker, with NF1, presents with a 2 year history of progressive dyspnea. She denied any chest pain, orthopnea, paroxysmal nocturnal dyspnea and there was no history to suggest thromboembolic disease or exposure to toxic inhalants. Pulmonary function testing revealed mild airflow obstruction with a severe reduction in diffusion capacity. A chest CT showed multiple, bilateral, thin-walled cysts. Echocardiography noted normal right atrium and ventricle but increased pulmonary artery systolic pressure. It was thought that her symptoms were cardiac in origin, but despite intervention with a stent to the LAD, she did not improve. Subsequently, she underwent right heart catheterization, which confirmed the diagnosis of PAH. She had an elevated mean pulmonary artery pressure (44mmHg, 78/23 mmHg), a normal pulmonary capillary wedge pressure (9mmHg) and a high pulmonary vascular resistance (7.23 Wood units), compatible with PAH.

PAH is a rare and potentially fatal complication of NF1. Often in association with severe parenchymal disease, the proposed mechanism is underlying vasculopathy due to disproportionate involvement of the pulmonary arteries. Characteristic plexiform lesions have been previously described on histology. Awareness of PAH in association with NF1 is crucial for early identification and treatment.
Colorectal cancer is the third most common non-skin cancer and the second leading cause of cancer-related mortality in the US. Early colon cancer is mostly asymptomatic, so clinicians must maintain a high index of suspicion for this diagnosis. We present a case of a young female patient with presumed Crohn’s Disease who was ultimately diagnosed with colonic adenocarcinoma.

A 35 year old female presented with complaints of nausea, vomiting and cramping abdominal pain for four days. Abdominal CT showed circumferential thickening of the terminal ileum and cecum suggesting active enteritis. She was discharged on oral antibiotics for presumed infectious enteritis with planned evaluation for inflammatory bowel disease (IBD). One week later, she was readmitted with recurrent symptoms, and a CT again showed active bowel inflammation with luminal narrowing. Fecal calprotectin and C-reactive protein were elevated. She was treated with IV antibiotics and steroids, but despite these interventions her symptoms worsened and progressed to a partial small bowel obstruction. An exploratory laparotomy revealed an obstructing ascending colonic mass, and hemicolecctomy was performed. Pathology confirmed stage IIA colonic adenocarcinoma and she is currently being treated with capecitabine.

Our patient’s age, presentation and clinical course were consistent with likely IBD. This case illustrates that ileocolitis on imaging has a broad differential, and patients with presumed IBD not responding to conventional treatment should be investigated for alternative diagnoses. As more recent data suggests the increasing incidence of colorectal cancer in young adults of ages 20-39, colon cancer should always be considered on the differential.
Overshooting the Ninety-Minute Door-to-Balloon Benchmark: The Untimely Management of ST-Elevation Myocardial Infarctions

Introduction: The American College of Cardiology and American Heart Association (ACC/AHA) recommend that ST-elevation myocardial infarction (STEMI) patients presenting to primary cutaneous intervention (PCI)-equipped medical centers have door-to-balloon times less than ninety minutes, with door-to-balloon time being the time of arrival to the time of crossing the first coronary lesion via PCI. It has previously been shown that meeting this ninety-minute benchmark is associated with decreased mortality, and it has also been shown that a reduction in the time spent in several of the intervals that comprise STEMI care have been associated with a decreased mortality as well. We examined four time intervals that comprise STEMI care as well as additional characteristics such as method of arrival via emergency medical services (EMS) and complaint of chest pain in order to determine points of focus for further improving and expediting future STEMI care.

Methods: We conducted a retrospective analysis of patients who presented to a rural Level 1 trauma center from January 2010 to May 2015 with confirmed STEMI who were treated with PCI. We categorized patients based on door-to-balloon time, grouping them based on the ninety-minute door-to-balloon benchmark. We examined four time intervals that comprise the door-to-balloon times for both groups: Time of arrival to Time of electrocardiogram acquisition, Time of electrocardiogram acquisition to Time of calling a “Heart Alert” (also referred to as a “Code STEMI” at other institutions), Time of Heart Alert call to Time of case start via PCI, and Time of case start to Time of first device placement via PCI. We also examined important background characteristics of said patient populations, including method of arrival to the hospital and presence of chest pain complaint. Descriptive statistical methods were employed to examine the STEMI care time intervals. Method of arrival and complaint of chest pain were evaluated using a chi-square test.

Results: We examined 352 patients, grouping them based upon door-to-balloon time ≥ or < ninety minutes, with 45 and 307 patients assigned to both respective groups. Of the four variables that comprised door-to-balloon time, the most notable of the four intervals was Door-to-EKG median time (seventeen versus five minutes, respectively). Complaint of chest pain between the two groups was 77.78% and 97.07%, respectively (p < 0.001). Method of arrival via EMS was 44.44% and 60.59%, respectively (p = 0.040).

Conclusion: Increased Door-to-EKG time, a lack of complaint of chest pain on arrival, and arrival without the use of Emergency Medical Services are all linked to and contribute to an increase in door-to-balloon time. We can use these findings to further inform our future management of STEMI patients in medical care settings both here in Pennsylvania and elsewhere.
**Pulmonary toxoplasmosis in a Rheumatoid arthritis patient on Methotrexate and steroids.**

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Patients on methotrexate presenting with chronic cough and dyspnea will typically prompt consideration of methotrexate toxicity, however opportunistic lung infections such as pulmonary toxoplasmosis (with a 40% mortality in the immunosuppressed) can present similarly.

A 55-year-old female with history of rheumatoid arthritis on methotrexate for 6 months and steroids, presented with shortness of breath and non-productive cough of 2 months. She denied hemoptysis, fever, night sweats, weight loss or recent travels. Of note, patient had a cat and ingestion of partially cooked hamburger. Vital signs were within normal limits and physical examination, including lung examination was unremarkable. ESR was mildly elevated – 35mm/hr otherwise CBC, electrolyte, HIV and IgE serology were all normal. CT Chest showed extensive bilateral ground glass opacities and small bilateral hilar lymphadenopathy with a broad differential. Further work up including a bronchoscopy and lung biopsy demonstrated nodular lymphohistiocytic interstitial infiltrates, and staining revealed small cystic bodies incorporating granular material suggestive of toxoplasmosis. Toxoplasma serology was positive for IgG - 139 IU/ml (normal < 7.1 IU/ml) and negative for IGM, typical of pulmonary toxoplasmosis in the immunocompromised. CT brain and MRI showed no acute intracranial abnormality. She received a 3-month course of TMP-SMX with resolution of her cough and dyspnea. Repeat CT lungs at 6 weeks showed resolution of afore mentioned lung findings.

In patients on chronic methotrexate presenting with shortness of breath, cough and exposure to risk factors for toxoplasmosis such as handling cat litter and ingestion of poorly cooked meat, pulmonary toxoplasmosis should be strongly considered.
When less is more- Ebstein anomaly

Ebstein’s anomaly involves atrialization of the right ventricle, accessory pathways and other cardiac defects. Patients with Ebstein anomalies usually survive to adulthood but tricuspid valve (TV) malfunction is all too common.

A 34 year old woman with Ebstein’s anomaly, surgically corrected with bio-prosthetic tricuspid valve at age 29, was admitted with palpitations, dyspnea and fatigue. EKG showed atrial flutter (AF) with rapid ventricular response. Transthoracic echocardiogram revealed severe tricuspid regurgitation (TR). Transesophageal echocardiogram (TEE) confirmed fracture of the bio prosthetic valve strut as the root cause of her symptoms. She underwent successful AF ablation.

The severe TR precipitated right atrial dilatation, increasing risk for additional flutter. Treatment of the malfunctioning valve presented a therapeutic dilemma. As bio-prosthetic valves usually survive median 10 years for individuals less than 35, and the patient was otherwise physically healthy, the prospect of multiple open heart surgeries, with progressively increasing morbidity/mortality, seemed a suboptimal solution.

The patient underwent placement of 29 mm, Edwards SAPIEN 3, bioprosthetic aortic valve (used for TAVR) in the TV orifice via the trans-jugular approach. Repeat TEE confirmed complete resolution of TR. She had immediate improvement of pulsations in her neck and prompt resolution of fatigue.

Trans-catheter replacement of a dysfunctional surgical bio-prosthetic valve is a new technique that is being considered for failing TV prosthesis. This minimally invasive procedure allows rapid recovery and avoids the complications associated with sternotomy surgery. This innovative use of a valve, initially developed for aortic valve replacement, is becoming popular for tricuspid valve repair.
Not all Toxic Megacolon is Infective or Inflammatory

A 55-year male with significant past medical history of schizophrenia, GERD and seizure disorder was admitted with severe abdominal pain and fever for 2 days. Patient had upper respiratory tract infection six weeks prior for which he had taken a course of Azithromycin. His medications included clozapine, lorazepam, levetiracetam, phenytoin and pantoprazole. He was tachycardic, tachypneic and hypotensive on admission. His white count was 20.9 and creatinine was 1.9. Computerized tomography of the abdomen was consistent with toxic megacolon. He was diagnosed with severe sepsis presumably secondary to Clostridium difficile. His admission stool for Clostridium difficile toxin and PCR were negative, as were the repeat studies. Given the high suspicion, rectal vancomycin and intravenous metronidazole were continued despite negative studies. As his clinical condition stabilized, oral medications were restarted and patient’s condition deteriorated again. A detailed medication review showed that clozapine could cause gastrointestinal hypomotility and toxic megacolon. Stopping clozapine resulted in clinical improvement and patient was discharged in stable condition.

Discussion

The etiology of toxic megacolon is usually infective or inflammatory. Clozapine-induced gastrointestinal hypomotility (CIGH) and toxic megacolon are uncommon but potentially fatal side-effects that are often overlooked. Clozapine, due to its anticholinergic and antiserotonergic effects, can affect the entire gastrointestinal tract, from esophagus to rectum, and may cause bowel obstruction, ischemia or perforation. Clozapine prescribing should be accompanied by appropriate laxative use and monitoring for CIGH. Knowledge of side-effects of psychiatric medications is lacking among primary care providers and this case emphasizes the importance of comprehensive medication review.
Thyrotoxicosis with coexistent Graves’ disease and Hashimoto’s thyroiditis

**Background:** There are quite a few case reports of Graves’ disease following Hashimoto’s thyroiditis and vice versa; but only 3 cases have been reported of a coexistent Graves’ disease and Hashimoto’s thyroiditis in a hyperthyroid patient.

**Case Description:** A 34-year-old female with no medical history presented for evaluation of 5 months of palpitations, excessive sweating, hand tremors, heat intolerance and a 20-pound weight loss. Physical examination revealed an asymmetrically enlarged thyroid gland with tenderness to palpation of the right lobe. There were no appreciable ocular manifestations other than a stare. Laboratory evaluation revealed suppressed thyroid stimulating hormone (TSH) < 0.01 µU/L (ref 0.27-4.2) with elevated T3 9.20 pg/ml (ref 2.6-4.4) and free-T4 2.39 ng/dl (ref 0.7-1.7). Antibodies were detected at high levels to both thyroperoxidase (TPO) at >1000 UI/ML (ref 0-35) and thyroid stimulating immunoglobulin (TSI) at 213 (ref < 125). Ultrasound of the thyroid gland revealed diffuse heterogeneity, consistent with Hashimoto’s thyroiditis, as well as a 1.3 x 0.6 x 1 cm hypoechogenic region within the right lower lobe. Ultrasound-guided needle biopsy revealed groups of atypical follicular cells, Hurthle cells and lymphocytes, consistent with Hashimoto’s thyroiditis. She was treated with beta blockade and methimazole. Approximately 6 years from the time of diagnosis, TPO and TSI antibodies remained elevated and TSH remained low, while free T3 and T4 had normalized.

**Discussion:** Graves’ disease following or preceding Hashimoto’s thyroiditis is a relatively rare phenomenon. Even rarer is Graves’ disease coexisting with Hashimoto’s thyroiditis. Graves’ disease is the most common cause of persistent thyrotoxicosis, while Hashimoto’s thyroiditis is typically associated with transient thyrotoxicosis. Our patient presented with clinical and laboratory evidence of Graves’ disease (elevated T3, T4 with low TSH and significant elevated TSI) with concomitant ultrasound and cytopathologic findings consistent with Hashimoto’s thyroiditis over an extended period of time.
Idiopathic Hyperammonemia and Rituximab Therapy

Introduction: Hyperammonemia is most commonly encountered as a complication of hepatic dysfunction. As ammonia levels acutely rise, neurons suffer oxidative and mechanical stress due to increased intracellular osmolarity. Recognition and management of non-hepatic hyperammonemia in adult patients is a great challenge as such cases are not often encountered, severely persistent, and rapidly progressing to a poor prognosis.

Case: A 69 y.o female with no history of inborn errors of metabolism, treated with Rituximab (a monoclonal antibody against CD20) for cryoglobulinemic vasculitis presented with acute encephalopathy and a hyperammonemia of 860. She was managed with lactulose and rifaxamin, demonstrating improvement in mental status with decreased yet fluctuating ammonia levels. Work up yielded no signs of gastrointestinal hemorrhage, infections, seizures, intoxication, or hepatic etiology. On day 10, her serum ammonia increased to levels >1000 with recurrent encephalopathy. Hyperammonemia was refractory to renal replacement therapy leading to expiration of the patient within 48 hrs. Further investigation suggested no enzymatic deficiencies to diagnose urea cycle disorders.

Discussion: Medications i.e., Valproic acid, may disrupt the hepatic urea cycle causing mild elevations in ammonia. Several reports have observed hyperammonemia with levels comparable to our patient’s following high-dose chemotherapy. While Rituximab is implicated in multiple cases, it has never been documented as being the sole treatment in patients with hyperammonemic encephalopathy. Proposed mechanisms suggest that Rituxumab may unmask mild or compensated urea cycle deficits. This case adds to the current literature available on iatrogenic hyperammonemia, specifically investigating its association with Rituximab.
The Impact of Code Sepsis on Inpatient Mortality

**Background:** Severe sepsis and septic shock are commonly encountered conditions yet insidious in onset, difficult to recognize, and challenging to treat in a timely manner. Since 2013, a drastic increase in mortality from complications of sepsis was observed within our healthcare network. The sepsis mortality index reached a peak of 1.4 when compared to the national average. Upon extensive review of charts and management procedures, gaps were noted in proper identification of septic patients, adherence to core measure goals for fluid resuscitation, collection of serum lactate, and administration of appropriate antibiotics.

**Methods:** A multidisciplinary taskforce was assembled to address the growing concerns, meeting regularly to standardize the process. Our facility revised and approved the criteria for SIRS and SEPSIS with emphasis on documentation of the patient’s clinical status. A new protocol was created, detailing an algorithm that emphasizes goal directed resuscitation using 3 and 6 hour bundles to simplify and expedite the administration of IV fluids, lactate collection, and initiation of antibiotics. An alert system was implemented to identify and warn care teams of patients meeting the sepsis criteria with potential risk for rapid progression to severe sepsis and septic shock. Throughout the process, fluid administration, timely collection of lactate levels, and antibiotic administration were all tracked and quantified. Providers involved in septic patients’ care received patient summaries to offer feedback, raise awareness of shortcomings, and track progress.

**Results:** Review of over 350 cases where sepsis alerts were activated revealed that compliance with timely lactate orders increased by 9% for initial levels and 21% for repeating lactate after fluid administration. Meeting the goal for prompt fluid resuscitation (30 ml/Kg) also increased by 20% as did collection of blood cultures and administration of broad spectrum antibiotics - 3% and 11% respectively. The current sepsis mortality index at our institution has declined to 0.6 since the recognition of increased sepsis related deaths and initiation of the sepsis committee in January 2015.

**Discussion:** We observe that the initial impact on the decline in sepsis mortality at our network stems from recognition of the problem. The creation of a sepsis taskforce was the foundation to raising awareness and initiating further steps to promote early recognition and intervention. Providing a standardized, tangible, and accessible stepwise algorithm to ED personnel defined and enhanced the recognition of septic patients. This in turn decreased the time to initiation of treatment as care teams were more organized and confident in acting. This project demonstrates that there is a vital role for standardization of care through protocol guided treatment of sepsis. Possible limitations include mislabeling septic patients, as SIRS criteria is non-specific. Further individualized chart review is needed for clarification.
Help Me Understand: The Impact of Language and Cultural Barriers on Asthma Control

Background:
In the United States, patients who do not speak English are at increased risk for poor control of chronic conditions such as diabetes and congestive heart failure. Communication regarding healthcare is hindered by differences in language as well as associated cultural differences and poor health literacy. This relationship has not been previously studied in asthma. In this retrospective cohort study, we compare asthma control between self-identified native English speakers and non-English speakers.

Methods:
Using electronic health records from Hershey Medical Center, we established a cohort of 26,423 asthmatics aged 12 years and older and with a body mass index (BMI) of at least 18. All patients had a diagnosis of asthma documented by ICD-9 or ICD-10 codes between January 2011 and February 2016. We performed multivariate logistic regressions and one-way analyses of variance to determine the effects of having a language barrier on asthma control based on Asthma Control Test (ACT) scores and pulmonary function tests (PFT), as well as the effects on number and type of hospital visits.

Results:
Our database included 25,386 English speakers and 1,037 non-English Speakers. Non-English speakers included speakers of the following languages: Chinese, French, Italian, Russian, Sign-Language, Spanish, Vietnamese, and other. ACT scores were available for 3,308 total patients (101 non-English speakers) and PFT scores were available for 3,068 of the study patients (129 non-English speakers). Non-English speakers had increased odds of having poor asthma control as defined by ACT scores of less than or equal to 15 (OR 1.6, 95 CI 1.03-2.63) and also had lower mean FEV1 percent predicted (68.9 compared to 71.7) and FEV1/FVC (72.5 compared to 75.2), with the latter being statistically significant (p=0.01). Additionally, non-English speakers had less mean clinic visits (12.1 compared to 26.5; p < 0.001). They were also noted to have less emergency visits and hospitalizations within Hershey Medical Center (p < 0.001).

Conclusions:
Our data show that patients with asthma who have a language barrier have worse asthma control as defined by ACT and PFT scores. Additionally, they had less clinic visits for continuity of care for their asthma symptoms. Although our data report fewer hospitalizations and emergency department visits for non-English speakers, we believe that seeking emergency care at other care centers may contribute to these results. Further research on this topic is warranted to better provide continuity of care for patients with asthma within this vulnerable population.
A Perfect Storm of “Normal” Labs

Introduction: DKA typically presents with severe hyperglycemia and acidosis. We present a case of DKA with mild hyperglycemia and a mixed metabolic acid-base process yielding a normal CO2. Atypical presentations together with opposing pathologies leading to lab “normalization” may result in diagnostic confusion.

Case Description: A 62 year female presented to the ER with urinary frequency, chills, rigor and episodes of vomiting and orthostatic symptoms. Lethargy and a systolic BP 60 mmHg improved with fluid resuscitation. The initial bicarbonate was 22.9, glucose 215, Lactate 5.4, Anion Gap 20, BUN 31, creatinine 6.39 and WBC 17.5. A diagnosis was made of septic shock due to UTI with acute kidney injury. DKA was felt unlikely due to the “normal” bicarbonate and mild hyperglycemia. Insulin was not given. Vancomycin and Cefepime were initiated. The UA was normal, CT head, neck, abdomen and pelvis negative. After fluid resuscitation, bicarbonate decreased from 22.9 to 17.6. ABG showed pH 7.293, HCO3 14.7, PCO2 30.3, anion gap 17.6, beta-hydroxybutyrate 1.01. Treating the contraction alkalosis unmasked the acidosis. The patient was diagnosed with DKA, insulin and hemodialysis were initiated, fluids continued. The patient clinically improved but remained dialysis dependent.

Discussion: It is known that DKA may present with mild hyperglycemia and mixed metabolic acidosis-alkalosis. As this case illustrates, two confounding factors delayed clinical diagnosis. Clinical suspicion for DKA must be maintained even with mild hyperglycemia, and clinicians must recognize combinations of opposing pathologies creating an appearance of normality and masking the underlying disease process.
Anemia is a common adverse reaction of the novel oral anticoagulants (NOAC), but association with an autoimmune hemolytic response has not been described in the literature.

A 69 year old male, admitted for palpitations, was found to have atrial flutter. He underwent successful ablation and was subsequently started on apixaban. One week post procedure, he was re-hospitalized with fatigue, shortness of breath, exertional intolerance, loss of appetite and a generalized rash. Comprehensive laboratory testing demonstrated autoimmune hemolytic anemia with thrombocytopenia - positive direct coombs test, elevated lactate dehydrogenase (LDH), bilirubin, ferritin, erythrocyte sedimentation rate (ESR) and C reactive protein (CRP). Genetic testing for hemochromatosis was negative. These findings are presumed secondary to apixaban, the only new medication that was started. Consequently, apixaban was discontinued and the patient was converted to rivaroxaban, in addition to steroids, with resolution of anemia and increase in platelet count. The patient had a gradual resolution of symptoms.

His clinical course however got complicated with adrenal insufficiency from the steroid use, necessitating chronic steroid use. Clinical condition was further complicated by infective endocarditis, large tricuspid valve thrombus and pulmonary embolism.

The novel anti-coagulants have very rapidly become extensively used medications. Very little is known about their side-effects other than bleeding and alteration in liver function. We report a novel causative mechanism of anemia in a patient using apixaban. Newer side-effects will get reported as prescription use of NOACs increase. Prompt identification of adverse reactions can help in preventing adverse outcomes.
Development and Implementation of an Adolescent Transition Readiness Screening Questionnaire for the Primary Care Setting

Planned health care transition from pediatric to adult care is essential to delivering optimal and cost-effective care. Guidelines have demonstrated the need for development and utilization of transition readiness assessment tools, such as the Transition Readiness Assessment Questionnaire (TRAQ), among adolescents and young adults with special health care needs. Limited studies, however, have focused on the transition of otherwise healthy patients. In this project, we aimed to develop a screening tool to identify at-risk patients that would benefit from more extensive transition readiness planning.

A residency-driven effort utilized quality improvement strategies to develop a six-question screening questionnaire to assess transition readiness among patients at Geisinger Medical Center primary care clinics. The residents were divided into two groups across five clinic sites and developed screening questionnaires. Ultimately through several Plan-Do-Study-Act (PDSA) cycles, a six-question screening questionnaire was developed to identify domains of transition readiness focused on: knowledge of medical history, medication management, and appointment scheduling. The response to each question was scored on a scale of 0 (no understanding), 1 (partial understanding), or 2 (complete understanding). Education was provided to all survey administrators to develop standardized scoring assessment prior to surveying patients. Surveys were administered by resident physicians in several primary care clinics to patients from 12-26 years of age. Patients with a score of 0 to any question were identified as at-risk for poor transition readiness.

Thirty-six patients, both otherwise healthy and those with chronic medical conditions, were surveyed across five primary care clinics. The average age of patients was 15.3 years of age.
(range 12-20) and 38.8% (n=19) were male. The average time for survey completion was 2.1 minutes (range 1-5 minutes). Nineteen patients (52.8%) were identified as at-risk that would benefit from formal transition readiness assessment and planning.

Investigating initial screening for formal transition planning among adolescents and young patients both healthy and with chronic medical conditions is a useful procedure. Further patient enrollment is need to improve validity of this screening questionnaire and to better understand its application to various patient populations. This initial study suggests that a screening questionnaire is feasible and can be administered in the routine primary care visit to identify adolescents and young adult patients that would benefit from extended transition readiness assessment and planning.
Syncopal Episodes of Arrhythmogenic Right Ventricular Cardiomyopathy Masked by Pre-existing Seizure Disorder

Arrhythmogenic Right Ventricular Cardiomyopathy is an under-recognized heritable condition which may lead to cardiac death. Clinical manifestations may also include palpitations, syncope, chest pain, and dyspnea. This case describes a young patient with recurrent syncopal events in the setting of ARVC criteria fulfillment.

A 25 year old male with significant history of thalassemia and tonic-clonic seizure status post head trauma with cystic encephalomalacia in the left parietal lobe who was admitted with recurrent syncope over the span of four weeks. These events lasted only seconds and were without prodrome. EEG did not demonstrate seizure activity and the patient was compliant with Lamotrigine therapy. EKG showed normal sinus rhythm with an incomplete right bundle branch block and Epsilon waves in leads V1 and V2 without findings supportive of Brugada syndrome. Echocardiogram was found to be without abnormalities. Eventual cardiac MRI showed small focal outpouchings of the right ventricular free wall, and the diagnosis of ARVC was achieved. The patient completed implantation of dual chamber cardioverter defibrillator for primary prevention.

The diagnosis of ARVC is challenging as ARVC is uncommon, and symptoms may be mild. The patient satisfied criteria for ARVC with RV akinesia by MRI and epsilon wave in the right precordial leads using the 2010 revised Task Force Criteria for the diagnosis of ARVC. His history of head trauma and seizure disorder confounded this diagnosis. Although epileptic activity is still a consideration despite negative EEG, early recognition of ARVC is imperative in order to potentially prevent sudden cardiac death.
New-onset Ascites in Crohn’s Disease: Don’t Forget Histo!

Histoplasma capsulatum is an opportunistic pathogen endemic to Midwestern states with potential to cause disseminated disease in patients with defective cell-mediated immunity. Isolated Histoplasmosis peritonitis is exceedingly rare. To our knowledge, the only reported cases are in HIV/AIDS or peritoneal dialysis patients. With increasing use of tumor necrosis factor-alpha (TNF-α) inhibitors to treat inflammatory bowel disease and rheumatologic disorders, clinicians must have heightened awareness of invasive fungal infections, as delay in treatment increases morbidity and mortality.

22-year-old female nurse with Crohn’s disease on infliximab presented with two-week history of abdominal distention associated with fevers and chills. CT abdomen/pelvis with contrast revealed new moderate ascites with omental thickening and enhancement. Paracentesis yielded clear ascitic fluid with 12,000 cells (53% lymphocytes) and serum-ascites-albumin-gradient 0.9 g/dL. Gram stain showed no organisms; cytology and acid-fast bacilli culture were negative. CT-guided omental biopsy showed granulomatous inflammation. TB skin test was negative. Peritoneal fluid fungal culture and serologies returned positive for Histoplasma capsulatum. Infliximab was discontinued. She completed a course of itraconazole with resolution of ascites.

Our case highlights that the clinical presentation of Histoplasmosis peritonitis may mimic symptoms of underlying Crohn’s disease, and it may overlap with more classically considered granulomatous infections (e.g. tuberculosis), often delaying diagnosis and treatment. Physicians must be alert to the possibility of disseminated histoplasmosis as a potentially life-threatening complication of TNF- α inhibitor therapy, particularly in endemic areas. Antifungal therapy is highly effective, and discontinuation of TNF- α inhibitor therapy is crucial.
Quality Improvement to Increase Compliance with Diabetic Retinal and Foot Exams in a Primary Care Office

**Introduction:** According to the CDC, 9.3% (29.1 million) of the United States population has diabetes. It is therefore imperative that primary care physicians appropriately monitor their patients with diabetes for complications of this disease with preventative measures including annual diabetic retinal and foot exams. In 2014, the Centers for Medicare and Medicaid services evaluation of Physician Quality Reporting System Measures yielded benchmarks, which demonstrated in the last year, 85.7% of Medicare and Medicaid beneficiaries had a dilated eye exam and 57.19% had a foot exam. Reading Health System, in an effort to approach national standards for these quality measures, set a system-wide benchmark goal of 80% for both diabetic retinal and foot exams. Review of the data for Berkshire Heights Internal Medicine Residency clinic, a member of the Reading Health System, demonstrated performance in these two quality metrics below the national and hospital system benchmark. Therefore, a two-year quality improvement initiative was started to improve compliance with diabetic retinal and foot exams.

**Methods:** During evaluation of data collected from the EPIC EMR via third party software, Phytel, a lack of standardization of scanning procedures and documentation was noted that was leading to system-wide inaccuracies. By working closely with Phytel for over one year, data collection for the hospital was validated. Barriers to patient care were then identified, such as the significant burden on office staff to call individual ophthalmology offices for retinal exam reports. To address this, a PDSA cycle utilized a fax-back form that patients took to their ophthalmology exams. This form included pertinent information, including PCP, fax number, and a short list of diagnoses to circle to indicate exam findings. In regards to the foot exam, it was noted that rooming staff were often unaware which patients required the examination. During the PDSA cycle, each physician’s nurse highlighted patients with diabetes in the schedule one week in advance to inform rooming staff of the required exam. Further, laminated mats were made for the roomers to place at the feet of the patient to serve as a visual cue for the provider.

**Results:** Review of the data before and after our PDSA cycles between June 2015 and June 2016 for the diabetic retinal and foot exams demonstrated increased compliance by 19% and 15.7% respectively.

**Conclusion:** Creating a fax-back form for patients to take to their ophthalmologist increases compliance with diabetic retinal exams and increases number of reports received. Having nurses highlight the schedule to denote patients requiring foot exams and having the rooming nurse lay a mat in the patient’s room at time of visit improves compliance with foot exams. Approaching national benchmarks for these preventative measures can help decrease the morbidity of the diabetic patient population.
Prompt Renal Biopsy May Improve Morbidity and Mortality in Multiple Myeloma Associated Crystalglobulin Induced Nephropathy

**Background:** Crystalglobulin-induced nephropathy associated with Multiple Myeloma (MM) is rare and results from crystallization of monoclonal proteins in the renal parenchyma causing thrombosis and occlusion resulting in renal injury. Manifestations include cutaneous ulceration, vascular injury, and polyarthritis. We report a patient with a history of MGUS and aortitis who developed MM and associated crystalglobulin-induced nephropathy.

**Clinical Case:** 48-year-old male with a history of aortitis, MGUS, hypertension, psoriatic arthritis, presented with painful lower extremity rash, acute kidney injury and pulmonary hemorrhage. Tissue thromboplastin inhibitor, cardiolipin antibody, lupus anticoagulation, C3, C4, and beta 12 glycoprotein antibody were normal. Upon admission, steroids were initiated. Hepatitis B serology, rheumatoid factor, and neutrophilic cytoplasmic antibody were negative. Serum protein electrophoresis showed hypergamaglobulinemia with a distinct monoclonal peak. Urine protein electrophoresis was normal. Serum immunofixation showed IgG kappa monoclonal gammopathy of 3.10 g/dL and free Kappa/Lambda ratio of >846.15. Cryoglobulinemia was identified. Bone marrow biopsy showed 12% IgG kappa monoclonal plasma cells confirming MM. Skin biopsy showed small vessel thrombosis associated with leukocytoclastic vasculitis. Kidney biopsy demonstrated MM associated crystalglobulin-induced nephropathy. Treatment included plasmapheresis and chemotherapy for MM. Hemodialysis was initiated. Renal function improved and Kappa/Lambda ratio was 1.8. Patient received stem cell transplant six months later.

**Conclusion:** Crystalglobulinemia is a rare vasculopathy. Data suggests strong correlation between MM and crystalglobulinemia. Crystalglobulinema induced nephropathy is a rare presentation of multiple myeloma and shares characteristics with vasculitis. Prompt renal biopsy helps differentiate vasculitis and plasma cell dyscrasias leading to disease directed therapy and improved morbidity and mortality.
A Rheumatological Riddle

Jennifer Reams, DO, Alicia Meadows, DO, Mark Schneider, DO, Thomas Harrington, MD

Migratory polyarthralgia offers a diagnostic riddle with differential diagnoses including infectious, malignant, and autoimmune etiologies. Concomitant bilateral ankle arthritis, hilar adenopathy, and erythema nodosum may point towards lymphoma, fungal pulmonary disease, or rheumatologic disease (gout or gonococcal arthritis). While it may present in a nonspecific manner, sarcoidosis less often presents with the classic triad of Lofgren’s.

A 49-year-old male patient presented to his PCP with bilateral lower extremity erythema, edema, night sweats, and migratory arthralgia with pain predominately in his ankles. After failing antibiotic therapy for presumed cellulitis, he was trialed on allopurinol for presumed gout. Without relief, he presented to the Emergency Department with additional symptoms of fever and dry cough. Lower extremity duplexes were negative for DVT and he started empiric antibiotic treatment for possible disseminated gonococcal infection. The patient underwent testing including gonorrhea and chlamydia screens, ASO and anti-DNAase antibiotics, complement, CRP, ANA, and ANCA battery; while CRP was elevated to 159, laboratory workup proved otherwise unremarkable. Chest x-ray revealed bilateral hilar lymphadenopathy, raising new concern for sarcoidosis versus lymphoma. Subsequent bronchoscopy with biopsy demonstrated benign reactive lymphadenopathy. The patient started a course of prednisone for Lofgren’s syndrome, experiencing prompt symptom relief.

Lofgren’s syndrome presents a challenging diagnostic puzzle when presenting for the first time. This is especially true when the symptomology is new and acute without prior established diagnosis of sarcoidosis. This case demonstrates and warns against the usual pitfalls and false diagnoses that can be common to even a classical presentation of Lofgren’s syndrome.
Non-dermatomal Distribution of Varicella Zoster Virus in the Lower Extremities of an Immunocompromised Patient

A 73 year-old female treated with Temozolomide for Stage IV neuroendocrine carcinoma presented with hypoxia. She was diagnosed with MRSA pneumonia and a right upper lobe pulmonary embolism. Review of systems revealed a two day old bilateral lower extremity rash. It was maculopapular, erythematous, and extended circumferentially from the ankles to the knees following her stasis dermatitis. They were also covered in dozens of darkened, umbilicated vesicles ranging in circumference (3-10 mm) along the same distribution. It was associated with a burning pain, allodynia, and pruritus. Two weeks prior to this she developed shingles along the left thoracolumbar region and was treated with Valacyclovir. Dermatology performed a 3-mm punch biopsy on the legs. Infectious Disease did not recommend empiric antimicrobial treatment as they doubted the vesicular lesions were due to varicella zoster virus (VZV) or herpes simplex virus due to the unusual distribution and recent antiviral treatment. The pathology was consistent with herpes virus vesicular dermatitis. She was started on Acyclovir 1 g IV q8h. Viral cultures from unroofed vesicles on the legs detected VZV via PCR at levels of 394, 468 copies/mL (reference range of <500 copies/mL).

This case illustrates a rare presentation of VZV in the lower extremities that followed a pattern of stasis dermatitis instead of a dermatomal distribution. In immunocompromised patients, it has been postulated that vascular and endothelial damage from chemotherapy in addition to increased capillary permeability seen in stasis dermatitis can create a predilection for VZV invasion and eruption, resulting in atypical patterns.
Hemophagocytic lymphohistiocytosis (HLH) is an immune system disorder with aberrant activation of T cells and macrophages resulting in vast tissue destruction. There are two forms of HLH: inherited HLH (autosomal recessive) and secondary HLH, occurring after strong immunologic activation. Here we highlight a case of HLH presenting as disseminated intravascular coagulation (DIC) in a patient with acute myelogenous leukemia (AML).

A 56 y.o. female with a history of Essential thrombocytosis (ET) presented to the ED with an episode of gross hematuria. She was normotensive and febrile (100.7°F). Physical exam was significant for petechiae on all extremities, tachycardia, and diffuse abdominal tenderness. Her CBC revealed a platelet and WBC level of 12,000 and 10,500, respectively. Fibrinogen was at 110, indicating DIC. Results of a bone marrow biopsy and flow-cytometry concluded transformation of ET to AML. However, it wasn’t clear if DIC was due to bacteremia or APL, a variant of AML. On day 4, cytogenetic testing ruled out APL while blood cultures remained negative. On day 8, ferritin levels were >12,000 and blood-smear revealed phagocytosis of RBCs. A diagnosis of HLH was made considering blood smear findings, hyper-ferritinemia and hypofibrinogenemia. Pt was started on HLH-94 Protocol along with idarubicin and cytarabine; subsequently platelets increased to 37,000 and both ferritin and fibrinogen normalized.

This presentation illustrates a transformation of ET into AML with concurrent HLH; highlighting the importance of considering HLH in AML patients presenting with DIC, as early detection could be essential in managing both patients' malignancy and hemodynamic status.
Title: Guideline-Driven High-Intensity Statin Dose Achievement in Cardiac Rehabilitation Patients

Introduction:
The 2013 American College of Cardiology/American Heart Association (ACC/AHA) Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk recommends high-intensity statin therapy for clinical atherosclerotic cardiovascular disease (ASCVD) patients age ≤75.1 Despite this recommendation, current statin therapy has been underutilized in both hospitalization discharge and outpatient settings.2-4 Cardiac Rehabilitation (CR) is an evidence-based secondary prevention strategy that provides risk factor modification and improved outcomes through a multidisciplinary approach via exercise, education and counseling. Lipid management, a core component of CR, includes documenting fasting lipid values, assessing treatment, and monitoring compliance5,6, however effectiveness of CR in lipid management and guideline adherence is unknown.

Purpose:
The purpose of this study is to determine if CR participation affects guideline achievement for statin use.

Design:
This multi-center retrospective study evaluated statin therapy of patients enrolled in Penn State Hershey Medical Center, Lancaster General Health System, and Pinnacle Health System Phase II CR programs from 1/1/2014 to 8/31/2015.

Methods:
Records for patients with known coronary artery disease who completed 18 or more CR sessions were reviewed for drug and dose prior to and after CR as well as any documented evidence of statin intolerance. Statin intensity was stratified according to the 2013 ACC/AHA guidelines. The McNemar’s chi-square test was used for statistical analysis.

Results:
Of the total 471 subjects, 76% were male with mean age and SD 66.0 ± 10.8 with age range 32 to 89. Subjects age ≤75 (n=378) showed statistically significant increase (p=0.001) in high-intensity statin use post-CR from 56.1% to 61.1%. Males demonstrated significant increase in high-intensity statin use (p=0.002) while females showed no significant change. Of the 147 subjects age ≤75 not on high-intensity statins post-CR, only 21 had history of statin intolerance. Of the subjects age >75 (n=93), 91% were already on moderate-high intensity statins and showed no significant change.

Conclusions:
According to our results, CR completion in subjects age ≤75 increases high-intensity statin use. However, despite a statistical significance, high-intensity statin use in this cohort increased only by 5% post-CR and 33% of subjects neither received high-intensity statin post-CR nor had documented statin intolerance. The majority of subjects age >75 were already on moderate-high intensity statins at CR enrollment and did not demonstrate significant changes. CR is a secondary
prevention strategy that is uniquely positioned to address the issues of statin underutilization and nonadherence. The CR population has a high risk of recurrent ASCVD events, and CR patients interact with and receive repetitive counseling from healthcare professionals multiple times a week. With the current 2013 AHA/ACC guideline recommendations, CR programs need to become more active in re-evaluating barriers and encouraging new guideline adoption.

References:
Antiphospholipid syndrome and acute coronary syndrome: a systematic review

ABSTRACT:

Background: Antiphospholipid syndrome (APS) is a systemic autoimmune disease characterized by venous and arterial thrombosis. It is diagnosed by modified Sapporo criteria. APS can cause acute coronary syndrome (ACS) due to coronary thromboembolism, plaque rupture after accelerated atherosclerosis or microvascular thrombosis. The purpose of this study is to expand the current understanding on the association of ACS and APS by performing the systematic review of available literature.

Methods:

A comprehensive search of PUBMED, EMBASE, Cochrane library and ClinicalTrials.gov databases was performed for relevant articles, from inception until March 30, 2016. The search was performed on Acute coronary syndrome associated with Antiphospholipid syndrome. The data on demographic characteristics, clinical features, investigations and clinical outcomes were extracted.

Results:

We identified a total of 40 cases from 27 articles. The mean age of patients was (41.10±13.61 years) with 55% being males. There were 23 cases of primary APS, 3 cases of secondary APS and 3 cases of catastrophic APS. 45% (n= 18/40) presented with STEMI and 27.5% (n=11/40) presented with NSTEMI. The coronaries were normal in 72.41% patients while 27.58% (n=8/29) had atherosclerosis during cardiac catheterization. Among the 12 patients who underwent PCI with stenting, 6 (50%) had recurrent MI within 3 months. 66.67% (n= 26/39) patients presented with ACS as initial presentation of APS. In 3 patients, warfarin was discontinued during the course of treatment of APS and they subsequently presented with ACS.

Discussion:

Our systematic review found that the mean age of our patients was less as compared to the usual cohort of patients presenting with ACS. Males constituted 55% of our patient population; however in large scale study, males constituted around 70% of ACS due to all causes. Thus, in younger patients, especially females presenting with ACS, APS should be considered as a possible cause. The proportion of patients with normal coronaries in our cohort was less as compared to the reported literature where almost all patients had normal coronaries. In our study, worse outcome with higher rate of target vessel restenosis was reported in patients with APS who
underwent stenting, which is similar to previous studies. 3 patients who discontinued warfarin developed ACS. Hence, lifelong anticoagulation is recommended in APS to prevent recurrence of thrombotic complication.

**Conclusion:**

APS should be considered if younger patients, especially females, present with ACS and have normal coronaries during cardiac catheterization. Patients with APS should be treated with lifelong anticoagulation to prevent recurrence of thrombotic complications.
**Refractory Hypokalemia; an atypical presentation in a patient with Pheochromocytoma**

**Background**
Pheochromocytoma (PCC) is a rare catecholamine secreting neuroendocrine tumor that arises from chromaffin cells of the adrenal gland. The annual incidence is 3-8 cases per million within the United States. Patients often present with the triad of diaphoresis, palpitations, and headache; however, other presentations may include tremors, anxiety, abdominal pain, and hypertension.

**Clinical Case**
A 29 year-old male with no significant past medical history presented complaining of a one week history of sharp abdominal pain radiating from the umbilicus to the back. On presentation, the patient was hypertensive with a blood pressure of 259/160. Subsequent CT scan of his chest and abdomen revealed a right adrenal mass concerning for PCC; however, lab studies revealed a potassium of 2.7 mmol/L which initially suggested hyperaldosteronism due to an adrenal adenoma. The patient remained persistently hypokalemic despite aggressive repletion of potassium. Further work up revealed normal cortisol, ACTH, and aldosterone levels. Plasma and urine normetanephrines were significantly elevated at 3776 pg/mL and 3645mcg/24h respectively, which prompted the diagnosis of PCC. The patient was treated initially with alpha-blockade and then beta-blockade was added prior to surgery. Pathology revealed a benign PCC.

**Conclusion**
Patients with PCC can have atypical presentations. The case we encountered presented as abdominal pain, hypertension, and hypokalemia suggestive of an aldosterone secreting adrenal adenoma. Subsequent studies however, revealed PCC as the diagnosis. This case brings to light catecholamine-induced refractory hypokalemia. The pathophysiology of PCC-induced hypokalemia is uncertain and further research is needed to determine the correlation.

**References**


Interventricular Membranous Septal Aneurysm Incidentally Diagnosed during CT Angiography in a Patient with Infrequent Supraventricular Tachycardia

Introduction

Interventricular membranous septal (IVMS) aneurysm is a rare condition with no accurate incidence rate. It can occur alone; however, it is associated with congenital heart disease. It is described in about 20% of patients diagnosed with Ventricular septal defect. IVMS aneurysm is often asymptomatic but can be complicated by right ventricular obstruction, rupture, thromboembolism, and conduction defects. We present an incidental finding of IVMS aneurysm in a patient with supraventricular tachycardia (SVT).

Case

A 69-yo female with history of SVT for 16 years with infrequent episodes of palpitations treated with Metoprolol underwent echocardiography because of more frequent palpitations. She had refused ablation, as her episodes were infrequent. She had no history of coronary artery disease and prior stress tests were unremarkable.

Echocardiography revealed a new aneurysmal appearing area near the right coronary cusp. CT angiography demonstrated an aneurysm measuring 2.2 X 1.5 X 1.7 cm arising from the membranous part of interventricular septum. It extended into the right ventricle with no outflow tract obstruction. The patient has remained asymptomatic except for infrequent episodes of SVT. She has been managed with Metoprolol, aspirin and observation.

Conclusion

An incidental finding of IVMS aneurysm prompts evaluation for cardiac abnormalities. In the absence of complications, conservative management with timely follow up along with patient education about potential complications represents the standard of treatment. In the absence of complications, surgical resection is not indicated. Despite the rarity of this entity, physicians should be educated about the potential complications and the need for routine monitoring.
Danon Disease for the Cardiologist

Introduction: Danon disease is an X-linked dominant genetic disorder manifesting with cardiomyopathy, skeletal myopathy, and intellectual disability. It is caused by defects in the lysosome-associated membrane protein 2 (LAMP2) gene. Men are affected earlier with hypertrophic or dilated cardiomyopathy and sudden cardiac death by early adulthood. No case report has studied Danon disease from symptom onset to death.

Case: An 8 year old male presented with palpitations and a grade III pansystolic murmur at the left lower sternal border. Electrocardiogram revealed Wolf-Parkinson-White syndrome, and echocardiogram showed hypertrophic cardiomyopathy (left ventricular wall thickness 65 mm). Skeletal muscle biopsy analysis revealed a Danon disease diagnosis. Management included atenolol, verapamil, and radiofrequency ablations, although patient deteriorated with syncopal episodes at age 9. This prompted an automatic implantable cardioverter-defibrillator (AICD) implantation. At age 13, patient experienced palpitations and syncope due to pre-excited atrial fibrillation, and was discovered to have a fasciculoventricular Mahaim pathway. Amiodarone therapy, AICD revision, and cryoablation were performed. He had progressive systolic and diastolic dysfunction, and experienced sudden cardiac death at age 15. At autopsy, his heart had a left ventricular septal thickness of 65 mm and weight of 1,425 grams, the largest documented in the literature.

Discussion: This is the first report to present data from symptom onset to death in classic Danon disease, aiding cardiologists in anticipating and managing disease progression.
Whole Exome Next-Generation Sequencing Identifies Novel Disease Genes In Primary Vascular Aneurysms

Introduction: Non-atherosclerotic arterial aneurysm is a morbid condition and its etiology remains unclear outside the spectrum of an identifiable heritable connective tissue condition (e.g. Marfan or Ehlers-Danlos Syndromes). We identified a cohort of unrelated patients lacking a heritable connective tissue diagnosis despite manifesting multiple aneurysms and/or pseudoaneurysms in medium-sized arteries. We termed the condition multiple aneurysmal-pseudoaneurysmal syndrome (MAPS) and hypothesized that MAPS may be due to a novel disease gene. We utilized exome sequencing and bioinformatics to identify disease genes which contribute to risk for MAPS.

Methods: Next-generation exome sequencing was performed for 15 MAPS patients and one family with multi-generational arterial aneurysms. Bioinformatics filtering of identified putative 'mutations' and Ingenuity Pathway Analysis of suspicious genes were performed.

Results: The familial MAPS phenotype was targeted by exome sequencing to identify candidate MAPS genes. For sporadic MAPS cases, Ingenuity Pathway Analysis (IPA) software was used to search literature describing biochemical pathways between known vascular disease genes and bioinformatics-filtered candidate genes. Analysis of familial MAPS yielded 15 candidate genes, of which PCDH12 was the most promising candidate due to its respective mutation being located in an extremely conserved gene region with a high score for predictive phenotypic damage. Analysis of sporadic MAPS using IPA software identified 6 candidate genes including BAG6, PRKCD, CTNNA1, JAG1, FN1, and MMP13.

Conclusion: Exome sequencing with bioinformatics filtering in the novel aneurysm phenotype, MAPS, identified several promising aneurysm candidate genes. Knock-out/knock-in animal models are being developed to further explore the relationship between candidate genes and phenotypic expression.
Thrombosis of multiple coronary arteries: An atypical case

Multiple simultaneous occlusion of coronary arteries is uncommon in patients presenting with ST-segment elevation infarction (STEMI).

A 51 year-old female with a history of migraines on Topamax presented with acute onset exertional chest pain. EKG showed 1 mm anterior ST elevations in V2 mimicking j-point elevations, not meeting ST-elevation criteria. Cardiac catheterization, done due to unremitting substernal chest pressure, showed complete occlusion of the left anterior descending artery and right coronary artery. The patient had primary percutaneous coronary interventions with drug eluting stents. She developed cardiogenic shock, requiring an intra-aortic balloon pump. She had two episodes of monomorphic ventricular tachycardia requiring cardioversions.

ST-segment elevations myocardial infarction rarely is due to complete occlusion of more than 1 pericardial artery. This case is especially unusual. Despite multiple thromboses, the majority of ST-elevations were marginal and did not meet criteria for MI. Additionally, she did not have any reported risk factors for multiple coronary occlusion, leading us to suggest Topamax as the cause. There are case reports of vasospasm, sometimes seen with Topamax, leading to rupture of vulnerable plaques causing acute thrombosis. We believe this was the cause in our patient.

Simultaneous coronary artery thrombosis in the setting of STEMI is rare. Even more uncommon is thrombosis without typical EKG changes. The incidence of an initial normal ECG with patient who have MI varies widely in the literature, approximately 3-16%, and this has never been reported as a result of use of Topamax.
Submitted by: Dr. Britt Marshall, M.D.
Contributors: Dr. Beth Foreman, MD, Dr. Emily Wood, MD
Abstract Title: It’s Not Cirrhosis! Chronic Pancreatitis as an Etiology of Ascites in Alcohol Abusers.

Introduction:
Though uncommon, chronic pancreatitis should be considered in alcohol abusers with ascites who may not have other clear cut signs of cirrhosis.

Case Presentation:
A 62-year-old man with history of alcohol abuse was diagnosed with cirrhosis at an outside facility after presenting with ascites and portal vein thrombosis. Patient was transferred to our hospital for rehabilitation. On presentation, he was cachectic with ascites but had no other stigmata related to cirrhosis. He had early satiety but no abdominal pain. Labs revealed albumin 1.5g/dL, INR 1.6, total bilirubin 0.4mmol/L, platelets 437,000K/µL and sodium 133mmol/L. Abdominal CT showed an atrophic pancreas with numerous cysts and loculated areas suspicious for pancreatic pseudocysts. The liver parenchyma appeared normal. Paracentesis was performed which showed no malignant cells on cytology and no signs suggestive of spontaneous bacterial peritonitis, however an amylase level was markedly elevated at 2908 S units/dl (88-109 S units/dl). It was concluded that patient’s signs and symptoms were not due to cirrhosis but to chronic pancreatitis. With conservative management including nutritional supplementation and pancreatic enzymes, his ascites and symptoms improved.

Discussion:
Cirrhosis is commonly implicated as the etiology of ascites in alcoholics. Chronic pancreatitis is also common in this population, though the prevalence of ascites as a complication is rare (1-6.6%). If the diagnosis of cirrhosis is not clear, chronic pancreatitis as etiology should be explored with a peritoneal fluid amylase level. If the fluid amylase level is >1000 S units/dl, chronic pancreatitis is more likely.
An Unholy Alliance: “Spotless” Rocky Mountain Spotted Fever and Shigella sonnei Bacteremia

Bacteremia complicating Shigella infection is uncommon as is Rocky Mountain spotted fever (RMSF) without a rash.

A 27-year-old previously healthy MSM presented with a 4-day history of watery stool, abdominal cramps, nausea and vomiting, and yellow skin and finger tips of 2 days duration. He reported a self-limited diarrhea illness in two close contacts in preceding days. No tick exposure. On examination, he was dehydrated, icteric, febrile and had no rash. Relevant laboratory data included WBC of 2200/µl, elevated AST, ALT (201 IU/L, 73 IU/L respectively), normal alkaline phosphatase, elevated total and direct bilirubin of 8.2 mg/dl and 4.4 mg/dl, albumin of 3.2 g/dl, INR of 2.9, prothrombin time of 31.7 and platelet of 96,000/µl. Work up for infectious, autoimmune and medication-induced hepatitis, Wilson’s disease and hemochromatosis was negative. He tested negative for HIV. CT abdomen and magnetic resonance cholangiopancreatography showed hepatic steatosis, right sided colitis and normal biliary ducts. *Rickettsia rickettsii* IgM was positive. Stool and blood cultures were positive for Shigella sonnei. He was treated with Doxycycline and Ciprofloxacin with clinical improvement. Follow up blood test 4 months later was within normal limits.

Our patient had Shigella bacteremia and positive Rickettsia rickettsii IgM without a typical rash. Absence of a rash occurs in 10% of cases, delays diagnosis of RMSF and is associated with increased mortality. Rash typically appears in the first five days of illness. Marked hepatic derangement with coagulopathy occurs in advanced RMSF or may have been a sequela of Shigella bacteremia.
Indicators on 12 lead EKG of clinically significant QT abnormalities.

Introduction: Among patients who undergo electrocardiography for any indication, the discovery of a prolonged QT interval has considerable gravity. In addition to suggesting the possibility of congenital long QT syndrome (LQTS), it raises restrictions on the use of ubiquitous medications known to provoke arrhythmia. However, aside from the corrected QT interval as calculated by the classical Bazett formula, additional methods have been proposed for determining one’s risk of arrhythmia in the setting of prolonged or dysfunctional repolarization. These include alternate calculations of the QTc itself (such as the particularly robust Hodge equation) as well as markers of dispersed repolarization - a precursor to torsades – such as T wave peak-to-end time, or surface QT dispersion (the range of QT intervals across all 12 leads). This study sought to evaluate the utility of these additional metrics in predicting Long QT-associated arrhythmias.

Methods: EKGs were reviewed from patients of a tertiary academic medical center who had experienced a ventricular arrhythmia in the setting of known LQTS (diagnosed by genetics or consistent clinical features). Parameters such as QTc, QT dispersion, and T peak-to-end time were measured and compared to those of EKGs from age and gender matched controls. When such parameters were found to differ significantly between the two groups (as determined by paired T-test), the sensitivity and specificity of apparent cutoff points were evaluated to assess their utility as diagnostic tools.

Results: 25 patients were identified as having LQTS complicated by a bout of ventricular arrhythmia (or a consistent off-monitor event, including sudden cardiac arrest or exertional syncope without alternative explanation). These included 17 females and 8 males, who were then matched by age and gender to the 25 most recent patients to undergo EKG at the medical center without a diagnosis of LQTS or a related arrhythmia. Among variables measured, surface QT dispersion (as measured on butterfly plots), QTc by Hodge’s equation, and T Peak-to-end time strongly differentiate healthy patients from those who experienced a LQTS-associated arrhythmia (P<0.001 for all). A T peak-to-end time of >100 msec was 100% specific for identifying patients with such arrhythmias (but only 52% sensitive), whereas surface QT dispersion of >40 msec was 72% sensitive and 96% specific. When applied across all ages and genders, Hodge’s equation was the most accurate QTc formula tested, with a cutoff of 420 msec providing sensitivity of 92% and specificity of 100%.

Conclusion: Hodge’s equation, T Peak-to-end time, and surface QT dispersion are useful tools to improve the diagnostic accuracy of EKGs in detecting patients at risk of clinically significant long QT.
Rare Fatal Syndrome Masquerading as Unstable Angina

The epidemiology of chest pain is manifested by musculoskeletal (36%), gastrointestinal (19%), cardiovascular (16%), psychosocial or psychiatric (8%), pulmonary (5%), and non-specific (16%) etiologies. We present a scarce gastrointestinal origin of chest pain caused by Acute Esophageal Necrosis Syndrome (AENS).

A 72 year-old man with a history of diabetes, coronary artery disease, and chronic kidney disease presented to cardiology for chest pain presumed to be unstable angina. Due to significant coronary history, he underwent catheterization exhibiting no change from study one year prior. He was later admitted for nausea, vomiting, and lactic acidosis that was attributed to gastroenteritis and diabetic gastroparesis. Endoscopy demonstrated black esophageal mucosa extending to gastroesophageal junction with strictures. Biopsy displayed completely necrotic tissue with no viable mucosa consistent with AENS. He continues to be treated with intensive PPI/H2 therapy and multiple esophageal dilations.

AENS symptoms are diverse due to multifactorial causes of tissue injury including vomiting, hematemesis, and epigastric pain misinterpreted as chest pain. Found most commonly in men over the age of 60 (4:1), AENS is associated with multiple comorbidities including diabetes, hypertension, and coronary artery disease. Although research is limited, most sources state prevalence ranges from 0-0.2%, and incidence is approximately 0.1%. Pathophysiology is hypothesized to be a combination of tissue hypo-perfusion followed by mucosal insult. Diagnosis is made by upper endoscopy revealing unmistakable circumferential black necrotic mucosa of the esophagus. Clinicians should be aware of this entity due to high mortality rate triggered by esophageal perforation which decreases with earlier detection and treatment.
Bipolarity of sodium: association with mortality among hospitalized patients

BACKGROUND

Dysnatremia has been found to be a predictor of worse outcomes including mortality among hospitalized patients in ICU and with significant comorbidities. Even a fluctuation within normal range have been reported to have significant impact. We attempted to look at the risk among hospitalized patients of all severities using a large national database.

METHOD

We utilized the Nationwide Inpatient Database for years 2009 to 2011 as a representation of the whole US inpatients. We selected adult patients >18 years with dysnatremia based on ICD-9 codes 276.0 and 276.1 at any diagnosis position and compared their rate of mortality without and with classification of major comorbidities. Multivariate logistic regression was used to calculate the odds of increased risk.

RESULTS

We included 19,908,811 sampled adult patients representing 98,636,364 patients in the US for those years. Mortality was 6.28 % among patients with dysnatremia, 4.69 % for hyponatremia, 14.80 % for hypernatremia and 1.19 % if no sodium abnormality (all p values <0.0001). Overall mortality rates due to dysnatremia by CHF, pneumonia, stroke, MI, CKD and sepsis were 8.94 %, 12.79 %, 9.69 %, 10.25 %, 7.70 % and 19.90 % respectively (all p values <0.0001). The odds of dying with concomitant dysnatremia was 2.3 (CI 2.31-2.39, p<0.0001).

DISCUSSION

Disturbance in sodium level is significantly related to higher mortality in patients with and without comorbidities. The odds of dying with concomitant abnormal sodium is unacceptably high. Whether correcting the sodium changes the outcome is a matter of further study.
ADENOVIRUS INDUCED Rhabdomyolysis Causing Hemodialysis Dependent Acute Renal Failure

Introduction: Adenovirus is known to cause self-limiting acute febrile and respiratory illness in infants and severe fatal infections in immunocompromised individuals. It is a rare cause of severe rhabdomyolysis leading to dialysis dependent renal failure.

Case: A 39-year-old African American male presented with acute febrile illness which was preceded with symptoms suggestive of viral conjunctivitis. Five days after that, he developed severe muscle achiness and fatigue. He noticed dark urine and was started on UTI treatment by PCP when urinalysis was positive for blood. His symptoms got subsequently worse and on his presentation to our facility he was found to have elevated creatinine [5.4] with significant anemia and CPK of 900,000, later 1,333,000. There was no history of statins, alcohol abuse, or any other common cause for rhabdomyolysis. Toxic screen, HIV, blood cultures and hepatitis serology’s were negative. He had prior exposure to EBV, VCA, CMV and mycoplasma as suggested by his lab work up. A multiplex real-time RT-PCR assay performed on respiratory specimens was negative for influenza but positive for adenovirus DNA. Later on his renal function worsened, with metabolic acidosis, hyperphosphatemia and hypocalcaemia, requiring hemodialysis, which was continued after his discharge from the hospital.

Conclusion: This case demonstrates a severe case of infectious rhabdomyolysis by an uncommon viral organism, Adenovirus, in an otherwise healthy young male. Furthermore the severity of myoglobinuria and subsequent pigment induced nephropathy was high enough to cause permanent renal injury requiring hemodialysis.
**Dust off Huffing: Emerging as a new and cheap form of abuse and a cause of different types of Arrhythmias with Transient multi organ failure**

1, 1-Difluoroethane is a compressed liquefied gas found in easily available dust cleaners like "Dust-off". An abused use of this dust cleaner as an inhalant to induce instant euphoria is gaining attention as it is a popular cheap alternative to other drugs. It has potential to cause fatal cardiac arrhythmias, multi organ failure and death on the first try.

We report a 33-year-old male who was found obtunded in a parking lot with 15 cans of Dust Off that he later admitted to be huffing. He was admitted to the burns unit due to frost bite injury to his hand, then transferred to cardiac ICU due to multiple cardiac arrests. Torsade’s de pointes was the predominant rhythm identified during his cardiac arrest and subsequent EKGs demonstrated transient Right bundle branch block, ST segment changes consistent with Inferior wall ischemia and Sinus tachycardia. The patient was intubated and treated for cardiogenic shock with multiple inotropes. 2D ECHO showed cardiomyopathy. Eventually he developed shock liver with elevated transaminases and impaired liver synthetic function and also acute kidney injury. The patient received supportive care after which all organs recovered including cardiac function as noted on repeat 2D ECHO.

This case stresses the dangers abusing this easily available product. In this case the patient recovered in spite of multiple cardiac arrests and multi organ failure, which is rare. However, it is critical to educate parents about its use and to inform kids that the inhalants can kill them on the first try.
Hidradenitis Suppurativa Obfuscating Late-Onset Crohn’s Disease
David Shore, MD. Risha Sinha, MS3.

Multiple dermatologic manifestations of IBD have been previously reported. While Erythema nodosum is the most common manifestation, evidence shows a significant association between Hidradenitis Suppurativa and Crohn’s Disease. Because of the similarity between HS and cutaneous manifestations of Crohn’s Disease, however, this can prove to be a diagnostic red herring.
A 70-year-old man with significant history of Hidradenitis Suppurativa complicated by multiple episodes of bacteremia presented with worsening pain and serosanguinous drainage from a large lesion on his buttocks without diarrhea, fevers, or chills. Physical exam revealed multiple, characteristic lesions of hidradenitis, as well as a large, violaceous lesion extending over his perineum and down his left thigh. Laboratory testing revealed leukocytosis of 22,000, microcytic anemia, elevated ESR of > 140, and polymicrobial growth on wound culture. CT pelvis demonstrated persistent skin thickening with subcutaneous fluid throughout the perineal lesion, soft tissue stranding, and thickening of the distal colon and rectum consistent with cellulitis. Further history, however, revealed previous imaging demonstrating similar findings. Colonoscopy, however, revealed the characteristic colitis, cryptitis, crypt abscesses, and eosinophilic infiltrate of IBD. Follow up punch biopsy of the lesion demonstrated plasmacytic infiltrate consistent with Cutaneous Crohn’s Disease.
This case illustrates the danger of being too easily lulled into accepting past diagnoses for acute presentations. Parsimony can be a potent cognitive bias, limiting the diagnostic differential to what was, rather than what could be. Recognizing our bias is an important step in expanding a differential to better appreciate atypical presentations of common diseases.
Diagnosing Yersinia Enterocolitis under the Disguise of Pseudoappendicitis

**Background:** Yersiniosis due to *Yersinia enterocolitica* causes pseudoappendicitis syndrome presenting with right lower abdominal pain, fever and leukocytosis. Timely recognition of this entity is important as treatment with antibiotics leads to rapid recovery and can save patient from an unwarranted appendectomy.

**Case discussion:** A 35-year-old female presented with three day history of right lower quadrant abdominal pain, nausea and vomiting. No fevers or diarrhea were reported. She had food from vendors prior to these symptoms. She was afebrile and physical exam revealed exquisite tenderness upon palpation of the right side of the abdomen, without rebound or rigidity. Laboratory data identified white blood cell count of 12,100/ul and normal amylase, lipase and liver enzymes. Computerized tomography scan of the abdomen discovered marginal proximal appendiceal wall thickening and inflammation of the ascending colon. The overall clinical picture was consistent with acute yersiniosis mimicking appendicitis and hence patient was started on IV ampicillin-sulbactam, pending stool culture and PCR results. At 24 hours, patient reported significant improvement with normalization of leukocyte count. She was discharged on oral ciprofloxacin and metronidazole for a total duration of 7 days. Her stool culture returned negative while the PCR returned positive for *Y. enterocolitica*, thus confirming the diagnosis.

**Conclusion:** Current CDC estimates suggest that *Yersinia enterocolitica* causes almost 640 hospitalizations in the United States every year. Recognizing pseudoappendicitis with history indicative of foodborne illness as a presentation of this uncommon infection is crucial, as treatment with antibiotics leads to prompt recovery.
A Heart that has no Fear of Adenosine

Supraventricular Tachycardia (SVT) is caused by abnormal electrical automaticity in the atria or atrioventricular node. The typical nonpharmacologic approach to a patient experiencing SVT includes valsalva maneuvers, carotid massage, and immersion of head into cold water. When these fail to terminate SVT, a pharmacologic approach is used. The drug of choice to abort SVT is adenosine. We present an interesting case of SVT that converted to atrial fibrillation with an accessory pathway after administration of adenosine.

A 26 year old man with no medical history presented with palpitations. Initial electrocardiogram revealed an irregular rhythm with a rate of 240 beats per minute and widened QRS complexes. He underwent cardioversion to sinus rhythm with suspicious shortened PR intervals and slurred upstroke of the QRS complexes. The following day he again experienced palpitations, however, the electrocardiogram demonstrated a regular tachycardia and narrow QRS complexes consistent with SVT. This rhythm was initially managed by vagal maneuvers. Eventually, this approach did not curtail the SVT and decision was made to give adenosine. Surprisingly after administration of adenosine, his heart rate increased from 150 to 240 beats per minute and became irregular with widened QRS complexes similar to his presenting rhythm. He was taken to the electrophysiology lab where studies unveiled orthodromic atrioventricular reciprocating tachycardia and a left posterolateral accessory bypass tract corresponding to Wolfe Parkinson White Syndrome which was ablated.

Clinicians should be aware that not all supraventricular tachycardias respond favorably to adenosine. In fact, adenosine is dangerous in patients with coexisting accessory pathways.
Abstract title: Loperamide - Poor Man’s Methadone or Poor Man’s Misery?

Case Presentation:

Loperamide acts as an agonist at the peripheral μ opioid receptor along the GI tract to reduce its motility and is widely available as an antidiarrheal treatment.

A 22-year-old female with intravenous (IV) heroin abuse history presented with a cardiopulmonary arrest prior to ER arrival. Her family member reported that she had been taking 120-130 Imodium (loperamide) tablets per day. Cardiopulmonary resuscitation and IV Naloxone was started and patient became briefly responsive. She continued to have recurrent wide complex tachycardia that required multiple electrical cardioversions and was given IV magnesium sulfate and sodium bicarbonate. Subsequent EKG in the ICU showed first-degree AV block, widened QRS complex, prolonged QT interval of 600 ms with multiple episodes of Torsade de Pointes requiring defibrillation. She received IV Isoproterenol and a transvenous pacemaker was temporarily placed to suppress recurrent ventricular dysrhythmias. Lab values, echocardiogram and toxicology screen were unremarkable. Patient later admitted to taking 50-175 tablets of Imodium (2 mg) per day to get high for the last 1 year. Patient continued to progress well and she was discharged on day nine with office follow-up and drug therapy counseling.

Due to lack of awareness for its abuse potential, loperamide detection may be overlooked at initial drug screen leading to potential fatal cardiac consequences while its accessibility over the counter makes it easy to obtain a massive dosage of opioid substitute. There is the need to inform the government and the public about this harmful practice so necessary precautions and regulations could be implemented.
Abstract title: Takotsubo Cardiomyopathy-an Atypical Imaging Variant

Takotsubo cardiomyopathy (TC) is characterized by transient cardiac wall motion abnormalities and nonobstructive coronary artery disease (CAD).

Patient is a 51 y/o female whose history is significant for hypertension and tobacco use presented with an acute onset of sub-sternal chest discomfort. She reported intermittent pressure type sub-sternal chest pain with associated nausea and vomiting, shortness of breath, diaphoresis and a cold, clammy feeling. Patient was reportedly under a lot of stress with a recent separation from her husband and a demanding occupation. Lab value was significant for elevated troponin 0.1 on admission and an EKG that showed sinus rhythm with prolonged QT interval but no acute ischemic changes despite patient’s positive response to sublingual nitroglycerin treatment.

A transthoracic echocardiogram (TTE) was performed which revealed left ventricle (LV) with normal ejection fraction and severe hypokinesis to akinesis of mid-septum, mid-anteroseptum, mid-anterior wall, mid-lateral wall and mid-inferior wall that formed a mid-ventrical band-like area. Subsequently, cardiac catheterization was performed which showed mild non-obstructive CAD and hypokinetic- akinetic anterolateral and mid inferior wall segment. Patient’s troponin level continued trending down and she was discharged in a stable condition. A 4-month follow-up TTE showed complete resolution of the LV wall motion abnormalities.

Typical TC is distinguished by the presence of LV apical ballooning on imaging. This case is important in demonstrating an atypical variant of TC characterized by a band-like mid-ventricular ballooning pattern on imaging. TC can mimic acute coronary syndrome so awareness of the various presentations can greatly impact diagnosis and clinical management.
A serious unfortunate case of
transfusion-related secondary hemochromatosis

in a sickle cell patient

Anam Tariq DO
Pinnacle Health
Internal Medicine

Purpose – It is of utmost importance that asymptomatic sickle cell patients receive prophylactic iron chelation to prevent transfusion-related secondary hemochromatosis, along with serial laboratory monitoring to prevent end organ damages.

Background – Secondary hemochromatosis remains a rare, underdiagnosed disorder when presented atypically from cirrhosis and “bronze diabetes,” causing significantly overlooked hepatic sequestration crisis and a poor prognosis. Decades of research demonstrate effectiveness of prophylactic chelation to prevent organ damage from excess transfusional iron.

Summary – A 52-year-old African American woman with chronic anemia due to sickle cell anemia, status post multiple transfusion treatments, without any personal or family history of liver disease or any abdominal pain, presented with elevated serum ferritin (8000ng/mL) and bilirubin (16.8mg/dL). Abdominal MRI suggested hemochromatosis and a liver biopsy confirmed the diagnosis with marked fibrosis and 4+ iron deposits. Despite being therapeutically on deferasirox for years, her hemochromatosis progressed within a year leading to cardiac and hepatic failure and ultimately death.

Conclusion – Since chronically transfused sickle cell patients are at risk of significant mortality from secondary hemochromatosis and organ damage, knowledge of prophylactic iron-chelation is of paramount importance. Minimizing unnecessary transfusions should be strongly emphasized early. The effectiveness of iron-chelating therapy is best monitored via periodic MRI, liver transaminases, bilirubin, creatinine, ferritin, and cardiac function. In this atypical case, the initial presentation did not correlate with the severity of end-stage liver failure until proven by liver biopsy and MRI, which still could not deter the sequelae and the mortality exactly one year after diagnosis of secondary hemochromatosis.
Using a Checklist to Improve Hypertension Control

**Problem Statement:** At the end of June, 2014 64% of the patients with hypertension at our practice age 18 – 85 had a blood pressure (BP) that was checked within the past 12 months and was under 140/90.

**Understanding the Problem:** Previous quality improvement work on hypertension showed that we frequently do not recheck the BP or record the repeat BP, adjust BP medications, and provide education or document the education that was provided.

With this project we reviewed records of our patients with high BP to better understand this population.

- 48% of hypertensive patients had a SBP in the 140-150 range, and 42% have a DBP in the 90-95 range.
- 25% of our patients with high BP (regardless of having a diagnosis of hypertension) were not on any antihypertensive medications. 67% were on one antihypertensive medication.

Providers did not document the reason for not adjusting BP medications 12% of the time. The most common reasons for not adjusting BP medications were

- Want to get home BP readings first
- Patient had good home BP readings
- Encourage lifestyle changes first
- Attribute high BP to acute illness, pain, or anxiety

**Goal:** Develop an easy point-of-care strategy to improve blood pressure control and track provider behavior.

**Action Plan:** We documented the current workflow.

- Clinical staff checks BP at every visit.
- If the BP is high, clinical staff leaves the BP monitor in the room to prompt the provider to recheck the BP.
- Provider recognizes that the BP is high and rechecks the BP.
- The provider gives education, adjusts medications, and schedules follow-up.

Our target condition was to be aggressive with adjusting blood pressure medicines. Our countermeasure was to ask the clinical staff to place a checklist on the encounter form when the initial BP was 140/90 or higher.

**Results:** We audited the rate of rechecking the BP and adjusting BP medications while using the checklist and compared these to two pre-checklist audits.

<table>
<thead>
<tr>
<th>Month</th>
<th>Recheck BP</th>
<th>Adjust Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>December, 2011</td>
<td>53%</td>
<td>38%</td>
</tr>
<tr>
<td>August, 2014</td>
<td>27%</td>
<td>18%</td>
</tr>
<tr>
<td>Start Using Checklist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>January, 2015</td>
<td>89%</td>
<td>33%</td>
</tr>
<tr>
<td>March, 2015</td>
<td>85%</td>
<td>38%</td>
</tr>
<tr>
<td>May, 2015</td>
<td>92%</td>
<td>56%</td>
</tr>
<tr>
<td>September, 2015</td>
<td>76%</td>
<td>41%</td>
</tr>
</tbody>
</table>

The repeat BP was $<140/90$ 24 – 49% of the time. Even while using the checklist we did not adjust BP medicines a majority of the time. BP control improved compared to the previous year.

<table>
<thead>
<tr>
<th>Month</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>62%</td>
<td>64%</td>
</tr>
<tr>
<td>June</td>
<td>64%</td>
<td>68%</td>
</tr>
</tbody>
</table>
Lessons Learned:

- The checklist improved the rate of rechecking the BP.
- The repeat BP is better in many patients.
- The checklist improved the rate of adjusting BP medications.
- Clinical inertia continues to affect our decisions to adjust BP medications.
Acute Heart Failure Secondary to Isolated Cardiac Sarcoidosis

Cardiac sarcoidosis is a potentially fatal condition that may precede, follow or occur concurrently with involvement of other organs. Delay in diagnosis may uncommonly lead to presentation with acute decompensated congestive heart failure.

A 53 year-old female presented with dyspnea, chest tightness and orthopnea that had been slowly progressing over 2 years. Prior evaluation 2 years ago had included normal coronaries with normal ejection fraction and a normal CT chest. EKG showed sinus rhythm with normal intervals. Echocardiogram this admission now revealed severely dilated cardiomyopathy with ejection fraction of 9%. Repeat catheterization again revealed normal coronaries. Evaluation of her non-ischemic cardiomyopathy included normal ferritin, TSH, serum protein, ESR and negative HIV, HBV and HCV. Further work up with PET scan found inflammation of mediastinal lymph nodes and heart presumed to be secondary to sarcoidosis. She underwent VATS-guided mediastinal lymph node biopsy and pathology showed non-caseating granulomas consistent with sarcoidosis. She was pulsed with intravenous steroids and continues on prednisone taper with a good response. Follow up PET scan in 2 months showed dramatic reduction in cardiac inflammation and repeat echocardiogram at 3 months revealed ejection fraction 23%.

Cardiac sarcoidosis can present as arrhythmias, heart failure or sudden cardiac death. Advanced imaging with MRI and PET scan may be helpful in unexplained cardiomyopathy or arrhythmias.
Small Bowel Metastasis of Malignant Melanoma Associated with Painless Hematochezia

Malignant melanoma can metastasize to the small intestine years after resection of the cutaneous primary. We report a case of metastatic melanoma in the small intestine of a patient who presented with painless hematochezia. A 74 year old man with a history of Stage IIB melanoma (pT3b pN0 M0 R0), treated with wide local excision two years prior, presented with intermittent painless hematochezia of two-month duration. He denied NSAID and anticoagulation use, and had no history of diverticular disease. Although vital signs and physical examination were unremarkable, the patient was anemic. He was given 2 units of packed RBCs and underwent a colonoscopy and then an esophagogastroduodenoscopy, which revealed a small hiatal hernia and a 20 mm gastric antral polyp. A subsequent capsule endoscopy showed findings concerning for arteriovenous malformations. An antegrade double balloon enteroscopy revealed a discolored, granular dark pigmented area of approximately 1 cm in diameter in the jejunum. Immunohistochemistry of the biopsy specimen was positive for s100, Melan-A, and HMB-45, consistent with metastatic melanoma. A pre-operative PET scan and head MRI showed no further lesions. He underwent resection of the lesion with primary end-end anastomosis of the small bowel. He recovered well from the procedure, and had no further episodes of hematochezia. Our case demonstrates the rare presentation of metastatic melanoma, years after the resection of the cutaneous primary. Physicians should be wary of this rare diagnosis, which should be considered in a patient with a previous history of malignant melanoma and presenting with atypical gastrointestinal symptoms.
Music for the ears: auditory hallucination associated with hearing loss

Introduction: Visual hallucination is a well-known condition among the visually impaired (Charles Bonnet Syndrome). A similar lesser known condition exists in patients with hearing loss, sometimes causing severe tormenting non-psychotic auditory hallucinations.

Case Description: 94-year-old-female with a history of sensorineural hearing loss with hearing aids for three years presented with symptoms of hearing sounds of musical choir over the past 6 months. It was getting more persistent requiring medical attention. She was concerned if she had an underlying psychiatric disorder leading to her symptoms. Considering this to be a variant of Charles Bonnet Syndrome, she was referred to an ear specialist by her internist. It was found that her hearing aid was not working optimally and a new hearing aid was prescribed. At 2 months follow up, patient reported some improvement of her symptoms and she has learned to live with it with time.

Discussion: Non-psychotic auditory musical hallucination in elderly with sensorineural hearing loss is a rare phenomenon that is often misdiagnosed. It is believed to be caused by disinhibition of the auditory center due to sensory deprivation. It is important to differentiate this condition from psychiatric conditions and dementia related syndromes. Treatment should be individualized as per severity of symptoms. Hearing aids and pharmacotherapy such as neuroleptics, antidepressants and anticonvulsants have been used in severe cases with variable efficacy.
**Introduction:** Acute kidney injury (AKI) following cardiac surgery occurs in 30% of cases with 1% requiring dialysis resulting in significant morbidity and mortality. HMG-CoA Reductase Inhibitors (“statins”) have been postulated to be of benefit in this population, however results from existing clinical studies have been inconsistent. Since there is abundance of evidence showing that short-term pleotropic effects of statins are usually seen after 2 weeks’ time, we sought to perform a systematic review and meta-analysis on the efficacy of preoperative statins in preventing AKI in patients undergoing cardiac surgery.

**Methods:** We performed a systematic review and meta-analysis from MEDLINE, Embase, clinicaltrials.gov and Cochrane database from commencement until March 2016. We collected pooled data from 26 studies where statins were given at least >2 weeks preoperatively (including long term statins) in cardiac surgery patients (CABG, isolated valve surgery or both). The primary outcome was AKI as defined by the authors (either RIFLE or AKIN criteria) among cardiac surgery patients administered a statin versus those without statins.

**Results:** In 4 RCTs and 22 observational studies involving 44,773 patients, the incidence of AKI in the statin vs. control group was 18.54% (4425/23872) vs. 20.74% (4335/20901), (OR 0.87; 95% CI 0.80-0.95, $I^2 = 33\%$, $p = 0.002$). Subgroup analysis of randomized controlled trials only also showed a similar trend, 16.15% (47/291) vs. 19.52% (57/292), (RR 0.85; 95% CI 0.60-1.20, $I^2 = 0\%$, $p = 0.35$).

**Conclusion:** Patients undergoing cardiac surgery might benefit from preoperative statin therapy in reducing the incidence of postoperative AKI. Providing adequate preoperative exposure time (at least >2 weeks) for the elective cardiac surgeries might be warranted to see optimal effect. The same dosing strategy as for percutaneous coronary intervention (PCI) i.e. 24-48 hours of preoperative statin therapy, might not work as the pathophysiology of AKI seems to be multifactorial here as opposed to contrast induced for PCI.
**RCVS versus CNS vasculitis- Great Mimickers of Stroke**

Introduction:

Reversible cerebral vasoconstriction syndromes (RCVS) are a group of conditions that show reversible multifocal narrowing of the cerebral arteries with clinical manifestations that typically include thunderclap headache with associated focal neurological deficit.

Case:

A 53-year male presented with the confusion and headache for 2 days. Neurological examination was consistent with anterograde amnesia. Head CT and MRI findings were consistent with a non-hemorrhagic sub-acute infarction in the inferior medial temporal region. Cerebral angiogram showed beading pattern, thought to be consistent with vasculitis. Patient was started on steroids. However, ESR was normal and cerebrospinal fluid analyses were negative. Serologies concerning vasculitis were negative as well. The possibility of RCVS rather than cerebral vasculitis was raised. Steroids were stopped and patient made a gradual but a good recovery. After a month, repeat angiography was negative, thus diagnosis was consistent with the diagnosis of RCVS.

Discussion:

The vasoconstriction of RCVS manifests as a smooth, tapered narrowing followed by abnormally dilated segments of second- and third-order branches of cerebral arteries. This angiographic appearance distinguishes RCVS from CNS vasculitis, where the arterial narrowing is more irregular. Brain imaging in RCVS can be normal or show watershed infarcts or lobar hemorrhages, whereas CNS vasculitis is usually associated with T2-hyperintense brain lesions, leptomeningeal enhancement, and scattered deep infarcts.

Differentiation is important as steroids are indicated in CNS vasculitis and contraindicated in RCVS. There is an additional risk of misdiagnosis with acute stroke, given that thrombolytics are contraindicated in both RCVS and CNS vasculitis.
Core needle biopsy prior to breast cancer surgery in northeast Pennsylvania: prevalence and barriers to uniform application

Background:
Core needle biopsy (CNB) techniques have enabled breast cancer diagnosis without invasive surgery. CNB is critical for planning treatment (lumpectomy, mastectomy, chemotherapy, etc.), minimizing the number of surgeries and improving outcomes. In 2003, the NCCN identified CNB as the preferred method for breast diagnosis. Currently, the National Accreditation Program for Breast Centers includes CNB as one of 19 clinical management standards, and the American College of Surgeons (ACoS) has set 80% as the reference standard for CNB.

Objectives:
To assess the prevalence of CNB prior to breast cancer surgery and factors associated with this procedure at one community hospital in northeast Pennsylvania.

Methods:
Cancer registry records for all patients treated for incident breast cancer at one large acute care hospital in Scranton during 2014 were examined. Of 106 records, five were excluded (diagnoses not confirmed or initial therapy received elsewhere). Data [patient characteristics, tumor characteristics, surgery, margin status, whether a CNB was performed, and surgeon identifier] for the remaining 101 patients were examined. Additionally, an attempted biopsy was considered as a completed biopsy. The prevalence of CNB (95% confidence interval) was calculated. Differences in proportions were assessed using the chi-square or Fisher’s exact test, as appropriate.

Results:
All cases were female, their mean age was 62.6 years, 97% were white, 2% were black, and one unknown race. All stages were included: most prevalent was stage IA (44.6%). The majority of cases were ductal histology (57.4%). A CNB was completed (n=78) or attempted (n=4) for 81.2% (95% CI, 73.6% - 88.8%) of the cases, which is not significantly different from ACoS Commission on Cancer accredited programs’ average (87.6%) or the Middle Atlantic Region average (85.3%), but was different from all hospitals in Pennsylvania (91%). Reasons for not obtaining a biopsy included: patient preference (n=8), contraindication (inability to cooperate, n=4), not medically indicated (n=3), palpable lesion (n=3), and patient expired (n=1). The prevalence of CNB was higher among patients with non-palpable tumors (81.9%) than palpable tumors (56.5%) (p = 0.023), among those with private health insurance (83.3%) v. other insurance types (65.7%) (p = 0.046). Prevalence varied by surgeon (range: 56% to > 90%). Remaining factors were not significantly associated with prevalence of CNB.

Conclusions:
The prevalence of CNB in 2014 at this hospital (81.2%) met the current ACoS standard for breast cancer care (80%). However, there is room for improvement. Failure to obtain CNB may subject the patient to additional staging procedures. Prevalence varied substantially by surgeon (range 56% to > 90%), and several barriers to CNB (presence of a palpable mass, type of health insurance) were identified. This variation (by surgeon, physician-patient factors) should be investigated further.
Malignant Paraganglioma-associated Takotsubo Cardiomyopathy

Introduction:
Paragangliomas are uncommon catecholamine-producing tumors arising from extra-adrenal chromaffin cells. They behave much like pheochromocytomas and cause episodic hypertension, headaches, and palpitations. Rarely, catecholamine-induced cardiomyopathy can occur and is typically manifested as a Takotsubo-like contractile pattern with apical left ventricular (LV) ballooning and apical dyskinesis. This phenomenon has been infrequently reported in the literature. However, catecholamine-induced cardiomyopathies can be catastrophic as they may result in cardiogenic shock. Herein, we report a case of hereditary malignant paraganglioma associated with ventricular dysrhythmias on exercise stress test with apical ballooning seen on subsequent cardiac catheterization.

Case:
A 54 year-old male presented with unexplained chest pain. An exercise stress test elicited frequent PVCs, ventricular tachycardia, and idioventricular rhythms. A subsequent cardiac catheterization showed mild luminal irregularities of coronaries; however, a left ventriculogram showed ejection fraction of 35% with evidence of apical ballooning consistent with a Takotsubo cardiomyopathy. An evaluation coincidentally identified para-aortic and retroperitoneal masses. Circulating catecholamines were elevated and he was diagnosed with a paraganglioma-like tumor. Following excision of his paragangliomas, LV size and function normalized. Beta blocker therapy was initiated with resolution of PVCs and improvement of symptoms. Molecular testing identified a succinate dehydrogenase type B mutation in the paraganglioma.

Discussion:
This report highlights the association between excess catecholamine stimulation and the development of Takotsubo-type cardiomyopathy. Catecholamine-secreting tumors should be included in the differential diagnosis of Takotsubo cardiomyopathy if other causes have been ruled out.