

*The Department of Internal Medicine  
Brody School of Medicine  
East Carolina University*

*Presents the*

**33<sup>rd</sup> Annual  
Yash P. Kataria  
Internal Medicine  
Research Day  
April 17, 2019**



EAST CAROLINA UNIVERSITY®  
SCHOOL OF MEDICINE  
Greenville, North Carolina

# **33<sup>rd</sup> Annual Yash P. Kataria Internal Medicine Research Day 2019**

***Wednesday, April 17<sup>th</sup>, 2019  
9:30 AM – 4:00 PM  
East Carolina Heart Institute***

**Paul Bolin, Jr., MD**  
*Professor and Chair  
Department of Internal Medicine*

**Research Day Advisory Committee**  
*Badih Kabchi, MD, Co-Chair  
Arjun Mohan, MD Co-Chair  
Cindy Kukoly  
Cathy Munson*

*"Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning."*

*Albert Einstein*

*Join us in thanking our sponsors for their support of Research Day.*





# Department of Internal Medicine

## 33rd Annual Yash P. Kataria Internal Medicine Research Day

Wednesday, April 17th, 2019

9:00am	<b>Refreshments- ECHI Atrium &amp; Conference Room</b>	Poster Presentations available for viewing
9:25am	<b>Welcome – ECHI Auditorium</b>	Paul Bolin, Jr., MD, Chair Department of Internal Medicine
	<b>Administrative Comments – ECHI Auditorium</b>	Arjun Mohan, MD & Badih Kabchi, MD Co-Chairs Research Committee

***First Oral Session, ECHI Auditorium***  
***Moderator: Clint Parker, MD***

9:30am	<b>OP1</b>	<b>CHARACTERIZATION OF IMMUNE CHECKPOINT INHIBITOR-RELATED CARDIOTOXICITY IN LUNG CANCER PATIENTS FROM A RURAL SETTING OF EASTERN NORTH CAROLINA</b>	MY Y Moey, AN Tomdio, JD McCallen, LM Vaughan, RA Naqash, C Cherry, BA Carabello and PR Walker
9:45am	<b>OP2</b>	<b>REAL-WORLD EXPERIENCE OF NIVOLUMAB INDUCED PNEUMONITIS IN METASTATIC NON-SMALL CELL LUNG CANCER. RESULTS FROM A TERTIARY CARE CANCER CENTER CATERING A RURAL POPULATION</b>	M Hafiz, AR Naqash, C Cherry, P Walker
10:00am	<b>OP3</b>	<b>ASSESSING END-OF-LIFE CARE AT A VIDANT COMMUNITY HOSPITAL: WHAT HAPPENS WITHOUT PALLIATIVE CARE?</b>	AM Ushpol, VT Dougherty, WJ Leland, TJ Lee
10:15am	<b>OP4</b>	<b>ANGLE BETWEEN THE RIGHT VENTRICULAR FREE WALL AND THE INTER VENTRICULAR SEPTUM AT THE APEX AS A MARKER OF PULMONARY HYPERTENSION</b>	HI Sanchez, AN Buch, JJ Suggs, MJ Thomassen, A. Malur, CB Marcu, DL Morris, S George, V Marri, V Maddipati
10:30am	<b>OP5</b>	<b>DYSPNEA RATING DURING THE INITIAL ASSESSMENT FOR PULMONARY FUNCTION TESTING</b>	P. Chandrika, R. ZuWallack
10:45 am	<b>OP6</b>	<b>TP-53 CO-MUTATION CONFERS A UNIQUE TUMOR IMMUNE PROFILE IN K-RAS MUTATED METASTATIC NON-SMALL CELL LUNG CANCER</b>	R Naqash, PR Walker, M Muzaffar, R Feldman, M Hafiz, A Patel, H Mamdani, S Liu, H Borghaei, N Sharma, JJ Nieva, I Azab, Y Bumber, A Vanderwalde, PC Ma, I Azab, DC Portnoy, Al Spira, N Abdel-Karim

11:00 am

***Keynote Address: ECHI Auditorium***

***“Translating Patient Observations into Clinical Interventions”***

***Mark Stacy, MD***  
*Dean, Brody School of Medicine*  
*Vice Chancellor for the Division of Health Sciences*

12:00pm

*ECHI Conference Room*  
*Lunch followed by*  
*Poster Session (12:00 – 2:00pm)*

*Second Oral Session, ECHI Auditorium*  
*Moderator: Sowmya Nagaraj, MD*

- 2:00pm **OP7** **ROLE OF KININ B1 RECEPTOR IN HYPERTENSIVE KIDNEY DISEASE** D Basuli, S Sriramula
- 2:15pm **OP8** **GPR65 EXERTS ANTI-TUMORAL EFFECT DURING INFLAMMATION-ASSOCIATED COLORECTAL CANCER DEVELOPMENT** MA Marie, EJ Sanderlin, LV Yang
- 2:30pm **OP9** **BREAST CANCER IN ELDERLY WOMEN: AGEISM OR PRIMUM NON NOCERE?** S Jonnalagadda, N Vohra, J Wong, M Muzaffar
- 2:45pm **OP10** **FROM PULMONARY GRANULOMA TO FIBROSIS: ROLE OF ALVEOLAR MACROPHAGE ABCG1 AND MITOCHONDRIAL METABOLISM** E Soliman, M McPeek, A Malur, MJ Thomassen
- 3:00pm **OP11** **MULTIFACETED APPROACH TO *CLOSTRIDIUM DIFFICILE* INFECTIONS** S Nichols, M Coogan, M Jordan, Opera, P Cook
- 3:15pm **OP12** **A TALE OF TWO SIDES** S Macherla, AR Naqash, M Muzaffar
- 3:30pm **OP13** **DEMOGRAPHIC STRATIFICATION OF INFLAMMATORY SIGNATURE IN LUNG CANCER PATIENTS IN EASTERN NORTH CAROLINA: A PROSPECTIVE COHORT STUDY** N Sharma, PR Walker, CRG Stroud, C Cherry
- 3:45pm **OP14** **INHIBITION OF GPR4 AMELIORATES INTESTINAL INFLAMMATION IN A MOUSE COLITIS MODEL** E Sanderlin, M Marie, J Velciky, P Loetscher, L Yang.

4:00pm

*Closing Remarks and Award Presentations*  
**Paul Bolin, Jr., MD, Chair Department of Internal Medicine**  
**Yash P. Kataria, MD – Founder of the Research Day Program**

*Poster Presentations, ECHI Conference Room  
Research*

- PR1 DEMYSTIFYING THE ROLE OF MATRIX METALLOPROTEINASE-12 IN SARCOIDOSIS.** N Neequaye, DE Vargas, N Leffler, A Malur, W Knudson, A Mohan, MJ Thomassen
- PR2 PEROXISOME-PROLIFERATOR-ACTIVATED RECEPTOR GAMMA DEFICIENCY PROMOTES AN ADAPTIVE T LYMPHOCYTE RESPONSE TO MYCOBACTERIAL ANTIGEN ESAT-6 IN A MURINE MODEL OF CHRONIC PULMONARY SARCOIDOSIS.** V Sanderford, A Malur, N Leffler, A Mohan, RA Barrington, BP Barna, MJ Thomassen
- PR3 BIOACTIVE LIPIDS HAVE DIFFERENTIAL EFFECTS ON THE G-PROTEIN COUPLED RECEPTOR G2A FOR THE REGULATION OF MACROPHAGE MIGRATION.** S Nik Akhtar, M Marie, D Atwell, EJ Sanderlin and L Yang
- PR4 DISRUPTION OF ERYTHROCYTE MEMBRANE ASYMMETRY BY TRICLOSAN IS PRECEDED BY CALCIUM DYSREGULATION AND P38 MAPK AND RIP1 STIMULATION** MA Alfhilli, DA Weidner, MH Lee
- PR5 ADULT ONSET HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS: A SINGLE CENTER EXPERIENCE** T Do, E Kolychev, B Vallangeon, A Naqash, M Navaid, M Muzaffar, A Weil, D Liles
- PR6 ORBERA INTRAGASTRIC BALLOON ON WEIGHT AND BLOOD PRESSURE REDUCTION IN A GASTROENTEROLOGY PRACTICE IN EASTERN NORTH CAROLINA: A RETROSPECTIVE REVIEW** K Lambert, G Samuel, E Ibegbu
- PR7 BENEFIT OF WEARABLE CARDIOVERTER DEFIBRILLATOR IN PATIENTS WITH END STAGE RENAL DISEASE** AE Burch, CR Christiano; S Johnson; T Odeneg, D Scherr; SF Sears
- PR8 PROTEOMIC ANALYSIS OF PAIRED PRE AND POST PULMONARY CAPILLARY PLASMA IDENTIFIES QUANTITATIVE AND QUALITATIVE DIFFERENCES IN PROTEINS IN PATIENTS WITH PULMONARY HYPERTENSION** HI Sanchez, A Malur, M Thomassen, CA Morrow, OJJ Johnson, KA Kew, LE de Castro Bras, V Maddipati.
- PR9 IMPROVING OUTPATIENT INFLUENZA VACCINATION** S Poola, H Johnson, M Freiberg, R Kilgore, J Chu, E Turner, A Mathai

*Poster Presentations, ECHI Conference Room  
Vignette*

<b>PV1</b>	<b>STENT PLACEMENT IN MALIGNANT BILIARY OBSTRUCTION</b>	<u>S Poola</u> , N Jampala, P Mudireddy
<b>PV2</b>	<b>HYPEREMESIS GRAVIDARUM SYNDROME MIMICKING RECURRENT PANCREATITIS</b>	<u>S Poola</u> , N Jampala, C Rives, E Ali
<b>PV3</b>	<b>SKELETAL FLUOROSIS FROM FLUOROCARBON INHALATION: <i>Huff and Puff and Blow Your Bones Down</i></b>	<u>M Seagrove-Guffey</u> , MP Whyte, S Mumm, FJ Cook
<b>PV4</b>	<b>UNCONTROLLED DIABETES WITH SEVERE KETOACIDOSIS - BLAME IT ON THE PHEOCHROMOCYTOMA!</b>	<u>AP Pokhrel</u> , SP Page, FJ Cook
<b>PV5</b>	<b>A CASE OF GRANULOMATOSIS WITH POLYANGIITIS IN A MIDDLE AGE FEMALE PRESENTING WITH VAGUE ABDOMINAL COMPLAINTS</b>	<u>S Dadzie</u> , R Obi
<b>PV6</b>	<b>EX-VIVO MEMBRANE PRIMING FOR LIFE THREATENING DIALYZER REACTION IN A CHRONIC HEMODIALYSIS PATIENT</b>	<u>M Hafiz</u> , S Marco, C Brown
<b>PV7</b>	<b>IGG4 RELATED KIDNEY DISEASE WITH COEXISTING IGA NEPHROPATHY</b>	<u>G Samuel</u> , D Basuli, R Obi
<b>PV8</b>	<b>EARLY TO PRESSORS, EARLY TO LEAVE AGAINST MEDICAL ADVICE – COTTON FEVER IN INTRAVENOUS DRUG USER</b>	<u>P Chandrika</u> , J Hussain, S Ghadermarzi, M Bowling
<b>PV9</b>	<b>MYCOBACTERIUM ABSCESSUS ENDOCARDITIS IN AN INTRAVENOUS DRUG USER</b>	<u>WM Wooten</u> , D Lebron, NT Winters, R Ghimire
<b>PV10</b>	<b>CRYPTOCOCCAL MENINGITIS PRESENTING AS BILATERAL HEARING LOSS IN AN IMMUNOCOMPETENT PATIENT</b>	<u>WM Wooten</u> , DJ Beshai, R Ghimire
<b>PV11</b>	<b>SQUAMOUS CELL CARCINOMA-KERATOACANTHOMA SUBTYPE IN A PATIENT WITH MELANOMA BEING TREATED WITH NIVOLUMAB</b>	<u>E Appah</u> , M Navaid
<b>PV12</b>	<b>STUMBLING UPON EHRLICHIOSIS WHILE IN PURSUIT OF THROMBOTIC THROMBOCYTOPENIC PURPURA</b>	A Pipilia, <u>S Baig</u> , D Liles
<b>PV13</b>	<b>PRIMARY MARGINAL ZONE LEPTOMENINGEAL LYMPHOMA</b>	<u>A Bulumulle</u> , AR Naqash, A Weil, B Vallangeon, A Patel, M Muzaffar
<b>PV14</b>	<b>UNSUSPECTED FACTOR XII DEFICIENCY COMPLICATING ANTICOAGULATION MONITORING DURING ACUTE MYOCARDIAL INFARCTION</b>	<u>S Cowles</u> , A Patel, C Knupp
<b>PV15</b>	<b>SYMPTOMATIC BONE MARROW CARCINOMATOSIS SECONDARY TO BREAST CANCER TREATED WITH METRONOMIC DOCETAXEL</b>	<u>S Jayananda</u> , S Macherla, E Gottsch, A Hegde, M Muzaffar

<b>PV16</b>	<b>METASTATIC BREAST CANCER WITH ORBITAL METASTASIS</b>	<u>S Jayananda</u> , E Gottsch, S Macherla, P Lepera, M Muzaffar
<b>PV17</b>	<b>TOXIC EPIDERMAL NECROLYSIS INDUCED BY IMMUNE CHECKPOINT BLOCKADE IN LUNG CANCER</b>	<u>A Patel</u> , N Sharma
<b>PV18</b>	<b>PRIMARY PINEAL GLAND MIXED GERM CELL TUMOR WITH LEPTOMENINGEAL INVOLVEMENT</b>	<u>SR Polsani</u> , AA Patel, M Muzaffar
<b>PV19</b>	<b>CYTOKINE RELEASE SYNDROME WITH IMMUNOTHERAPY FOR METASTATIC ADRENOCORTICAL CARCINOMA – RARE MANIFESTATION</b>	<u>SR Polsani</u> , M Navaid
<b>PV20</b>	<b>THROMBOPOIETIN RECEPTOR AGONIST IN PREGNANCY: A CASE FOR ROMIPLOSTIM IN REFRACTORY IDIOPATHIC THROMBOCYTOPENIC PURPURA.</b>	<u>C. Uzoka</u> , D. Liles
<b>PV21</b>	<b>CASE OF THE UNKNOWN MALIGNANCY: HOW AND WHEN TO ADDRESS GOALS OF CARE</b>	<u>D Broderick</u> , T Blair, A Choe, S Nagaraj,
<b>PV22</b>	<b>MALE BREAST CANCER: DIAGNOSTIC AND THERAPEUTIC CHALLENGES</b>	<u>AN Mohammad</u> , M Muzaffar
<b>PV23</b>	<b>INCIDENTAL FINDING OF GIANT CORONARY ARTERY ANEURYSM – SUCCESSFULLY TREATED WITH MEDICAL THERAPY</b>	R Shammas, <u>P Sengodan</u> , A Movahed
<b>PV24</b>	<b>WHEN MISHAP TURNS TO AORTIC INJURY: HOW AN MVA DEVELOPED INTO A THROMBUS NEEDING WARFARIN</b>	<u>L Min</u> , T Blair, S Nagaraj
<b>PV25</b>	<b>ATRIOESOPHAGEAL FISTULA: A RARE BUT DEADLY COMPLICATION OF ATRIAL FIBRILLATION ABLATION</b>	<u>L Vaughan</u> , M Moey, H Devineni, V Lakkakula and P Mounsey
<b>PV26</b>	<b>CAT GOT YOUR TONGUE? A RARE CASE OF PASTEURELLA EPIGLOTTITIS</b>	<u>L Vaughan</u> , K Lambert, M Pickmans, P Singh
<b>PV27</b>	<b>CAN HEART-HEALTHY PEOPLE SUFFER FROM A HEART ATTACK? LEARN ABOUT THIS RARE CASE OF SPONTANEOUS CORONARY ARTERY DISSECTION (SCAD)</b>	<u>F Mohamed</u> , S Jain, L Vaughan, P Sengodan, R. Kreeger
<b>PV28</b>	<b>RETROPERITONEAL FIBROSIS: A CAUSE OF BILIARY OBSTRUCTION AND UROPATHY</b>	<u>S Jain</u> , K Lambert, P Singh
<b>PV29</b>	<b>AN UNUSUAL CASE OF OSTEOMYELITIS CAUSED BY ENTEROCOCCUS</b>	<u>S Jain</u> , F Kaleta, R Hunt, E Phan, T Solomon-Tsegaye, J Smalls, P Singh
<b>PV30</b>	<b>A RASH THAT FOLLOWS NONE OF THE RULES: A UNIQUE CASE OF DISSEMINATED HSV-2</b>	<u>T Blair</u> , D Chang, S Nagaraj
<b>PV31</b>	<b>SYNCOPE SURPRISE: WHEN ALL YOUR DIFFERENTIALS COME TRUE!</b>	<u>T Blair</u> , S Sundaram, J Garber, S Nagaraj
<b>PV32</b>	<b>REACTIVATION HEPATITIS: WHERE RITUXIMAB AND LIVER FAILURE COALESCE</b>	<u>T Blair</u> , K Lambert, K Roach, S Nagaraj
<b>PV33</b>	<b>LIFE THREATENING XANTHOGRANULOMATOS IN PARAPLEGIC PATIENT</b>	R Hunt, <u>F Kaleta</u> , S Jain, E Phan, T Solomon-Tsegaye, J Smalls



- PV34 GASTRIC SARCOIDOSIS: A RARE MANIFESTATION OF THE DISEASE** S Sundaram, SR Gollul Raju, G Harvin
- PV35 METASTATIC GASTRIC ADENOCARCINOMA MIMICKING PULMONARY TUBERCULOSIS** P Patel, S Sundaram, E Phan, W Leland, P Muthukanagaraj
- PV36 NON-SURGICAL MANAGEMENT OF AN EMBEDDED PAPERCLIP IN SIGMOID COLON CAUSING PERFORATION AND ABSCESS** N Gollol-Raju, N Jampala, H Khalid, P Mudireddy
- PV37 TRANSJUGULAR LIVER BIOPSY CAUSING HEMOBILIA, ACUTE PANCREATITIS AND RARELY REPORTED HEMOCHOLECYSTITIS** N Gollol-Raju, H Khalid, M Rosenblatt, K Regan
- PV38 HEMOBILIA LEADING TO A DIAGNOSIS OF HEPATOCELLULAR CARCINOMA** N Gollol-Raju, S Jayananda, P Mudireddy
- PV39 RIGHT ATRIAL THROMBUS: A DIAGNOSTIC AND THERAPEUTIC CHALLENGE IN SUB MASSIVE PULMONARY EMBOLISM** H Sarwar, S Awadallah, V Maddipati, ON Obi.
- PV40 A ROCK-SOLID LUNG MASS: A CASE OF RARE INFLAMMATORY MYOFIBROBLASTIC LUNG TUMOR WITH CHALLENGING DIAGNOSIS** P King, S Awadallah, M Sahebazamani
- PV41 RARE CAUSE OF CHRONIC COUGH FROM PULMONARY AMYLOIDOSIS** BK Dunn, MR Bowling, CJ Anciano
- PV42 INHALANT REFRIGERANT EXPOSURE: AN UNLIKELY CAUSE OF FULMINANT HEART FAILURE** K Parikh, J Quinn, J Denis, A Mohan



In 2008, the Annual Departmental Research Day Program was dedicated and renamed the **Yash P. Kataria Internal Medicine Research Day** to honor the many contributions of Dr. Yash P. Kataria and to support the educational and research program in the Department of Internal Medicine at the Brody School of Medicine at ECU.

Dr. Kataria is Professor Emeritus of Medicine at BSOM and continues to contribute actively to the clinical, educational and research mission of the Pulmonary and Critical Care Division at BSOM. He was the first pulmonologist in eastern NC and helped to establish the pulmonary specialty at BSOM 30 years ago and has been an integral force since the inception of the medical school. Yash was the first Division Chief of Pulmonary Medicine at BSOM and successfully recruited and established a clinical and active laboratory research program. Yash was the section head of pulmonary at BSOM /PCMH from 1978-1995, Vice Chair of the Dept. of Medicine 1987-1992 and Interim Chair 1986-87. Yash is of course known regionally, nationally and internationally for his passion in translational research with a particular focus on Sarcoidosis. He has authored over 70 publications, has received the Trudeau Award from the American Lung Association, Lifetime Achievement Award by the NC Thoracic Society, on many occasions been listed on the “Best Doctors” list, has been a reviewer and/or on editorial boards for numerous specialty journals.

Over his 30-year career, he has cared for thousands of patients with sarcoidosis and he arguably has one of the largest sarcoid cohorts in the US. Yash is revered by his patients and families. Yash has literally trained hundreds of medical students and house staff and is cherished by them as a role model and outstanding teacher at the bedside and in clinics. Yash has been a fixture in the international sarcoid community and has contributed actively at a leadership level at ACCP, ATS and WASOG. Scientifically, Yash is perhaps best known for promulgating a paradigm shift in our understanding of sarcoid immunology. While it was accepted dogma in the 70s that sarcoidosis was a disease of “depressed immunity” and anergy, Yash proposed and championed the concept that it is a pro-inflammatory disease with involvement of activated T-cells, cytokines, etc. Yash and his group also proposed that the active “sarcoid factor” was localized to the cell walls of alveolar macrophages and monocytes or an “autologous kveim” model (this remains an intriguing hypothesis!).

One of the missions of the medical school is community service in which medical school faculty plunged deeply. Yash lived in and loved Greenville where he raised two lovely children.

He was actively involved in the J H Rose Attendance Area Foundation Advisory Committee; also served as a Member Board of Academic Boosters Club, Rose High School, Greenville, NC and President, Parent Teacher Association, Greenville Middle School, Greenville, NC. He also helped to develop support groups for patients with sarcoidosis & COPD and played leadership roles in the local American Lung Association of NC. We are honoring Dr. Kataria by dedicating our annual Internal Medicine Research Day, which he started in 1987, to the **Yash P. Kataria Internal Medicine Research Day**. We will continue to build on the tradition of encouraging research by inviting leading guest speakers and facilitating scholarship and interaction by our trainees and faculty.



## ***Keynote Address:***

***“Translating Patient Observations into  
Clinical Interventions”***

***Mark Stacy, MD***

***Dean, Brody School of Medicine  
Vice Chancellor for the Division of Health Sciences***

Dr. Mark Stacy is currently serving as the Vice Chancellor for Health Sciences at East Carolina University (since January 2019) and the Dean, Brody School of Medicine at East Carolina University (since August 2017). He came to ECU from Duke University where he held the position of Vice Dean for Clinical Research and directed the Duke Human Research Protection Program. In this role he led the Institutional Review Board (IRB), the Conflict of Interest Committee, Regulatory Affairs Office, and created the Duke Office of Clinical Research (DOCR). He has been a member of the Parkinson Disease and Movement Disorders Society since 1990 and is a former member of the International Executive Committee. He is the co-editor of the Society Newsletter, *Moving Along*. Dr. Stacy also served as a member of the Executive Committee of the Parkinson Study Group, and a Fellow of the American Academy of Neurology and American Neurological Association.

Dr. Stacy is married to Tina Estrada Stacy, PhD and they have two children. He received his undergraduate degree from Southeast Missouri State University and medical training at the University of Missouri. He completed a Parkinson Disease and Movement Disorders fellowship at Baylor College of Medicine. His clinical and research interests include motor and non-motor symptoms in Parkinson Disease. Prior to moving to Duke University, he served as the director of the Muhammad Ali Parkinson Research Center in Phoenix, Arizona. He has published more than 250 manuscripts and one book, *The Handbook of Dystonia*.

## *The Keynote Address - Celebrating 33 Years*

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| <p><b>1987 Morris Reichlin, MD</b><br/>Professor of Medicine<br/>University of Oklahoma, School of Medicine</p>  | <p><b>2004 Helen Burstin, MD, MPH</b><br/>Director of the Center for Primary Care, Prevention and<br/>Clinical Partnerships, Agency for Healthcare Research<br/>and Quality</p>   |
| <p><b>1988 Jesse Roth, MD</b><br/>Director, Intramural Research<br/>National Institute of Diabetes and Digestive and<br/>Kidney Diseases, NIH</p>  | <p><b>2005 Marschall S. Runge, MD, PhD</b><br/>Chair, Department of Medicine<br/>University of North Carolina at Chapel Hill<br/>President, UNC Physicians</p>  |
| <p><b>1989 Roy Patterson, MD</b><br/>Professor and Chair<br/>Department of Medicine<br/>Northwestern University Medical School</p>   | <p><b>2006 Jose Caro, MD</b><br/>Vice President, Endocrine Research and Clinical<br/>Investigation<br/>Lilly Corporate Center, Indianapolis</p>   |
| <p><b>1990 Edward W. Hook, MD</b><br/>Professor and Chair<br/>Department of Medicine<br/>University of Virginia, Health Sciences Center</p>  | <p><b>2007 William Stratford May, MD, PhD</b><br/>Chair, Hematology and Oncology<br/>Director, Shands Cancer Center<br/>University of Florida</p>   |
| <p><b>1991 Albert F. LoBuglio, MD</b><br/>Director, Comprehensive Cancer Center<br/>Director, Division of Hematology/Oncology<br/>University of Alabama at Birmingham</p>                          | <p><b>2008 Phillip A. Bromberg, MD</b><br/>Bonner Professor of Medicine<br/>Scientific Director of the Center for Environmental<br/>Medicine, Asthma and Lung Biology<br/>University of North Carolina at Chapel Hill</p> |
| <p><b>1992 Raj K. Goyal, MD</b><br/>Harvard Medical School<br/>Chief Gastroenterology Division<br/>Beth Israel Hospital</p>  | <p><b>2009 Randy L. Jirtle, PhD</b><br/>Professor of Radiation Oncology and Pathology<br/>Duke University Medical Center</p>  |
| <p><b>1993 Richard E. Kerber, MD</b><br/>Professor of Medicine<br/>Associate Director Cardiovascular Division<br/>The University of Iowa College of Medicine</p>                                   | <p><b>2010 Robert M. Lust, PhD</b><br/>Interim Associate Dean, Research and Graduate Studies<br/>Chair, Department of Physiology<br/>East Carolina University, Brody School of Medicine</p>                               |
| <p><b>1994 James S. Louie, MD</b><br/>Chief, Division of Rheumatology<br/>Department of Medicine<br/>Harbor-UCLA Medical Center</p>  | <p><b>2011 David C. Goff Jr., MD, PhD</b><br/>Chair, Department of Epidemiology and Prevention<br/>Division of Public Health Services<br/>Wake Forest University School of Medicine</p>                                   |
| <p><b>1995 Matthew I. Gilmour, B.SC., PhD</b><br/>Center for Environmental Medicine and Lung Biology<br/>University of North Carolina at Chapel Hill</p>   | <p><b>2012 Vinay Kumar, MBBS, MD, FRCPath</b><br/>Donald N Pritzker Professor and Chair<br/>Department of Pathology<br/>University of Chicago</p>   |
| <p><b>1998 O. Michael Colvin, MD</b><br/>William Singleton Professor of Cancer Research<br/>Director, Duke Comprehensive Cancer Center</p>   | <p><b>2013 Paul W. Nobel, MD</b><br/>Chair, Department of Medicine<br/>Director, Women's Guild Lung Institute<br/>Cedars-Sinai, Los Angeles, California</p>   |
| <p><b>1999 Jerry Palmer, MD</b><br/>Professor of Medicine<br/>Director, Diabetes Research Center<br/>University of Washington</p>  | <p><b>2014 Vishva Dixit, MD</b><br/>Vice President<br/>Early Discovery Research<br/>Genentech, Inc.</p>   |
| <p><b>2000 Thomas Feldbush, PhD</b><br/>Vice Chancellor for Research and Graduate Studies<br/>Dean, Graduate School<br/>East Carolina University</p>   | <p><b>2015 Jerry R. Mendell, MD</b><br/>Curran-Peters Chair in Pediatric Research<br/>Professor of Pediatrics and Neurology<br/>Nationwide Children's Hospital and The Ohio State University</p>                          |
| <p><b>2001 William B. Applegate, MD, MPH</b><br/>Professor and Chair<br/>Department of Internal Medicine<br/>Wake Forest University School of Medicine</p>   | <p><b>2016 Manoocher Soleimani, MD</b><br/>James F Heady Professor of Medicine<br/>Department of Medicine, Nephrology and Hypertension<br/>University of Cincinnati</p>   |
| <p><b>2002 William Roper, MD, MPH</b><br/>Dean, School of Public Health<br/>University of North Carolina at Chapel Hill.</p>   | <p><b>2017 Barbara Dudley Alexander, MD</b><br/>Professor of Medicine and Pathology<br/>Director, Transplant Infectious Diseases Service<br/>Duke University</p>  |
| <p><b>2003 Jeffrey P. Engel, MD</b><br/>Division Head, General Communicable Disease Control<br/>State Epidemiologist, Division of Public Health<br/>NC Department of Health and Human Services</p> | <p><b>2018 Lynn M. Schnapp, MD</b><br/>Professor of Medicine<br/>Director, Pulmonary, Critical Care, Allergy and Sleep Medicine<br/>Medical University of South Carolina, Charleston</p>                                  |

## ***W. James Metzger, Jr., MD Award***

The W. James Metzger, Jr., M.D. award is presented to the most outstanding presentation by a junior faculty member in the Department of Internal Medicine. A peer-review process selects the winner. The recipient of the award receives a certificate and has his/her name engraved on a plaque that is displayed in the Department of Internal Medicine Library. The recipient also receives recognition on the Department of Internal Medicine web site.

Dr. Metzger, a native of Pittsburgh, Pennsylvania, was a graduate of Stanford University and Northwestern University Medical School, Chicago, Illinois. He completed his residency and research fellowship in Allergy-Clinical Immunology at Northwestern University. After serving in the United States Air Force, he came to Greenville in 1984 to join the East Carolina University School of Medicine. During his tenure at East Carolina University, Dr. Metzger rose to the rank of Professor of Medicine. He was Section Head of the Section of Allergy-Immunology and held the appointments of Vice Chairman of Research, Department of Internal Medicine; Executive Director, the Center for Asthma, Allergy, and Immunology; Assistant Vice Chancellor for Clinical Research; Assistant Dean for Clinical Research; and Director, Clinical Trials Office. He was the recipient of the East Carolina University Award for Excellence in Research and Creative Activity and the Distinguished Research Professor of Medicine. His research was published in the New England Journal of Medicine, Nature, and other journals. Dr. Metzger had mentored numerous faculty and fellows.

In August 2000 Dr. Metzger accepted a position as Professor of Allergy, Asthma and Immunology at the National Jewish Medical and Research Center and was a faculty member at the University of Colorado Medical School, Denver, Colorado. He died on November 11, 2000 at the age of 55. Dr. Metzger represented excellence in research.

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**Li Yang, PhD**  
**Hematology/Oncology**

# **ABSTRACTS for ORALS**

## **In Presentation Order**

OP = Oral Presentation

PR = Poster Research

PV = Poster Vignette

## OP1

### CHARACTERIZATION OF IMMUNE CHECKPOINT INHIBITOR-RELATED CARDIOTOXICITY IN LUNG CANCER PATIENTS FROM A RURAL SETTING OF EASTERN NORTH CAROLINA

MY Y Moey, AN Tomdio, JD McCallen, LM Vaughan, RA Naqash, C Cherry, BA Carabello and PR Walker

**Background:** The cardiotoxic profile of ICIs is not well defined and our study aimed to characterize iRCs in lung cancer patients of a rural population at a tertiary care center.

**Methods:** Patients with non-small cell (NSCLC) and small cell lung cancer (SCLC) receiving ICIs were retrospectively identified between 2015 to 2018 at Vidant Medical Center. iRCs categorized as new-onset cardiomyopathy, non-ST elevated myocardial infarction (NSTEMI), myocarditis, supraventricular tachycardia (SVT) or pericardial disorders were identified. Medical history, laboratory values, medications, pre-ICI electrocardiogram (ECG) and echocardiogram were compared between suspected iRC and control patients.

**Results:** Among 197 patients, 23 (0.11%) patients developed suspected iRC following a median of 3 doses (IQR of 3 to 4 doses). Median days to onset of the iRC was 40 days (IQR 12 – 82 days). Patients were equally male and female with a mean age of  $64 \pm 10$  years. Majority of control and suspected iRC patients received single agent nivolumab (68% and 83%, respectively) for NSCLC. iRC included cardiomyopathy (n=3), NSTEMI (n=3), myocarditis (n=6), SVT (n=7) and pericardial disorders (n=4) and were 70% grade 3 toxicity. EKG at time of iRC event was commonly sinus tachycardia or SVT with shorter PR interval when compared to baseline. QTc was unchanged from baseline. Mean troponin I on admission was  $0.98 \pm 0.36$  ng/mL and peaked at a mean of  $1.35 \pm 0.49$  ng/mL. In comparison to baseline control values, neutrophil-to-lymphocyte (N:L) ratio ( $7.7 \pm 0.54$  vs  $20.78 \pm 4.5$ ,  $p < 0.01$ ) and C-reactive protein (CRP) ( $35 \pm 4.1$  mg/L vs  $99 \pm 14$  mg/L,  $p < 0.01$ ) were significantly elevated at the time of suspected iRC. Ejection fraction in patients with suspected iRC was not significantly changed from baseline pre-ICI treatment.

**Conclusions:** iRCs may be underrepresented in clinical trials and further studies describing this syndrome, diagnostic work up and surveillance are warranted. Larger datasets to identify potential predictors that may guide optimal management of these events are required.

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## OP2

### REAL-WORLD EXPERIENCE OF NIVOLUMAB INDUCED PNEUMONITIS IN METASTATIC NON-SMALL CELL LUNG CANCER. RESULTS FROM A TERTIARY CARE CANCER CENTER CATERING A RURAL POPULATION

M Hafiz, AR Naqash, C Cherry, P Walker

#### BACKGROUND AND OBJECTIVES

Immune checkpoint blockade (ICB) has significantly improved outcomes in non-small cell lung cancer (NSCLC). However, immune related adverse events (irAEs) attributed to ICB are not uncommon and can lead to premature treatment cessation. Although immune pneumonitis (IP) is one of the common, there is a paucity of data on outcomes with IP in a rural population.

#### METHODS

Out of 250 patients (pts) treated with different types of ICB at ECU, we identified 75 metastatic NSCLC pts treated with Nivolumab (Nivo) from 4/2015 to 2/2018. Best response was calculated based on response evaluation criteria in solid tumors (v1.1). Chi square and paired t-test were used as indicated. Kaplan Meier method was used for overall survival (OS) and progression free survival (PFS) analysis.

#### RESULTS

We identified 26.7% pts with IP which was the most common irAE followed by thyroid dysfunction. The median time to onset of IP from starting Nivo was 9.2 (0.25-65.5) weeks. Grade (G) distribution was: G2 (35%), G3 (60%), & G4(5%). Depending on the severity of the suspected IP, steroids were promptly initiated and maintained for 3-4 weeks. ICB discontinuation specifically attributed to IP was 77%. 65% pts with IP were former smokers. Although median pk-years for pts with IP was higher (38 vs 25.7), this did not show statistical significance. Best response for pts with IP was: complete (0%), partial (0%), stable (52.9%) and progression (47.06%). Median for OS and PFS for pts with and without IP were not significantly different.

#### CONCLUSIONS

Our results suggest a significantly higher incidence of IP in metastatic NSCLC than previously reported in trials. This could be because of the host environmental factors and low socio-economic demographics unique to a rural population. Also, ICB discontinuation from IP tend to be significant which may lead to poor outcomes. Timely recognition of symptoms, prompt interventions, and larger studies to help identify biological factors predisposing to IP are required.

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### OP3

#### ASSESSING END-OF-LIFE CARE AT A VIDANT COMMUNITY HOSPITAL: WHAT HAPPENS WITHOUT PALLIATIVE CARE?

AM Ushpol, VT Dougherty, WJ Leland, TJ Lee

**Background:** There is a robust inpatient palliative care infrastructure at Vidant Medical Center (VMC), but the Vidant community hospitals lack a dedicated palliative care team. This mortality review sampled the palliative care environment at a Vidant community hospital outside VMC.

**Methods:** The charts of all patients who died at hospital X during April-June 2018 were assessed for the presence of Advance Directives (Living Will, HCPOA, DNR, MOST), documentation of end-of-life discussions between doctors/patients/case-managers, and whether life-prolonging measures were undertaken. Data was gathered over 6 months prior to death for the number and length of hospital admissions, ICU admission frequency and days in ICU, ED visit frequency, and the time before death a goals-of-care discussion ensued initiating a change in care. The data was stratified according to whether patients had advance directives available to view on the EHR or not.

**Results:** 26 patients died and were included in the chart review. 5 out of 26 patients had Advance Directives (AD) on file, 21 did not. For patients with AD, in the 6 months prior to death, the average number of ED visits = 3.4, hospitalizations = 2.6, days in hospital = 17.6, ICU stays = 1.0, days in ICU = 8.6, and a conversation that initiated a change in goals of care occurred, on average, 1.2 days before death. For patients without AD, in the 6 months prior to death, the average number of ED visits = 3.0, hospitalizations = 2.0, days in hospital = 17.7, ICU stays = 1.1, days in ICU = 7.3, and a goals-changing conversation occurred 1.7 days before death.

**Conclusion:** No significant differences between the two groups are present, suggesting that advance directives alone are insufficient to impact hospital and ICU utilization and overall days of aggressive care. Qualitative review showed lack of communication between the medical team and patients/families, inadequate case management, and lack of initiative from providers to discuss end of life issues – despite extremely poor diagnoses. In facilities that lack the resources or critical mass of patients to support a specialist provider in palliative care, all physicians must operate in the spirit of identifying goals-of-care, realistic outcome expectations, and prognosis. Ways to identify patients with high risk for mortality and coordinating these difficult conversations earlier on in patients' end stage illness may improve end-of-life healthcare utilization.

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### OP4

#### ANGLE BETWEEN THE RIGHT VENTRICULAR FREE WALL AND THE INTER VENTRICULAR SEPTUM AT THE APEX AS A MARKER OF PULMONARY HYPERTENSION

HI Sanchez, AN Buch, JJ Suggs, MJ Thomassen, A Malur, CB Marcu, DL Morris, S George, V Marri, V Maddipati

**Background:** All the echocardiographic measures currently available for the assessment of Pulmonary Hypertension (PHTN) and right ventricle (RV) have their own limitations when used individually. For this reason, one should use a set of variables to guide proper interpretation. As such, we propose a novel echocardiographic variable that may serve as a marker of pulmonary hypertension. The RV apex is the point of attachment of the RV free wall to the septum. In patients with pulmonary hypertension we have observed that the compact apex of the right ventricle becomes splayed, pari-passu with the severity of the disease.

**Methods:** All participants signed an IRB approved consent for Echocardiogram, which was done within 2 hours of the right heart catheterization (RHC). In the apical four chamber view or a dedicated 2 chamber view of the RV, a still image is selected, and measurements made in end systole. To avoid the nuances of the heavily trabeculated right ventricular endocardium the free wall line is drawn along the epicardial surface (external margin of the RV free wall at apex). The septal line will traverse through the center of the septum (apical 2 centimeters). The angle is termed as the External Chamber Union angle (ECU angle). The interpreting cardiologists were blinded to the measurements obtained by right heart catheterization. **Results:** 11 (4 Males and 7 Females) Patients who were getting RHC for any clinical indication were enrolled. 2 studies were excluded due to poor quality. 6 subjects had Pulmonary arterial hypertension, pulmonary arterial systolic pressure, mean = 70.8 mm Hg (SD +/- 22), and their ECU angle was, mean = 75.4 degrees (SD +/-21). 3 subjects did not have pulmonary arterial hypertension, pulmonary arterial systolic pressure = 40 mm Hg (SD +/- 7.2) and their ECU angle was mean = 48.9 degrees (SD +/- 8.5).

**Conclusions:** Preliminary data suggest a linear relationship between the ECU angle measured at the RV apex and the pulmonary arterial systolic pressure measured during RHC.

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## OP5

### DYSPNEA RATING DURING THE INITIAL ASSESSMENT FOR PULMONARY FUNCTION TESTING

P. Chandrika, R. ZuWallack

**BACKGROUND AND OBJECTIVE:** Dyspnea rating helps characterize the severity and impact of chronic respiratory disease.

**METHODS:** For this retrospective study, we related pulmonary function and demographic variables to self-reported dyspnea. The latter was rated using the modified Medical Research Council (MRC) instrument. We defined chronic airflow limitation (CAL) as a postbronchodilator FEV1/FVC < 0.70, restriction (R) as a total lung capacity < 80% of predicted. Stepwise forward regression (SAS) was used to determine predictors of MRC; potential predictor variables were age, gender, body mass index (BMI), smoking history, and percent predicted values for postbronchodilator FEV1 and FVC, total lung capacity (TLC), functional residual capacity (FRC) and residual volume (RV). A  $p = 0.05$  was required to enter into the model.

**RESULTS:** Data on 826 patients with MRC ratings, postbronchodilator spirometry and lung volume determinations were available for analysis. The mean age was  $62 \pm 15$  years, 47% were male, 42% had 10+ packyears' smoking history, and BMI was  $32 \pm 9$  kg/m<sup>2</sup>. The MRC was  $1.40 \pm 1.11$ ; 21% had an MRC of 3 or 4. Thirty five percent had normal (NL) function, 21% had CAL, 35% had R, and 9% had combined CALR. In CAL, 17%, 56%, 19%, and 8% were in Global Initiative for COPD (GOLD) spirometric stages IIV, respectively. MRC was higher in each successive GOLD stage: GOLD I ( $1.16 \pm 0.15$ ), GOLD II ( $1.55 \pm 0.09$ ), GOLD III ( $1.90 \pm 0.14$ ), and GOLD IV ( $2.55 \pm 0.23$ ) (all comparisons,  $p < 0.04$ ). MRC in combined CALR was higher than in the other 3 categories (every comparison,  $p < 0.0005$ ). In stepwise regression, in CAL FEV1 was the only predictor of dyspnea ( $r^2 = 0.11$ ); in R, age, BMI, TLC and RV were predictors ( $R^2 = 0.15$ ); in CALR age and TLC were predictors ( $R^2 = 0.10$ ).

**CONCLUSION:** Dyspnea is higher in combined CALR than in CAL or R alone; this may reflect, in part, the lower FEV1 in the former category. MRC dyspnea relates to disease severity in general, but only a small percentage of the variability of this symptom (10-15%) is explained by pulmonary function.

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## OP6

### TP-53 CO-MUTATION CONFERS A UNIQUE TUMOR IMMUNE PROFILE IN K-RAS MUTATED METASTATIC NON-SMALL CELL LUNG CANCER

R Naqash, PR Walker, M Muzaffar, R Feldman, M Hafiz, A Patel, H Mamdani, S Liu, H Borghaei, N Sharma, JJ Nieva, I Azab, Y Boumber, A Vanderwalde, PC Ma, I Azab, DC Portnoy, AI Spira, N Abdel-Karim

**Background:** Recent results with limited data in metastatic non-small cell lung cancer (m-NSCLC) suggest *K-RAS* mutations with co-occurring *TP-53* mutations (KP subset) to have a distinct biology with potential therapeutic vulnerabilities to immune checkpoint blockade (ICB). To explore the immunological basis for these findings, we evaluated the immune biomarker profile, i.e., tumor mutational burden (TMB) and programmed cell death-ligand-1 (PD-L1) in KP mutated m-NSCLC using a commercially available large next-generation sequencing (NGS) dataset. **Methods:** Caris life sciences data consisting of 1317 m-NSCLC patient (pt) tissue samples from 2016-18 was queried. Using tissue targeted NGS, *K-RAS* mutations were identified in 28.7% (378/1317). KP subset constituted 49.4% (187/378), remaining were *K-RAS* mutated/ *TP-53* wild type (K-Pwt). We defined TMB<sup>high</sup> as  $\geq 10$  mutations/ Megabase (mut/Mb). **Results:** 72.2% (135/187) of KP had PD-L1<sup>positive</sup> with 51.9% (97/187) pts having PD-L1  $\geq 50\%$ . KP had a significantly higher median TMB vs. K-Pwt (14.5 vs. 9 m/MB,  $p < 0.001$ ). KP had a significantly higher proportion of TMB<sup>high</sup> vs. K-Pwt (79.9 vs. 45.1%,  $p < 0.001$ ). Even in the PD-L1<sup>negative</sup> group, KP had significantly higher % of TMB<sup>high</sup> vs. K-Pwt (86.5 vs. 41.5%,  $p < 0.001$ ). In the KP subset, *K-RAS- G12C* (40.1%, 75/187) and *TP-53 exon-5* (28.3%, 58/187) were the most common mutations. We observed no difference in median TMB or % of TMB<sup>high</sup> for exon-specific mutations. Across metastatic sites, the brain had the highest % of KP subset (38.3%, 68/187) followed by bone (28.9%, 54/187). KP subset with brain involvement had highest median TMB vs. bone (16 vs. 11m/MB,  $p < 0.01$ ) as well as higher % of TMB<sup>high</sup> vs. bone (86.5 vs. 68.5%,  $p = 0.01$ ). **Conclusions:** This is the most extensive dataset till date highlighting the unique immune profile of KP mutant m-NSCLC. Our results show that the KP subset has a distinctly high median TMB and % of TMB<sup>high</sup>, especially within the PD-L1<sup>negative</sup> group. Notably, metastatic site-specific variations in TMB were also observed for the KP subset. These findings could have therapeutic implications in guiding patient selection for ICB.

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## OP7

### ROLE OF KININ B1 RECEPTOR IN HYPERTENSIVE KIDNEY DISEASE

D Basuli, S Sriramula

#### Background and Objectives:

Hypertensive nephropathy (HN) is the second leading cause of end-stage renal disease (ESRD) following diabetes. Despite the use of various renin-angiotensin system blockers, the prevalence of HN and ESRD from it remains high. Recently, the growing body of evidence suggest a role for kinins of kallikrein-kinin system in hypertension and kidney diseases. The effects of kinins are exerted through two G-protein coupled receptors- B1R and B2R. It has been recently shown that B1R regulates neurogenic hypertension in mice, offering a novel pathway for pathogenesis of hypertension. However, the role of B1R in hypertension induced end organ damage, particularly in kidney has not been studied. This study examines the significance of B1R induced inflammation and fibrosis in the kidney and its role HN.

#### Methods:

Deoxycorticosterone acetate (DOCA)-salt hypertension model coupled with a whole body B1R knockout (B1RKO) mice was used to study the effect of kinin B1R blockade on HN. Renal injury and remodeling were assessed by measuring serum creatinine, albuminuria, inflammation, and renal fibrosis markers (collagen I/III, fibronectin, TGF- $\beta$ ).

#### Results/Outcomes/Improvements:

Treatment with DOCA-salt significantly increased blood pressure ( $p < 0.001$ ) in wild-type mice, which was attenuated in B1RKO mice. B1R blockade decreased DOCA-salt-induced renal inflammation as indicated by decreased gene expression of TNF, IL-6, IL-1 $\beta$  and MCP-1. Moreover, DOCA-salt-induced increase in renal fibrosis was significantly blunted in B1RKO mice.

#### Conclusions/Significance/Relevance:

Together, these data provide evidence that kinin B1R knockdown reduces hypertensive renal damage by decreasing inflammation and fibrosis in the kidney. Kinin B1R offers a promising new target for the treatment of hypertension and hypertensive nephropathy.

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## OP8

### GPR65 EXERTS ANTI-TUMORAL EFFECT DURING INFLAMMATION-ASSOCIATED COLORECTAL CANCER DEVELOPMENT

MA Marie<sup>1</sup>, EJ Sanderlin<sup>1</sup>, LV Yang

**Background:** Colorectal Cancer (CRC) is the third most common type of cancer worldwide with an estimated 140,250 new cases in the US in 2018. Chronic inflammation of the colon is a risk factor in CRC development. Inflammatory bowel disease (IBD), which includes Ulcerative Colitis (UC) and Crohn's disease (CD), is characterized by persistent intestinal inflammation which can lead to DNA damage and consequently CRC development. Previously, we have shown that T-cell death associated gene 8 (TDAG8 or GPR65) has an anti-inflammatory effect on intestinal inflammation in the chronic dextran sodium sulfate (DSS)-induced colitis mouse model. In this study, we have assessed the role of GPR65 in colitis-associated CRC development using the azoxymethane (AOM)/DSS-induced mouse tumor model.

**Methods:** Wild-type (WT) (n=8) and GPR65 <sup>-/-</sup> (n=8) mice were administered one dose of AOM *i.p.* (10mg/kg) followed by three (5 day) cycles of oral administration of 4% DSS integrated by water-only recovery cycles. Body weight loss and fecal blood and diarrhea scores were assessed for disease activity. Mice were euthanized between 12-14 weeks post-treatment for tissue collection and tumor assessment.

**Results:** Better clinical outcomes of disease activity were observed in WT versus GPR65 <sup>-/-</sup> mice. Macroscopic investigation indicated a significant reduction in colon shortening, mesenteric lymph node expansion, splenic extension, and tumor burden in WT versus GPR65 <sup>-/-</sup> mice.

**Conclusions:** Our results indicate that GPR65 contributes to the reduction of inflammation and subsequent tumor development in inflammation-associated CRC.

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## OP9

### BREAST CANCER IN ELDERLY WOMEN: AGEISM OR PRIMUM NON NOCERE?

S Jonnalagadda, N Vohra, J Wong, M Muzaffar

**Background:** The risk of breast cancer increases with advancing age. Routine use of screening mammogram in women after 75yrs and its impact on overall survival is controversial. Studies have also found that elderly breast cancer patients are underrepresented among clinical trials and a tendency for undertreatment may result in inferior outcome

**Methods:** We identified female patients  $\geq 75$  years of age with breast cancer diagnosed between the years 2000 and 2015 in the SEER database. Univariate and multivariate descriptive and survival analyses was performed. We assessed impact of race, stage, grade, year of diagnosis and other factors on outcome. We excluded patients with autopsy alone diagnosis, unknown race, age, and stage. A total of 167,802 patients met the inclusion criteria for analysis.

**Results:** The 5-year overall survival was 74% for Stage I, 60% for Stage II, 38% for stage III and 11% for Stage IV cancer ( $p < 0.0001$ ). The disease specific survival (DSS) for stage I was (96%), Stage II (88%), Stage III (64%), and Stage IV (23%). Only 24% of deaths were attributed to this cancer.

**Conclusion:** Early breast cancer continues to be the most common presentation for patients  $\geq 75$  yrs. of age with 51% having Stage I disease. Traditional clinicopathologic factors like race, hormone receptor status, stage and grade impact cancer outcome among elderly patients. Black elderly patients with breast cancer have inferior disease specific survival compared with white patients. Only 24% of deaths were attributed to this breast cancer highlighting the concern for over diagnosis in this cohort of patient. Nonetheless once diagnoses is established a multidisciplinary comprehensive geriatric assessment should be the cornerstone of individualized management.

RESULTS		
Variable	Hazard Ratio (95% CI)	p value
Age	75-79	1
	80-84	1.22
	85+	1.7
Race	White	1
	Black	1.14
	Others	0.95
ER status	Positive	1
	Negative	1.19
	Unknown	1.2
Stage	I	1
	II	1.17
	III	1.66
	IV	1.7

Table 2. Proportional hazard regression model for survival

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## OP10

### FROM PULMONARY GRANULOMA TO FIBROSIS: ROLE OF ALVEOLAR MACROPHAGE ABCG1 AND MITOCHONDRIAL METABOLISM

E Soliman, M McPeek, A Malur, MJ Thomassen

**Introduction:** Pulmonary sarcoidosis is a chronic inflammatory condition characterized by the presence of granulomas. Progressive sarcoidosis is usually associated with the development of fibrosis. We have developed a murine model of chronic granulomatous inflammation using multi-wall carbon nanotube (MWCNT). Previous studies demonstrated that gene expression profiles in alveolar macrophages in MWCNT-induced granuloma resemble those of sarcoidosis patients. Decreased expression of ATP-binding cassette (ABC) cholesterol transporter ABCG1 was observed in alveolar macrophages of both sarcoid patients and MWCNT instilled wild type mice. Using macrophage specific-ABCG1 knock out (ABCG1-KO) mice, we found that ABCG1 deficiency promoted granuloma formation and increased fibrosis induced by MWCNT. In addition, mitochondrial dysfunction has been reported to contribute to the pathogenesis of pulmonary fibrosis. Hence, in the present study we hypothesize that altered mitochondrial function is associated with the progression of fibrosis in MWCNT-induced granuloma in ABCG1-KO mice.

**Methods:** To test this hypothesis, C57 wild type and ABCG1-KO mice were instilled with MWCNT. Sixty days following instillation bronchoalveolar lavage (BAL) cells were collected and mitochondrial respiration was analyzed using Oroboros O2K. Mitochondrial oxidative stress and apoptosis of BAL cells were measured using mitoxox red reagent and caspase3/7 activity assay kit, respectively.

**Results:** MWCNT instillation reduced mitochondrial oxygen consumption rate, increased oxidative stress and increased caspase 3/7 activity in BAL cells of C57 wild type mice. Interestingly, further reduction in mitochondrial oxygen consumption rate was observed in BAL cells of ABCG1-KO mice instilled with MWCNT.

**Conclusion:** ABCG1 deficiency promotes mitochondrial dysfunction which may contribute to the progression of fibrosis in MWCNT-induced granuloma.

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## OP11

### MULTIFACETED APPROACH TO *CLOSTRIDIUM DIFFICILE* INFECTIONS

S Nichols, M Coogan, M Jordan, J Opera, P Cook

**Background:** *Clostridium difficile* infection (CDI) is the number one cause of nosocomial infections and a major cause of morbidity and mortality in hospitalized patients in this country. Previous data indicated 37% of patients with CDI in our facility were receiving at least one laxative at the time of testing, suggesting that there may be false positive results. Because of a recent increase in our nosocomial CDI rates, we implemented two interventions to address the problem. We evaluated our rates of CDI before and after these changes.

**Methods:** This was a retrospective study of all positive test results for *Clostridium difficile* from January 1, 2018 until January 31, 2019 at Vidant Medical Center. In June 2018, we implemented a best practice advisory (BPA) in our electronic health record (EHR) to recommend against testing for CDI in patients receiving laxatives. We reviewed the number of *Clostridium difficile* tests that were ordered before and after initiating the BPA. In December 2018, we removed nucleic amplification testing (NAAT) and replaced it with a cell cytotoxicity assay (CCA) for specimens that tested negative for toxin by enzyme immunoassay (EIA) but were positive by glutamate dehydrogenase (GDH). Charts were reviewed to determine whether the diagnosis of CDI was based on a positive EIA, NAAT, or CCA result.

**Results:** The number of *Clostridium difficile* tests decreased by 20% following implementation of the BPA ( $p=0.002$ ). Following implementation of the CCA testing, there has been a 64% reduction in the rate of CDI in the hospital (8.4 cases/10,000 patient days to 3.0 cases/10,000 patient days ( $p=0.07$ )). Fifty four percent (97 of 179 positive results) were EIA-/GDH+/NAAT+ prior to making the change in testing. Since implementing the CCA, one third of the positive results were EIA-/GDH+/CCA+.

**Conclusion:** Laxative use in hospitalized patients is very common and likely contributes to a false elevation in the CDI rate by identifying carriers in addition to those who have true infection. Initiating a BPA to avoid testing in these patients and changing our algorithm of *Clostridium difficile* testing from NAAT to CCA has resulted in a lower rate of CDI infection in patients in the hospital setting.

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## OP12

### A TALE OF TWO SIDES

S Macherla, AR Naqash, M Muzaffar

**Background:**

Recent data suggests side of colon cancer is a prognostic factor and a potential predictive factor for biologic therapy. We sought to analyze SEER database to study impact of colon cancer side.

**Methods:**

The SEER database (version 8.3.4) was reviewed for patients with Stage IV colon cancer from 2004-2014. We only included patients with labeled primary site, and excluded appendiceal, rectal or unlabeled cases. Variables included were: age, race, gender, stage, grade and side of the tumor. Primary outcome was overall survival and disease specific survival. Cox proportional hazard regression model was employed to test the association between survival and side of cancer.

**Results:**

48,306 patients met the inclusion criteria, median age was 67 years (range 20-108), 51% were male, and 77% patients were white. 19831 (41%) patients had left colon cancer (LCC). Right colon cancer (RCC) was associated with inferior OS and DSS compared to LCC. The median overall survival was 15 months (mo) for left side and 9 months for right colon cancer ( $p<0.0001$ ). Estimated 3-year OS for RCC was 14% and 24% for LCC ( $p<0.0001$ ). RCC was associated with poor outcome across different variables, among patients < 60 years of age median OS was 23 mo for LCC, and 16 mo for RCC ( $p .0001$ ). In the age group  $\geq 60$  years, 10 mo for left side and 7 mo for RCC ( $p < 0.0001$ ). Among male patients RCC had 10 mo median OS vs 16 mo for LCC ( $p < 0.0001$ ), women 15mo for LCC vs 9mo for RCC ( $<0.0001$ ). Cox regression model suggested age ( $<0.001$ ), race ( $<0.0001$ ), year of diagnosis ( $<0.0001$ ) and grade ( $<0.0001$ ) correlate with outcome.

**Conclusions:**

Right side colon cancer is associated with poor outcome compared to left colon cancer. These findings are consistent with other recent reports.

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## OP13

### DEMOGRAPHIC STRATIFICATION OF INFLAMMATORY SIGNATURE IN LUNG CANCER PATIENTS IN EASTERN NORTH CAROLINA: A PROSPECTIVE COHORT STUDY

N Sharma, PR Walker, CRG Stroud, C Cherry

**Background:** Lung Cancer remains the major cause of cancer related mortality in the state of North Carolina. There is a growing body of evidence that implicates inflammation as a mechanism of disease progression and reduced survival in patients with advanced cancer (Laird et al, Oncologist 2013). Smoldering inflammation in the tumor microenvironment regulates and escalates cancer invasion, angiogenesis and immune surveillance escape (Balkwill and Mantovani, Lancet 2001). We investigated the predictive value of inflammatory signature according to social stratification of cancer patients using Modified Glasgow Prognostic Score (mGPS). mGPS is a composite inflammatory score based on CRP and serum albumin with proven prognostic and predictive value in various tumor types.

**Methods:** A prospective observational single institutional study was conducted whereby serum albumin and CRP were drawn at baseline for 333 patients with diagnosis of cancer regardless of stage from 30 counties in Eastern North Carolina. The mGPS score was compared according to rural urban divide and occupational regional exposure of various counties stratified per US Census Data.

**Results:** Lung cancer was the predominant cancer type in 93% of patients. The mGPS of zero in Urban vs Rural counties was noted in 36% and 24% patients respectively. The mGPS score of two in Urban vs Rural counties was noted in 26% and 41% respectively. The mGPS of two in areas of hog farming, cattle farming and wet waste lands was seen in 41%, 38% and 43% respectively (p=0.0019). The mGPS of zero was seen in 24%, 20% and 27% respectively (p=0.0008).

**Conclusions:** This study suggests a strikingly unfavorable inflammatory signature in rural population as well as areas of hog farm, cattle farm and wet waste lands. The hog and poultry operations heighten the harmful effect on waterways and can adversely affect the inflammatory signature, hence the tumor biology. These underscores additional interventions in these high-risk populations that can have significant implications for quality of life and survival, especially in the era of immunotherapy.

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## OP14

### INHIBITION OF GPR4 AMELIORATES INTESTINAL INFLAMMATION IN A MOUSE COLITIS MODEL

E Sanderlin, M Marie, J Velciky, P Loetscher, L Yang.

Inflammatory bowel disease (IBD) is characterized by chronic inflammation of the intestinal tract. Current therapeutic approaches for IBD are limited and primarily include biologics and steroids such as anti-TNF $\alpha$  monoclonal antibodies and glucocorticoids. GPR4, a pH-sensing G protein-coupled receptor, has recently emerged as a potential therapeutic target for intestinal inflammation. Previous studies demonstrate that GPR4 is a pro-inflammatory receptor expressed in vascular endothelial cells (EC) and stimulates leukocyte-EC adhesion and extravasation. Genetic deletion of GPR4 alleviates intestinal inflammation in colitis mouse models. In this study, we have assessed the effects of a recently developed GPR4 antagonist, 2-(4-((2-Ethyl-5,7-dimethylpyrazolo[1,5-a]pyrimidin-3-yl)methyl)phenyl)-5-(piperidin-4-yl)-1,3,4-oxadiazole (compound 13, also known as NE 52-QQ57), in the dextran sulfate sodium (DSS)-induced acute colitis mouse model. The GPR4 antagonist 13 inhibited intestinal inflammation. All colitis parameters, such as body weight loss, fecal score, colon shortening, splenic expansion, and mesenteric lymph node enlargement, were reduced in the GPR4 antagonist 13 treatment group compared to the vehicle group. Histopathological features of active colitis and inflammatory gene expression of colon tissues were reduced in the GPR4 antagonist 13 treatment group compared to vehicle control. Our results indicate that the GPR4 antagonist 13 provides a protective effect in the DSS-induced colitis mouse model and inhibition of GPR4 can be explored as a novel anti-inflammatory approach.

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# **ABSTRACTS for POSTERS**

## **In Presentation Order**

OP = Oral Presentation

PR = Poster Research

PV = Poster Vignette

## PR1

### DEMYSTIFYING THE ROLE OF MATRIX METALLOPROTEINASE-12 IN SARCOIDOSIS.

N Neequaye, DE Vargas, N Leffler, A Malur, W Knudson, A Mohan, MJ Thomassen

**Background:** Sarcoidosis is a chronic inflammatory disease characterized by granuloma formation primarily in the lungs. Matrix Metalloproteinase-12 (MMP-12) is an enzyme that degrades elastin in the extracellular matrix and enables infiltration of the immune cells responsible for inflammation and granuloma formation. Little is known about the exact role of MMP-12 in granulomatous diseases, but previous studies have shown increased gene and protein expression in sarcoidosis patients as well as an association between MMP-12 expression and disease severity. Our murine model using multiwall carbon nanotubes (MWCNT) mimics the characteristics observed in sarcoidosis patients including elevated MMP12 gene and protein expression. Based on these observations we hypothesized that MMP12 is critical to granuloma pathogenesis. We utilized MMP12 KO mice to address this hypothesis.

**Methods:** C57/Bl6 (wildtype) and MMP-12KO mice were instilled with PBS (control) and MWCNT. The bronchoalveolar lavage (BAL) cells were evaluated by immunofluorescence, RT-PCR, and RNA Seq; the lungs were harvested for histology.

**Results:** Histological analyses revealed marked attenuation of granuloma formation in MMP12 KO mice compared to wild type. CCL2, a monocyte chemoattractant thought to play a role in granuloma formation was significantly ( $p=0.007$ ) reduced in MMP12 KO MWCNT instilled mice (19 fold) compared to wild type (85.5 fold).

**Conclusions:** The striking reduction in granuloma formation in the MMP-12 KO mice compared to wildtype supports a critical role for MMP12 in granuloma formation. Furthermore, the reduced expression of CCL2 in MMP12KO mice in response to MWCNT suggests a possible mechanism.

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## PR2

### PEROXISOME-PROLIFERATOR-ACTIVATED RECEPTOR GAMMA DEFICIENCY PROMOTES AN ADAPTIVE T LYMPHOCYTE RESPONSE TO MYCOBACTERIAL ANTIGEN ESAT-6 IN A MURINE MODEL OF CHRONIC PULMONARY SARCOIDOSIS

V Sanderford, A Malur, N Leffler, A Mohan, RA Barrington, BP Barna, MJ Thomassen.

**Background:** Sarcoidosis is a chronic granulomatous disease of unknown etiology. We established a murine model of granuloma formation by instillation with multi-wall carbon nanotubes (MWCNT). The disease is characterized by alveolar macrophage deficiency of the nuclear transcription factor peroxisome-proliferator-activated receptor gamma (PPAR $\gamma$ ), and the expression of PPAR $\gamma$  is also decreased in MWCNT instilled mice. Because lymphocyte reactivity to mycobacterial antigens may be associated with sarcoidosis, we hypothesized that addition of mycobacterial peptide ESAT-6 to MWCNT might exacerbate the murine T effector cell response.

**Methods:** MWCNT with or without ESAT-6 peptide 14 were instilled into macrophage-specific PPAR $\gamma$ KO or wild-type mice. Controls received vehicle or ESAT-6 alone. Lymph nodes were collected for histology or flow cytometric analysis and *in vitro* stimulation. Lymphocytes were cultured for 5 hours with 1-15  $\mu$ g/mL ESAT-6 or KatG peptides.

**Results:** PPAR $\gamma$ KO mice receiving MWCNT+ESAT-6 displayed markedly increased granuloma formation and exhibited mediastinal lymphadenopathy ( $p\leq 0.05$ ). Flow cytometric analyses revealed that CD4 T cells were significantly elevated in PPAR $\gamma$ KO mice receiving MWCNT+ESAT-6 ( $p\leq 0.05$ ). After *in vitro* stimulation with ESAT-6, only lymphocytes from PPAR $\gamma$ KO mice instilled with MWCNT+ESAT-6 upregulated IFN $\gamma$  expression ( $p\leq 0.05$ ). *In vitro* stimulation with KatG control peptide produced no response. Finally, ESAT-6 peptide was detected by mass spectrometry in lungs of PPAR $\gamma$ KO animals receiving ESAT-6 after 60 days, but not wild-type lungs.

**Conclusions:** These findings suggest that only PPAR $\gamma$ KO mice instilled with MWCNT+ESAT-6 produce an adaptive immune response, which may explain the enhanced granulomatous reaction.

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### PR3

#### BIOACTIVE LIPIDS HAVE DIFFERENTIAL EFFECTS ON THE G-PROTEIN COUPLED RECEPTOR G2A FOR THE REGULATION OF MACROPHAGE MIGRATION.

S Nik Akhtar, M Marie, D Atwell, EJ Sanderlin and L Yang.

**Background:** Previous studies have shown that G2A, a G protein coupled receptor, influences the migration of macrophages. Lipid compounds such as Lysophosphatidylcholine(LPC) and Commendamide(Cd), have been shown to activate G2A. In this study the migration, viability and morphology of macrophages under the influence of the above-mentioned bioactive lipid compounds were investigated.

**Methods:** Transwell assay was performed to study the migration of J774 macrophage cell towards LPC and Cd. The cell morphology was investigated by microscopy. A luminescent cell viability assay was used to study the effect of Cd on J774 cell viability.

**Results:** It was observed that LPC induced migration in the macrophages in a G2A dependent manner whereas Cd could potently induce migration, which indicates Cd's role as a novel chemoattractant. Cells in which G2A was overexpressed migrated in lower numbers under the influence of Cd. This indicates that Cd might have differential effects on G2A within the context of J774 migration. Inhibition of the Gai pathway by pertussis toxin (PTX) was found to abrogate macrophage migration towards Cd, confirming that Gai pathway is the mechanism by which G2A mediates J774 macrophage migration towards Cd. In terms of cell morphology LPC induces an elongated morphology in the J774 cells whereas Cd reversed it. Cd had no effect on J774 cell viability or proliferation.

**Conclusion:** This study indicates that LPC and Cd stimulate J774 cell migration, but have differential dependence on the G2A receptor. Investigating the role of G2A in immune cell migration will provide further insight in to the mechanism of inflammatory response which is a hallmark of many pathophysiological conditions.

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### PR4

#### DISRUPTION OF ERYTHROCYTE MEMBRANE ASYMMETRY BY TRICLOSAN IS PRECEDED BY CALCIUM DYSREGULATION AND P38 MAPK AND RIP1 STIMULATION

MA Alfhili, DA Weidner, MH Lee

**Background & Objectives:** Triclosan (TCS) is a broad-spectrum antimicrobial proposed for the treatment of malignancy. A major complication of chemotherapy is anemia, which may result from direct erythrocyte hemolysis or premature cell death known as eryptosis. We sought to examine the hemolytic and eryptotic potential of TCS and accompanying mechanisms.

**Methods:** Hemolysis was spectrophotometrically evaluated by hemoglobin leakage, while flow cytometry was utilized to detect phosphatidylserine (PS) exposure by annexin-V binding, intracellular  $Ca^{2+}$  by Fluo-3/AM, and oxidative stress by 2-,7-dichlorodihydrofluorescein diacetate (DCFH<sub>2</sub>-DA).

**Results:** Incubation of cells with 10-100  $\mu$ M TCS for 1-4 h induced time- and dose-dependent hemolysis. Moreover, TCS significantly enhanced annexin-V binding and Fluo3 but not DCF fluorescence. Blockage of p38 MAPK or receptor-interacting protein 1 (RIP1) significantly ameliorated TCS-induced PS externalization.

**Conclusion:** TCS is cytotoxic to erythrocytes by inducing hemolysis and stimulating premature death at least in part through  $Ca^{2+}$  mobilization, and p38 MAPK and RIP1 stimulation.

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## PR5

### ADULT ONSET HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS: A SINGLE CENTER EXPERIENCE

T Do, E Kolychev, B Vallangeon, A Naqash, M Navaid, M Muzaffar, A Weil, D Liles

**Background:** Hemophagocytic lymphohistiocytosis (HLH) is a rare, but rapidly progressive and potentially fatal condition resulting from an excessive immune activation. HLH remains challenging at all stages, from diagnosis to management.

**Methods:** We retrospectively reviewed adult patients with suspected diagnosis of HLH between January 2014 and May 2018. Thirteen patients who met the HLH-2004 diagnostic criteria were included in this study. Clinical findings, etiology, and treatment modality and response were collected.

**Results:** Median age was 53.5 (range: 18–73) years, male to female ratio of 1.6. All patients initially presented with fever, bi- or trilineage cytopenia, hyperferritinemia, and hypoalbuminemia. Splenomegaly was found in 8 of 13 (61.5%) patients. Hypofibrinogenemia, hypertriglyceridemia, low or absent NK-cell activity, and elevated sCD25 were reported in 15.4, 61.5, 66.6, and 90% of patients tested, respectively. Hemophagocytosis was found in biopsy of 7 (53.8%) patients. Abnormal liver and kidney function and elevated LDH were seen in >75% of cases at diagnosis. Positive EBV serology was noted in 8 of 13 (61.5%) patients. Other likely etiology was as follows: 4 (30.7%) malignancy, 1 (7.7%) *Staphylococcus aureus*, 1 (7.7%) *Ehrlichia chaffeensis*, 1 (7.7%) rheumatoid arthritis, and 2 (15.4%) idiopathic. Induction therapy based on HLH-94 and HLH-2004 protocols was started in 6 and 2 patients, respectively. Disease-specific therapy was also given based on presumed etiology. Nine (69.2%) patients failed to achieve resolution and died, and multiple organ failure was the main cause of death. Two patients treated with HLH-2004 regimen suffered prolonged pancytopenia and died. Among 4 patients achieving resolution, 2 received HLH-94 regimen, and 2 with disease-specific therapy only.

**Conclusions:** Early recognition and prompt treatment plays a crucial role in HLH management. The modification of diagnostic criteria which includes liver and kidney function, LDH, and albumin levels may help identify HLH syndrome earlier. Although aggressive immunosuppression plays a vital role in suppressing inflammation, identifying and managing the underlying condition is of paramount importance.

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## PR6

### ORBERA INTRAGASTRIC BALLOON ON WEIGHT AND BLOOD PRESSURE REDUCTION IN A GASTROENTEROLOGY PRACTICE IN EASTERN NORTH CAROLINA: A RETROSPECTIVE REVIEW

K Lambert, G Samuel, E Ibegbu

#### Background

Obesity has evolved into a global pandemic and a major health concern associated with multiple comorbidities. Little is known about endoscopic bariatric therapy, such as intragastric balloon therapy (IGBT), on hypertension improvement. We will evaluate the impact of the Orbera IGBT on weight loss, blood pressure reduction, and association of weight and blood pressure reduction in a private Gastroenterology practice.

#### Methods

Retrospective review between January 1, 2016 and May 31, 2017 of adults who received IGBT. Outcomes: reduction of weight (wt) and in systolic (SBP) and diastolic blood pressure (DBP) pre- and post-implantation at 6 months. Multiple regression model was used to check for association between changes in SBP and DBP with wt changes at 3- and 6-months, age, and sex. Paired t-test was used for differences in average wt between baseline, 3, and 6 months post-implantation. Multiple regression model was used for association between changes in SBP & DBP with wt changes at 3- and 6-months post-implantation. Statistical analysis was done using SAS 9.4.

#### Results

The study included 59 patients (93% female, mean age of 49 +/-11.73). Patients had an average baseline wt of 101 kg +/- 18.1, 3-month wt of 95.1 kg +/- 18.6, and 6-month wt of 92.5 kg +/- 13.8. Average wt loss: 7.6 kg +/- 4.86 and 9.93 kg +/- 7.1 for 3- and 6-months post-implantation, respectively. The difference in wt and change of weight from baseline to 3 and 6 months were statistically significant. Average change in SBP and DBP: -11.74 + 26.4 and -4.19 + 12.33 at 6 months post-implantation, respectively. No statistically significant correlation was found between demographic data and wt loss with changes in SBP or DBP.

#### Conclusion

IGBT can offer effective weight loss. There was statistically significant wt reduction post-implantation. No correlation was found between wt reduction and change in SBP or DBP. Larger sample size studies with longer follow-up duration and additional endpoints are needed.

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## PR7

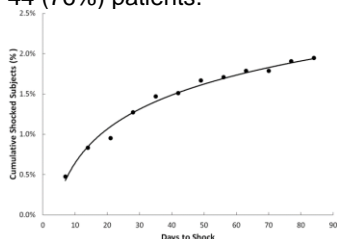
### BENEFIT OF WEARABLE CARIOVERTER DEFIBRILLATOR IN PATIENTS WITH END STAGE RENAL DISEASE

AE Burch, CR Christiano, S Johnson; T Odeneg; D Scherr; SF Sears

**Background:** Patients with end stage renal disease (ESRD) and cardiomyopathy have elevated risk of sudden cardiac arrest (SCA).  
**Purpose:** Assess the benefit of rapid access to shock provided by the wearable cardioverter defibrillator (WCD) in patients with ESRD and spontaneous sustained VT/VF.

**Methods:** A retrospective analysis of Medicare/Medicaid WCD patients with EF $\leq$ 35% was performed. Included were patients with stage 5 chronic kidney disease, ESRD, or dialysis. 98% of patients wore the WCD from January 2015 through June 2017. Three patients were excluded due to incomplete data.

**Results:** 2,516 patients with ESRD and cardiomyopathy with EF  $\leq$ 35% were identified. Median age and interquartile range (IQR) was 64 [56, 72], and 1,655 (66%) patients were male. WCD use was primarily for ischemic (1,206, 48%) or non-ischemic cardiomyopathy (907, 36%). Patients wore the WCD for a median and IQR of 36 [11, 83] days and for 20.3 [14.9, 22.7] hours each day. Overall, appropriate shock for sustained VT/VF occurred in 58 (2.3%) patients with 49 (1.9%) patients treated within the first 90 days. The median and IQR of days to first appropriate shock was 24 [8, 57] days. First shock conversion of VT/VF occurred in 52 (90%) patients. Survival 24 hours post-shock was achieved in 44 (76%) patients.



**Conclusion:** ESRD patients with EF  $\leq$ 35% have an increased risk of SCA. The WCD was well tolerated and resulted in conversion of potential lethal VT/VF with a high 24-hour survival rate. The WCD should be considered in ESRD patients with low EF for short term protection prior to a decision to implant an ICD.

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## PR8

### PROTEOMIC ANALYSIS OF PAIRED PRE AND POST PULMONARY CAPILLARY PLASMA IDENTIFIES QUANTITATIVE AND QUALITATIVE DIFFERENCES IN PROTEINS IN PATIENTS WITH PULMONARY HYPERTENSION

HI Sanchez, A Malur, MJ Thomassen, CA Morrow, OJJ Johnson, KA Kew, L E de Castro Bras, V Maddipati.

**Rationale:** There is increasing evidence that pulmonary hypertension is a systemic disease. OMIC analysis of paired blood samples (obtained simultaneously from systemic and pulmonary circulation) can potentially identify signaling pathways involved. The aim of the current study is to perform proteomic analysis of plasma samples from the pulmonary artery sample and pulmonary capillary occlusion/left ventricular sample obtained during heart catheterization in patients with pulmonary hypertension.

**Methods:** After informed consent, N=5, 1 male and 4 females; mean age 63 +/- 10.8 years) were enrolled. All 5 subjects had PHTN and 4 had PAH, with a mean pulmonary artery pressure of 40.8 +/- 11.78 mm Hg and a pulmonary vascular resistance of 6 +/- 3.3 Wood Units. Plasma was isolated and stored with proteinase inhibitors to avoid degradation. Total protein levels were quantified using the Bradford protein method. Plasma proteins (250  $\mu$ g) was fractionated by molecular weight using a gel free system (Gelfree8100, Expedeon) and the fractions containing <30 kDa proteins and peptides were prepared for mass spectrometry (MS) analysis. Shortly, fractions were concentrated by lyophilization, digested with trypsin, cleaned using C18 columns, and peptides recovered in 0.1% formic acid were injected in a Q Exactive<sup>TM</sup> Mass Spectrometer (Thermo). All MS/MS spectra were processed with PeakView<sup>®</sup> software.

**Results:** Majority of proteins were present both in the pre-pulmonary capillary and post-pulmonary samples. However, we also identified proteins unique to each group. Focadhesin was observed only in the pre-pulmonary group, while azurocidin, biglycan, calmin, collagen 3a1, and collagenase-3 (matrix metalloproteinase 13) were mostly present in the post-pulmonary circulation samples. These proteins are associated with extracellular matrix remodeling.

**Conclusion:** Quantitative and qualitative differences in proteins between pre and post pulmonary circulation samples exist. Larger studies exploring the differences in proteins in the pre and post pulmonary circulation could provide new insights into the molecular mechanisms of pulmonary vascular remodeling and allow discovery of new therapeutic targets.

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**IMPROVING OUTPATIENT INFLUENZA VACCINATION**

S Poola, H Johnson, M Freiberg, R Kilgore, J Chu, E Turner, A Mathai

**Background:** Influenza (flu) is a severe but a potentially preventable infection. The vaccination produced before flu season helps to decrease the incidence of the flu. Vaccination rates continue to be low despite its known benefit. The CDC have identified barriers that may lead to such low vaccination rates, which includes access to vaccination. Eastern NC has a diverse patient population with significant comorbid conditions where hospitalizations can be devastating. We hope by providing the flu vaccine we will reduce flu associated morbidity.

**Methods:** By using EPIC we are able to track month to month percentages of all patients who have received the flu vaccine in our clinic. All patients are identified prior to the encounter if they are in need of the influenza vaccination. During check in, all patients 6 months and older are queried regarding the flu vaccine. If they are interested in the vaccine or if the patient declines the vaccination their response will be noted in the EHR. If the patient has already received the vaccination the EHR will be updated. During the encounter providers will educate the patient on the benefits of the vaccination. Flu vaccine walk-in clinics were added during each week at the clinic. Inconsistencies were found in EPIC regarding accuracy of vaccinated and unvaccinated patients. This was addressed by working with IT to fix the issue of correct data capture.

**Results:** In the month of August only 4 percent of patients were vaccinated. During the months of September, October, November, December, and January 3%, 33%, 52%, 61%, and 67% of all patients of the clinic were vaccinated. It was noted that among patients seen by their PCP in the clinic the percentage of patients for the months of September, October, November, December, and January were 5%, 39%, 62%, 74%, and 82% respectfully.

**Discussion:** The flu vaccination is recommended by the CDC for all person above the age of 6 months who have no contraindications for the vaccination. It is a clear way to prevent illness and death caused by the flu. The percentage of children and adults who received the flu vaccination has been decreasing yearly. There is a clearly a need to improve vaccination among both adult and pediatric patients. Our QI project was designed to establish a system of continued prompts to reiterate the need for the flu vaccine, starting from before the patient's clinic visit to when they leave.

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## PV1

### STENT PLACEMENT IN MALIGNANT BILIARY OBSTRUCTION

S Poola, N Jampala, P Mudireddy

**Background:** The incidence of pancreatic cancer has increased over the past ten years. The Whipple procedure is the mainstay operation for pancreatic head tumors; however, long term complications include cholangitis. This can be managed with drainage or stenting. This case highlights placement of a stent using a pre-existing PTC drain for guidance.

**Case Information:** A 71-year-old Caucasian male with history of pancreatic cancer, a Whipple and chemoradiation presented with obstructive jaundice. EGD demonstrated a malignant stricture of the afferent jejunal limb. Endoscopic stenting was unsuccessful. A PTC with internal and external biliary drainage catheter was placed with the internal catheter placed beyond the stricture. The patient improved clinically however over the next month he had decreased output from his drain. The biliary drain catheter was replaced without significant improvement. A repeat EGD demonstrated a PTC drain in the afferent jejunum and using a biliary wire through the side hole of the PTC drain, the PTC drain was removed over the wire. A metal stent was placed across the afferent jejunal stricture. The patient had an acute elevation in total bilirubin and alkaline phosphatase and repeat EGD demonstrated a clogged stent therefore a pigtail plastic stent was placed through the preexisting stent. The patient had improvement in his LFTs.

**Discussion:** Management of biliary obstructions after a Whipple procedure requires biliary drainage with either surgical drainage or the utilization of a stent (endoscopically or percutaneously placed). This case highlights a multi-step approach for management of a malignant biliary obstruction. After identifying an obstruction of the PTC stent, an internal metal stent was placed in a rendezvous approach. Rendezvous techniques allows for management of a complicated biliary stenosis or bile leaks to restore continuity. Endoscopic stent placement is a common practice for malignant biliary obstructions with metal stents as the intervention of choice for jaundiced pancreatic cancer patients. In an event of an occluded metal stent, placement of a plastic stent is effective for management. This patient had signs and symptoms of biliary obstruction after metallic stent placement prompting placement of a plastic pigtail stent within the metal stent. Although long term patency from the pigtail stent has yet to be determined, the duration of plastic stents is not significantly different compared to self-expanding metal stents.

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## PV2

### HYPEREMESIS GRAVIDARUM SYNDROME MIMICKING RECURRENT PANCREATITIS

S Poola, N Jampala, C Rives, E Ali

**Background:** Nausea and vomiting are common complaints of pregnant patients. Hyperemesis gravidarum (HG) is characterized by severe nausea, vomiting, weight loss, and dehydration associated with electrolyte imbalances and nutritional deficiencies. Patients with HG have a complicated picture in the setting of elevated laboratory findings including liver enzymes and lipase. Although rare, pancreatitis has been demonstrated in a pregnant population. This case highlights a patient with HG which mimicked recurrent pancreatitis.

**Case:** A 35-year-old Hispanic female presented at 12 weeks of intrauterine pregnancy for persistent nausea and vomiting. Her medical history was significant for obesity and fatty liver disease. Baseline LFTs demonstrated AST of 85 U/L, ALT of 188 U/L, lipase of 45 U/L, and total bilirubin 1.3 mg/dL. The patient symptoms improved after hydration and antiemetic therapy and was discharged home. The patient was readmitted four times during her pregnancy for worsening abdominal pain, nausea, and vomiting. Radiographic test ultrasound and MRI were negative. Infectious and immunologic work up was negative. During one admission the patients' LFTs peaked to an AST of 645, ALT of 1240, total bilirubin of 2.2, ALP of 142, and lipase of 192. The patient was lost to follow up after delivery.

**Discussion:** The patient in this case had clinical findings and history concerning for HG. There are reports of elevated lipase among patients with HG without a diagnosis of pancreatitis. The patient had an elevation of liver function tests including AST, ALT and total bilirubin initially thought to be due to hepatic steatosis however, during each hospitalization the patient had elevation of her LFTs. This peaked to an AST of 645 U/L and ALT of 1240 U/L. Although HG has been associated with elevations of ALT up to 200 U/L, this patient had an increase of LFTs above the expected range. The diagnosis of pancreatitis in pregnant patients includes identifying characteristic symptoms and laboratory and radiographic findings. This patient had abdominal discomfort, elevated lipase and LFTs, however negative imaging therefore acute pancreatitis was never diagnosed. This case speculates whether patients with HG and lab abnormalities need a different diagnostic criterion for pancreatitis. Overall further research should be done to define the relationship of HG and liver and biliary pathologies.

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### PV3

#### **SKELETAL FLUOROSIS FROM FLUOROCARBON INHALATION: *Huff and Puff and Blow Your Bones Down***

M Seagrove-Guffey, MP Whyte, S Mumm, FJ Cook

**Background:** Skeletal fluorosis (SF) is endemic in some parts of the world, especially where well water is rich in fluoride (F) from volcanic rock. SF is rare in the US, where it has unusual causes. The impact of F on the skeleton is conditioned by calcium and vitamin D sufficiency:

**Clinical Case:** A 51-year-old obese man with chronic opiate use was referred for secondary hyperparathyroidism detected after right femoral neck and left proximal femur fractures, and displaced humeral fracture, which healed poorly with radial nerve entrapment. Oncologic evaluation was negative, including intraoperative bone biopsy. He reported longstanding diffuse musculoskeletal pain, drank 72 oz of cola daily, and consumed little dietary calcium. Physical exam showed Ht 1.7 m, BMI 46, no dental abnormalities, deformed right humerus, diminished right wrist dorsiflexion, and an antalgic gait. DXA BMD Z-score was +7.4 at the spine and +0.4 at the "1/3" radius. At femur fracture, corrected serum calcium was 7.8 mg/dL (8.5-10.1) and alkaline phosphatase (ALP) 1080 U/L (46-116). After 5 months of calcium and vitamin D supplementation, calcium was 9.4 mg/dL, ALP 539 U/L, phosphorus 3.7 mg/dL (2.3-4.7), 25(OH) vitamin D 20.6 ng/mL (30-100), PTH 327 pg/mL (8.7-77.1), and creatinine 0.62 mg/dL (0.72-1.25). 24-hour urine of 3.43 liters contained calcium <68.6 mg. Hepatitis C Ab and PSA were normal. Serum markers indicated rapid bone turnover. Bone scan showed increased uptake at the left hip fracture site, 2 ribs, and periarticular areas. Radiographic skeletal survey revealed diffuse osteosclerosis. Mutation analysis for high turnover sclerotic skeletal disease was negative. Nondecalfified histology of bone at fracture site showed significant osteomalacia. Initially, F exposure history was negative, however serum and urine F levels were elevated at 118 mcml/L (0-4) and 42.6 mg/L (0.3-3.2), respectively. His mother confided that he had "huffed" difluoroethane containing computer cleaner for 2 years several times daily to control pain.

**Conclusion:** Inhalant abuse of fluorocarbons is known. However, literature concerning the skeletal effects is scant. Our patient's positive bone balance together with low calcium intake could explain his secondary hyperparathyroidism. High phosphorus in colas may also have decreased gastrointestinal calcium absorption. Deposition of fluorohydroxyapatite in the skeleton likely explained our patient's skeletal fragility.

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### PV4

#### **UNCONTROLLED DIABETES WITH SEVERE KETOACIDOSIS - BLAME IT ON THE PHEOCHROMOCYTOMA!**

AP Pokhrel, SP Page, FJ Cook

**Background:** Pheochromocytomas are rare catecholamine secreting tumors that arise from chromaffin cells of the adrenal medulla and the sympathetic ganglia. Typical symptoms include paroxysmal hypertension (HTN), headache, and palpitations. Hyperglycemia is also seen in 35-50% of these patients. There are a few case reports depicting the rare presentation of diabetic ketoacidosis (DKA) precipitated by a catecholamine-secreting tumor.

**Case:** A 57-year-old female with a history of HTN, known adrenal mass, and uncontrolled diabetes mellitus (hemoglobin A1C 9.1%) presented with severe DKA after taking oral steroids. Her review of systems noted intermittent pounding headaches, blurred vision, dizziness, unintentional weight loss, palpitations, fluctuating blood pressure (BP). She had an episode of DKA 6 months prior. She was treated in the ICU with intravenous (IV) fluid and insulin with resolution of hyperglycemia and acidosis. Subsequently, she acutely became severely hypertensive requiring transfer back to the ICU. BP was uncontrolled despite aggressive IV anti-hypertensive medication. A CT scan of the abdomen showed a 7.8 cm right adrenal mass with heterogeneous internal enhancement. Pertinent labs included plasma free total metanephrines 29073 pg/mL(<205) and 24 hour urine total metanephrines 34633 mcg (149-603). Her BP was stabilized with clonidine and doxazosin and she was discharged on these medications and insulin. After appropriate alpha and beta blockade, she underwent right adrenalectomy at another hospital. Subsequently her BP has been easily controlled and HbA1c after surgery was 5.5% on metformin alone.

**Conclusion:** This case illustrates the causative role of a pheochromocytoma in a patient with hyperglycemia and severe DKA. Epinephrine secreted by a pheochromocytoma inhibits insulin secretion by stimulation of alpha-adrenergic receptors and induces glucagon secretion by stimulation of beta and alpha-adrenergic receptors in the pancreas. Stimulation of these receptors promotes glycogenolysis and gluconeogenesis in the liver and activates lipolysis contributing to insulin resistance. These factors may lead to DKA. In a patient who presents with DKA and paroxysmal or uncontrolled hypertension, the diagnosis of pheochromocytoma should be considered.

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## PV5

### A CASE OF GRANULOMATOSIS WITH POLYANGIITIS IN A MIDDLE AGE FEMALE PRESENTING WITH VAGUE ABDOMINAL COMPLAINTS

S Dadzie, R Obi

**Learning Objectives:** Recognized that granulomatosis with polyangiitis (GPA), previously known as Wegener's granulomatosis is a rare disease with insidious onset and nonspecific symptoms that can make diagnosis very challenging.

**Case information:** 49-year-old female with history of chronic sinusitis, asthma, hypertension, anxiety disorder and GERD who started experiencing malaise, abdominal discomfort and changes in bowel habits in 2016. An EGD performed in March 2017 revealed esophagitis and esophageal ulcer. Her symptoms did not improve with omeprazole, ranitidine and sucralfate and she continued with about 30lbs weight loss. Colonoscopy revealed diverticulosis and mild internal hemorrhoids. Treatment for IBS-C was given, however, due to persistence of her symptoms she had a repeat negative EGD in April 2018. An abdominal CT showed moderate volume ascites with suspicion for carcinomatosis and a 5.5 cm complex cystic left adnexal mass of likely ovarian etiology thought to be the primary neoplasm. Due to concerns for ovarian cancer, an ex-lap with left salpingo-oophorectomy, rectovaginal septum dissection and multiple peritoneal biopsies. Pathology results did not reveal any malignancies but diffuse granulomatous disease with focal necrosis. Her AFB and fungal stains were negative. A suspicion for Sarcoidosis was entertained and while being worked up for this she developed left pleuritic chest pain and a CT angiogram of the chest revealed left basilar pleural effusion and pulmonary consolidation. She completed a course of antibiotics for pneumonia without symptomatic improvement and started on a prednisone taper. She was evaluated by Pulmonology for sarcoidosis and noted to have a saddle nose deformity. Additional work up revealed a positive PR3 ANCA and a diagnosis of GPA made.

**Summary:** GPA is a member of the ANCA vasculitides and typically presents with granulomatous inflammation commonly involving the upper airways, lungs and kidneys with PR3 ANCA positivity in about 75% of cases. When atypical organ involvements occur diagnosis can be challenging as illustrated in this case. It is important to consider ANCA vasculitis when a patient's clinical presentation suggests multiorgan involvement coupled with constitutional symptoms such as weight loss of unclear.

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## PV6

### EX-VIVO MEMBRANE PRIMING FOR LIFE THREATENING DIALYZER REACTION IN A CHRONIC HEMODIALYSIS PATIENT

M Hafiz, S Marco, C Brown

#### Learning Objectives

Dialyzer reactions refer to the signs & symptoms that occur in hemodialysis (HD) patients due to blood-dialyzer interactions. These typically occur on initial exposure & resolve on finding the right dialyzer for the patient. We present an unusual case of a late-onset, persistent dialyzer reaction.

#### Case Information:

65-year-old woman with End Stage Renal Disease on HD for 6 years presented with dyspnea, wheezing and hypoxia after 15 minutes of outpatient HD that resolved after the session was aborted. No changes had been made to the HD prescription or dialyzer type. Patient was admitted, asymptomatic, to the ICU for HD in a controlled setting. Workup showed eosinophilia, elevated markers of inflammation, normal complements & inconclusive bone marrow biopsy. Symptoms recurred with polyethersulfone, polyvinylpyrrolidone /polyarylethersulfone & cellulose triacetate dialyzers even when patient was pretreated with steroids & antihistamines. Transition to peritoneal dialysis was unsuccessful as patient continually resorbed all the dialysate, thought to be secondary to severe inflammation. Patient developed respiratory failure from volume overload and was intubated. HD was then reattempted after priming the dialysis membrane ex-vivo with autologous blood and albumin in a heroic attempt to stave off in-vivo anaphylaxis.

Unfortunately, the membrane clotted off repeatedly even when heparinized. Due to lack of HD patient developed severe metabolic derangements & hypoxia. Extra Corporeal Membrane Oxygenation was attempted but she was unable to be cannulated due to poor vascular access. Ultimately, she was made comfort care and expired.

#### Summary:

Type A dialyzer reactions are rare & occur fast but can be delayed. Symptoms range from itching to anaphylaxis. Majority result from the use of ethylene oxide sterilization, non-biocompatible membranes & use of ACE inhibitors with polyacrylonitrile membranes. Type B reactions are more common, non-specific, poorly understood but thought to be related to complement activation. Our patient had a Type A dialyzer reaction and we discuss the salvage attempts at pretreating dialysis membranes with autologous blood and albumin primers to safely dialyze these difficult patients.

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## PV7

### IGG4 RELATED KIDNEY DISEASE WITH COEXISTING IGA NEPHROPATHY

G Samuel, D Basuli, R Obi

**Learning Objectives:** To highlight the clinical presentation of IGG4 related kidney disease and also spotlight an even rarer coexistence with IgA nephropathy.

**Case Information:** A 74-year-old Caucasian male with hx of DM, HTN, CAD and CVA without residual deficit presented with 3 months of generalized weakness, chronic diarrhea, 10lbs weight loss, SOB and slowly worsening renal function with admission creatinine of 8 mg/dl from a normal baseline. His workup showed a FeNa of 5, elevated serum lipase, positive ANA, low complements, elevated IgG level and IgG4 subclass. A noncontrast abdominal CT showed soft tissue densities surrounding the aorta and aortic bifurcation concerning for retroperitoneal fibrosis and also intermediate densities in both kidneys of unclear etiology. A renal biopsy revealed extensive lymphoplasmacytic interstitial infiltrates with IgG4 positive plasma cells and a 70-80% interstitial fibrosis in a storiform pattern. He had evidence of coexisting mild IgA nephropathy on the renal biopsy.

**Summary:** IgG4-related disease is a recently recognized clinical entity characterized by dense lymphoplasmacytic infiltrate involving multiple organs. Renal involvement occurs in about 15 % of patients and tubulointerstitial nephritis with fibrosis arranged in a characteristic storiform pattern is the most common presenting feature in IgG4 renal disease. Coexisting IgA nephropathy with this disease is extremely rare. Other renal associations include membranous glomerulonephritis, Henoch Schonlein nephritis and renal amyloidosis. Our patient was treated with prednisone and responded with improving creatinine down to 3 mg/dl after 4 weeks therapy. Immunosuppressive drugs like rituximab have shown to be effective in steroid resistant cases.

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## PV8

### EARLY TO PRESSORS, EARLY TO LEAVE AGAINST MEDICAL ADVICE – COTTON FEVER IN INTRAVENOUS DRUG USER

P Chandrika, J Hussain, S Ghadermarzi, M Bowling

**Learning Objectives:** Cotton fever is a fairly common phenomenon that has not been well documented in literature. The presentation is sudden and dramatic. It mimics sepsis but is usually benign, self-limiting and short lasting. We are documenting a case of cotton fever.

**Case Information:** A 30-year-old male with history of IV drug abuse, was transferred to our medical intensive care with diagnosis of septic shock. He presented with progressive fever, nausea, vomiting, chest pain and dyspnea over 2 days, that started 2 hours after injecting cocaine. He admitted to using old cotton to filter cocaine. He was in shock requiring vasopressor support. Skin exam was significant for track marks on bilateral upper extremities. Laboratory investigation showed leukocytosis (39k) with leftward shift and lactic acidosis. Urine toxicology screen was positive for cocaine. He was started on broad spectrum antibiotics, which were discontinued after the blood culture showed no growth for 48 hours. Transthoracic-echocardiogram, abdominal ultrasound and chest x-ray were normal. His blood pressure stabilized, and vasopressor support was stopped within 24 hours of admission. White cell counts trended down to normal within 48 hours. On the third day of hospitalization, patient checked out against medical advice, as he felt he was back at his baseline. He himself recognized the diagnosis of cotton fever and admitted that he has had such self-limiting episodes of febrile illness in the past, after injecting drugs.

**Summary:** The term “cotton fever” was first used for IV drug users in 1975 for pyrexia and leukocytosis in the absence of bacteremia. Cotton fever is thought to be caused by preformed endotoxins from gram negative rods (like *Enterobacter agglomerans*) that colonize the cotton plant. Hospitalization of young adults due to IV drug abuse and related complications has increased in recent years. Physicians should remain vigilant to the possibility of cotton fever as a diagnosis of exclusion in acutely sick IV drug users, especially in patients with similar episodes in the past. Patients are mostly self-aware of the diagnosis and course, like our patient. Therefore, questioning patients about injection practices is key, and should be incorporated into routine history taking practices.

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## PV9

### MYCOBACTERIUM ABSCESSUS ENDOCARDITIS IN AN INTRAVENOUS DRUG USER

WM Wooten, D Lebron, NT Winters, R Ghimire

**Learning Objective:** Consider atypical mycobacterial infection in a differential diagnosis of septicemia in a person who inject drugs.

**Case Information:** 24-year-old woman with history of intravenous drug use and multiple prior admissions presented with intermittent fevers for 3-4 months. She was having chills, night sweats, and productive cough for three days. She acknowledged using intravenous cocaine and heroin every few days after being discharged from our hospital six months previously at which time she was treated with a six-week course of intravenous antibiotics for methicillin-resistant *Staphylococcus aureus* endocarditis of the tricuspid valve with septic pulmonary emboli. She also had MRSA abscess in the right upper arm that required incision and drainage. She was admitted this time with a diagnosis of pneumonia and was discharged home on oral antibiotics. Three days later, her blood culture grew acid fast bacilli which was later identified as *Mycobacterium abscessus*. Transthoracic and transesophageal echocardiograms (TTE and TEE respectively) were suggestive of tricuspid valve endocarditis. CT scan of the chest showed evidence of septic pulmonary emboli, pneumonic consolidation, and pleural effusion requiring chest tube placement. Bronchoalveolar lavage (BAL) cultures also grew *M. abscessus*, while pleural fluid cultures remained sterile. She was treated with triple-combination antibiotic therapy for six weeks with resolution of her symptoms and microbiological cure. Repeat TTE one month after completion of therapy demonstrated a decrease in the tricuspid valve vegetation. Blood cultures three months later remained sterile. AFB blood cultures done one year later did not report any growth.

**Summary:** This is a rare case of *M. abscessus* native tricuspid valve endocarditis treated with a short course of antibiotic therapy (six weeks). Typical treatment for this pathogen in setting of disseminated disease is 6-12 months. There is no report in the literature of successful treatment of this condition with a short course of antibiotic therapy.

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## PV10

### CRYPTOCOCCAL MENINGITIS PRESENTING AS BILATERAL HEARING LOSS IN AN IMMUNOCOMPETENT PATIENT

WM Wooten, DJ Beshai, R Ghimire

**Learning Objectives:** Consider evaluating a patient for cryptococcal meningitis whom presents with hearing loss and altered mental status even if no immunosuppression is present when not improving on appropriate antibacterial and antiviral therapy.

**Case Information:** 75-year-old female with history of CAD s/p PCI, non-insulin dependent type II diabetes, and hypertension presented with fever of 102.3F and altered mental status for one day. She was fully functional until six months prior to presentation in which she first started experiencing hearing loss. She later started exhibiting several episodes of intermittent altered mental status. An extensive workup was conducted for several potential etiologies of her encephalopathy. Lumbar puncture demonstrated a lymphocytic-predominant CSF with low glucose at 38 mg/dL and high protein of 303 mg/dL. She was initially placed on vancomycin, ceftriaxone, ampicillin, and acyclovir. However, when CSF cultures demonstrated growth of *Cryptococcus neoformans*, all antibiotics were discontinued and liposomal amphotericin B and flucytosine were initiated. After three LPs, CSF pressures normalized, and cultures became sterile. Decision was made to stop amphotericin and flucytosine after 12 days of therapy due to significant side effects (severe hypokalemia as low as 1.9 mEq/L leading to bradycardia). Her hearing and mental status began to improve, and she was discharged to complete fluconazole 600 mg daily for at least 6-12 months.

**Summary:** Cryptococcus is a fungus found in the soil from pigeon droppings and decaying vegetation. It mostly affects individuals with an immunocompromising condition such as AIDS, prolonged treatment with corticosteroids, and organ transplantation among others. While this case does describe a patient with diabetes mellitus (an immunocompromising condition), it was well-controlled only on Metformin with a recent hemoglobin A1c of 5%. There was also a remote history of malignancy (breast cancer five years previously) without active chemotherapy. This case was an atypical presentation (initially hearing loss and not headaches) of a rare disease that typically occurs in immunocompromised individuals in which only a few similar cases have been reported in the medical literature.

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## PV11

### SQUAMOUS CELL CARCINOMA-KERATOACANTHOMA SUBTYPE IN A PATIENT WITH MELANOMA BEING TREATED WITH NIVOLUMAB

E. Appah, M. Navaid

Immune checkpoint inhibitors (ICI) are monoclonal antibodies targeting cytotoxic T lymphocyte-associated antigen-4(CTLA-4), programmed cell death protein 1 (PD-1) or programmed death ligand 1 (PD-L1). They represent a new class of anticancer agents that have transformed cancer treatment. ICI have demonstrated remarkable response, durability and better toxicity profile compared to conventional chemotherapy. They however, have some unique adverse effects. These frequently involve the skin, gastrointestinal tract, lung, and endocrine glands and rarely manifest as neurologic, rheumatologic, renal, and cardiac toxicities. Dermatologic reactions are among the most common immune-related adverse events reported with ICI. These usually manifest in the form of maculopapular rashes, pruritus and hypopigmentation. Other rare manifestations have been reported.

We report a rare case of squamous cell carcinoma - keratoacanthoma subtype in a patient with metastatic melanoma who was been treated with Nivolumab. To the best of our knowledge, there are only 7 cases of eruptive keratoacanthoma due to immune checkpoint inhibitors published in three case reports so far.

The patient is a 78-year-old male who was diagnosed with metastatic melanoma after presenting with a dark macular lesion on his left forearm and a hypermetabolic lesion in the liver on positron emission tomography (PET) scan.

He was started on ipilimumab and nivolumab for four cycles and then continued with maintenance Nivolumab. After his 23 cycles of Nivolumab, he was noted to have multiple hyperkeratotic nodules on both lower extremities. Biopsy was consistent with squamous cell carcinoma-keratoacanthoma subtype.

Treatment was started with intralesional fluorouracil and topical clobetasol. With advances in the field of immuno-oncology, rapid development and frequent use of ICI, the potential for encountering unique immune-related adverse events would increase over time as well as the development of previously unknown adverse reactions. ICI can now be recognized as one of the causes of keratoacanthomas.

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## PV12

### STUMBLING UPON EHRLICHIOSIS WHILE IN PURSUIT OF THROMBOTIC THROMBOCYTOPENIC PURPURA

A Pipilia, S Baig, D Liles

#### Introduction

Human monocytic ehrlichiosis (HME) is a tick-borne illness caused by the gram-negative pleomorphic Ehrlichia chaffeensis. Clinical findings are nonspecific, but often characterized by a viral syndrome a few weeks after a tick bite and sometimes accompanied by rash with rare presentations of meningoencephalitis or renal failure. Transaminitis, thrombocytopenia, anemia and lymphopenia are commonly seen. The variable presentation of HME may create diagnostic confusion with other well-recognized clinical entities. Here we present a case that was marked by an early suspicion for thrombotic thrombocytopenic purpura (TTP).

#### Case

A 69-year-old black male presented with fever, altered mental status, nausea, vomiting, diaphoresis, and dysuria. The patient lived and worked in a heavily wooded area. Exam revealed a disoriented, nonverbal elderly male with dry oral mucosa, abdominal distention, mild RUQ tenderness without hepatosplenomegaly and scattered petechiae on the lower extremities. Labs showed a platelet count of 28,000/ $\mu$ L, mild anemia, severe acute kidney injury with oliguria requiring dialysis, moderate transaminitis, and lymphopenia, an elevated lactate dehydrogenase (1028 U/L) and haptoglobin (285 mg/dL), and a hypo-proliferative marrow. Plasmapheresis and IV methylprednisolone were administered to presumptively treat TTP. On review of peripheral smear few schistocytes were seen, however rare monocyte inclusions were noted. Doxycycline was started for empiric coverage. E. chaffeensis DNA PCR later returned positive and confirmatory workup for TTP was negative. The patient responded to treatment with doxycycline and recovered well.

#### Discussion

Our patient initially presented with fever, confusion, thrombocytopenia, renal failure and a subsequent development of anemia, completing the typical TTP "pentad." A thorough and complete workup led to the discovery of monocyte inclusions on the peripheral smear. Nonspecific, multiorgan diseases such as Ehrlichiosis can easily produce diagnostic confusion with the similarly nonspecific presentation of TTP. Our case underscores the importance of careful peripheral smear examination in the evaluation of thrombocytopenia.

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## PV13

### PRIMARY MARGINAL ZONE LEPTOMENINGEAL LYMPHOMA

A Bulumulle, AR Naqash, A Weil, B Vallangeon, A Patel, M Muzaffar

**Learning Objectives:** Marginal zone lymphoma (MZL) is a low grade indolent non- Hodgkin's lymphoma presenting most commonly in nodal, splenic or extranodal sites like gastric. However very rarely presents as primary marginal zone leptomeningeal lymphoma (PMZLL). Primary central nervous system lymphomas (PCNSL) represent a rare form of Non-Hodgkin's Lymphomas accounting for about only 2% of all primary brain tumors, and 0.8% of all lymphomas. Here we outline a patient with this unique presentation of a very rare tumor type.

**Case Information:** An African American female in her 40s presented with seizures and personality changes of few months' duration. Patient had no focal neurological deficits and was initially treated with anti-seizure medications. Extensive workup for infection, vasculitis, paraneoplastic, and multiple sclerosis was normal. CT head was negative for any masses or hemorrhages. MRI brain showed diffuse leptomeningeal enhancement most conspicuously at the right frontal lobe and also in bilateral basal ganglia. Lumbar puncture was normal except for WBC count 26 with 92% lymphocytes. CSF Flow Cytometry analysis was consistent with B Cell lymphoproliferative disorder. CD20 +, CD5 - CD 10 - monoclonal B-cells were detected. Population of small mature appearing lymphocytes admixed with larger plasmacytoid lymphocytes were present. Bone marrow biopsy with flow cytometry did not show evidence of lymphoma. Meningeal biopsy proved consistent with marginal zone lymphoma. Patient continued to have seizures and was started on high dose steroids, intrathecal Rituximab 25mg weekly and WBRT. This resulted in a quick resolution of her neurological symptoms. She completed 8 weekly treatments of rituximab and remains in clinical CR and MRI shows stable disease and we switched to active surveillance.

**Summary:** Most patients with dural based marginal zone lymphomas display an indolent behavior compared to the more aggressive forms of primary CNS Non-Hodgkins Lymphomas. Diagnosis of PMZLL is a diagnosis of exclusion and often requires a dural biopsy, due to close resemblance to other disease entities. There is limited data for treatment of PMZLL, however reasonable options include low dose RT and or IT /systemic rituximab or chemotherapy as in our patient which resulted in quick resolution of her symptoms.

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## PV14

### UNSUSPECTED FACTOR XII DEFICIENCY COMPLICATING ANTICOAGULATION MONITORING DURING ACUTE MYOCARDIAL INFARCTION

S Cowles, A Patel, C Knupp

**Learning Objectives:** Factor XII (Hageman Factor) deficiency is a rare disorder of the intrinsic coagulation pathway which is typically found incidentally in asymptomatic individuals with routine coagulation testing. Alterations in the partial thromboplastin time and activated clotting time complicates the monitoring of anticoagulation in the setting of Factor XII deficiency. We present a challenging case of unsuspected Factor XII deficiency discovered after treatment of acute myocardial infarction with unfractionated heparin.

**Case Information:** An 85-year-old white female presented to the emergency department with chest pain. She was found to have an acute anterior ST segment elevation myocardial infarction. Unfractionated heparin was initiated at 12:51 pm. Coagulation tests were drawn at 13:11 pm and 14:34 pm. The initial partial thromboplastin time was elevated at >200 seconds and the activated clotting time was elevated at >400 seconds. She underwent emergent cardiac catheterization with placement of stent to the left anterior descending coronary artery. An intra-aortic balloon pump was also placed. These tests remained elevated for 2 days despite cessation of unfractionated heparin. There was no history of liver disease or coagulopathy. She did not have any bleeding complications with previous surgeries. The thrombin clotting time was normal. The anti-Xa heparin level was not detectable. A partial thromboplastin time 1:1 mixing study was normal suggesting a factor deficiency. Intrinsic pathway factor levels revealed normal activity of Factor IX, Factor XI and Factor VIII. The Factor XII activity level was 6% indicating severe deficiency. The balloon pump was removed on day 3 uneventfully.

**Summary:** Baseline coagulation screening tests should be performed prior to initiation of heparin anticoagulation in the setting of cardiac bypass, myocardial infarction, extracorporeal membrane oxygenation and use of intra-aortic balloon pump. Achieving therapeutic anticoagulation in these high-risk circumstances is imperative to prevent thrombotic complications and is compromised with use of partial thromboplastin time and activated clotting time tests in those with Factor XII deficiency. Monitoring with anti-Factor Xa, hepcan testing are preferred. Administration of fresh frozen plasma and monitoring the activated clotting time may also be considered.

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## PV15

### **SYMPTOMATIC BONE MARROW CARCINOMATOSIS SECONDARY TO BREAST CANCER TREATED WITH METRONOMIC DOCETAXEL**

S Jayananda, S Macherla, E Gottsch, A Hegde, M Muzaffar

#### **Background**

Bone marrow carcinomatosis (BMC) is diffuse infiltrative growth of tumor cells in the bone marrow and is associated with systemic serious hematological disorders. While bone metastasis is common site of involvement but bone marrow carcinomatosis is very rare. We present a case of young female with metastatic breast cancer predominantly in bones, who developed bone marrow carcinomatosis six years after her initial Stage IV diagnosis.

#### **Case Summary**

41 y/o African-American female with metastatic breast cancer estrogen receptor positive, HER 2neu negative, presented with extensive osseous metastasis at the age of 35. The patient was treated with endocrine therapy tamoxifen 20mg orally daily. Around five years after her diagnosis she developed new onset pancytopenia with Hemoglobin of 7.4 g/dl and Platelets of 108,000 and peripheral smear was concerning for myelophthisic picture due to Metastatic bone marrow carcinomatosis. After worsening myelosuppression with palbociclib we initiated treatment with metronomic weekly docetaxel 35 gm/m<sup>2</sup> for 8 weeks. Her platelets increased from 58,000 to 121,000 after 5 weeks of treatment. After 8 weekly docetaxel cycles, we switched to every other week. Her blood counts continued to improve on docetaxel and eventually had normalization of counts and maintained the response for around 7 months post treatment cessation.

#### **Conclusion**

Even though various chemotherapeutic regimens have been used in this clinical scenario with very limited efficacy, the safest and most efficacious method to treat patients with profound cytopenia's secondary to BMC is unclear. Docetaxel causes significant cytopenia's at standard dose, but metronomic docetaxel has demonstrated novel antivascular efficacy and less myelosuppression in different studies. This case is one of the few cases reported of resolution of BMC induced cytopenia with metronomic docetaxel

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## PV16

### **METASTATIC BREAST CANCER WITH ORBITAL METASTASIS**

S Jayananda, E Gottsch, S Macherla, P Lepera, M Muzaffar

#### **Background**

Orbital metastasis of breast cancer is rare and accounts for 1-13% of all ocular metastases. They usually present in patients who have an established diagnosis of disseminated cancer and a long medial time interval of 4.5-6.5 years from diagnosis. We present a case of young woman with 6 year history of Stage IV breast cancer who developed a rare scirrhous metastases to bilateral orbits.

#### **Case Summary**

41 y/o African-American female with metastatic breast cancer with estrogen receptor positive, HER 2neu negative biomarkers. The patient was diagnosed at an age of 35 with extensive bone metastasis and tested negative for BRCA. Around six years after her initial diagnosis she developed bilateral eye pain, enophthalmos of her left eye. MRI done showed enhancement of extraocular muscle and bilateral enophthalmos consistent with scirrhous breast carcinoma. Ocular exam noted to have restricted extraocular movement, unchanged vision with intact optic nerve. She received palliative radiation to the orbits with 30-40Gyr dose. She was resumed on LHRH agonist with fulvestrant and abemaciclib. The patient subsequently developed Left facial palsy and worsening extra cranial disease warranting chemotherapy.

**Discussion:** Bilateral synchronous orbital metastases is very rare. Scirrhous (or fibrosing) breast carcinoma is the most common tumor that metastasizes to the orbit. The patients may present with diplopia, and visual changes. However, as in this patient, patients with infiltrative scirrhous breast carcinoma may present with enophthalmos, ptosis, and restricted ocular motility. Treatment for orbital metastasis is palliation, in the form of radiation or chemotherapy followed by hormone therapy in cases of hormone sensitive. Timely recognition and early treatment initiation are important to maximize the quality of life in these patients and often diagnosis is established based on clinical and imaging suspicion for metastatic cancer as in our patient.

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## PV17

### TOXIC EPIDERMAL NECROLYSIS INDUCED BY IMMUNE CHECKPOINT BLOCKADE IN LUNG CANCER

A Patel, N Sharma

**Learning Objective:** With the increasing use of immune checkpoint blockade (ICB) in a wide spectrum of malignancies, prompt recognition and treatment of immune related adverse events (IrAEs) is imperative. While in some studies, the presence of skin rash has been correlated to response to ICB, the severity of skin rash has not been linked to response.

**Case Information:** A 63-year-old gentleman with no underlying autoimmune disease was diagnosed with a TTF-1 positive poorly differentiated non-small cell lung cancer. He was started on upfront chemo-immunotherapy with Carboplatin, Pemetrexed and Pembrolizumab for four cycles followed by maintenance Pembrolizumab. After eleven months on Pembrolizumab, the patient noticed a tender, blistering, erythematous rash over his chest, abdomen and back, with vitiligo of his palms and soles of feet. Immunotherapy was held and he was started on a hydrocortisone ointment. At follow up in three weeks, there were more confluent lesions on his skin along with epidermal detachment and tenderness, with positive Nikolsky sign. The rash involved more than 30 percent of his body surface area. A punch biopsy revealed subepidermal blister and epidermal necrosis with complete separation from the underlying dermis with mild lymphocytic inflammation, concerning for toxic epidermal necrolysis (TEN). The patient was started on prednisone 1 mg/kg and doxycycline. He had clinical improvement, however relapsed after a four to six-week steroid taper. His c-reactive protein was 63 mg/dL. He was administered a dose of anti-interleukin-6 (anti- IL-6) antibody Tocilizumab along with prednisone with improvement of the rash.

**Summary:** TEN is a rare, but life-threatening reaction of immunotherapy. The exact mechanism of this dermatologic manifestation in the setting of anti PD 1 antibodies remains unclear. It is speculated that PD-1 antagonism results in the loss of T cell homeostasis in skin resulting in self-directed cytotoxic and inflammatory reactions. While the mainstay of treatment includes discontinuation of the inciting agent, fluids, and immunomodulating agents, this case demonstrates the use of anti- IL-6 antibody for the treatment of TEN.

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## PV18

### PRIMARY PINEAL GLAND MIXED GERM CELL TUMOR WITH LEPTOMENINGEAL INVOLVEMENT

SR Polsani, AA Patel, M Muzaffar

**Learning Objectives:** Primary Intracranial Germ Cell Tumors (GCTs) are a heterogeneous group of exceedingly rare, poorly understood neoplasms with an overall incidence in US of 0.6 per million per year. Non-germinomatous germ cell tumors (NGGCTs) which constitute approximately one-third of GCTs have survival rates ranging from 40–70% and are treated with a multimodal treatment plan including Chemotherapy and Radiation in addition to complete Surgical Resection when possible.

**Case Information:** An African American male in his 30s presented to a local hospital with 2-month history of early morning headaches, gait abnormalities, episodic loss of consciousness suspected to be seizures. His neurologic examination was positive for wide based gait and Romberg's sign. MRI of Brain and whole spine which showed a poorly marginated enhancing mass in the pineal region measuring approximately 1.5 x 2.5 x 2.0 cm with leptomeningeal extension, involving the adjacent posterior right thalamus, right midbrain, medial right temporal lobe, medial right occipital lobe, and superior right cerebellum and diffuse enhancement over the entire surface of the spinal cord and along the cauda equina nerve roots. Imaging did not reveal any disease in neck, chest, abdominopelvic area or testis. Neurosurgery opined that a brain biopsy would be high risk and carried unacceptable surgical morbidity. CSF cytology revealed atypical cells, CSF AFP was normal, CSF Beta hCG was markedly elevated at 1019 mIU / mL (Ref < 5). Serum AFP was normal and serum beta hCG was elevated at 11 IU/L (Ref 1.4). A testicular ultrasound showed a large 5.2 x 3.1 x 3.7 cm right intrascrotal septated cyst. A diagnosis of primary pineal gland mixed germ cell tumor was made, and patient was initiated on treatment based on a combination chemotherapy COG protocol followed by craniospinal radiation if required.

**Summary:** Timely diagnosis of primary central nervous system GCTs can be challenging due to nonspecific symptoms. Diagnosis of an intracranial germ cell tumor usually requires histological information, but a subgroup of tumors will secrete specific tumor markers which may obviate the need for surgical intervention. Treatment plans can differ depending on the subtype of GCT. For intracranial GCTs chemotherapy prior to radiation is associated with better therapeutic ratio.

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## PV19

### CYTOKINE RELEASE SYNDROME WITH IMMUNOTHERAPY FOR METASTATIC ADRENOCORTICAL CARCINOMA – RARE MANIFESTATION

SR Polsani, M Navaid

**Learning Objectives** - Adrenocortical Carcinoma (ACC) is a rare endocrine neoplasm with dismal prognosis. No effective second line therapies after disease progression on Combination Cytotoxic therapy and Mitotane are available. We share our experience of using a Dual Immune Check Point Blockade (DICB) therapy with Ipilimumab and Nivolumab in a patient with Metastatic Adrenocortical Carcinoma who manifested Grade 2 Cytokine Release Syndrome (CRS) which is an unusual, rare complication in solid tumors.

**Case Information** - A 31-year-old female with Metastatic Adrenocortical Carcinoma who had disease progression on Mitotane, Etoposide, Doxorubicin and Cisplatin chemotherapy was started on an experimental DICB therapy with Ipilimumab and Nivolumab in December 2018. She was hospitalized with Grade 2 CRS manifesting as Fever, Hypotension, Hypoxia and Liver transaminitis after Cycle 1 with a C - reactive protein (CRP) of 148 and after cycle 2 with a CRP of 402. She required treatment with Tocilizumab an antagonist of Interleukin-6 (IL-6) receptor and high dose steroids. She recovered well from both hospitalizations and clinically has shown improvement in her metastatic disease burden with decrease in size of a shoulder mass.

**Summary** - ACC's intermediate tumor mutational load makes immunotherapy an attractive option with clinical trials underway to determine its efficacy.

CRS is a common manifestation of Immunotherapy in hematologic malignancies. Myeloid cells including macrophages and monocytes are the major cells mediating CRS by releasing IL-1 and IL-6 among other cytokines. However, CRS is very rarely noted with Immunotherapy use in solid tumors. CRS is a potentially life-threatening condition which can be reversed with timely identification, grading and intervention

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## PV20

### THROMBOPOIETIN RECEPTOR AGONIST IN PREGNANCY: A CASE FOR ROMIPLOSTIM IN REFRACTORY IDIOPATHIC THROMBOCYTOPENIC PURPURA.

C Uzoka, D Liles

**Learning Objectives:** Refractory Idiopathic thrombocytopenic purpura (ITP) in pregnancy, carries an increased bleeding risk, especially during labor and delivery. To mitigate this risk, therapeutic options, are aimed at diminishing platelet destruction and maintaining the platelet count above  $50 \times 10^9/L$ . In pregnancy therapeutic options are limited to Intravenous immunoglobulin (IVIG), steroids, and rituximab. 2<sup>nd</sup> line drugs for chronic ITP are either contraindicated due to risks of teratogenicity, or of unknown risk in pregnancy. We utilized a less studied but novel approach to optimize platelet production and decrease the possible risk of peri-partum hemorrhage.

**Case Information:** We present a case of a young woman, with preexisting SLE and ITP during pregnancy. She initially presented at 12-weeks of pregnancy, with a platelet count of  $8 \times 10^9/L$ . She had a brief response to IVIG and relapsed only 3 weeks after the initial dose. She was resistant to both oral and intravenous steroids throughout the pregnancy. After the second trimester she received Rituximab. The response was brief and at the time of relapse, through the 2<sup>nd</sup> and 3<sup>rd</sup> trimester of pregnancy, she required multiple hospital admissions for profound thrombocytopenia. Due to the extremely refractory ITP and as the delivery date approached, with no controlled clinical trials in this patient population, she was treated with weekly doses of romiplostim, a thrombopoietin receptor agonist (TPO-RA). She demonstrated a robust platelet count response and was later delivered of a live infant birth, without any bleeding complications.

**Summary:** Bleeding disorders in pregnancy can lead to marked maternal and fetal morbidity. ITP is very complex and better comprehension of the disease continues to improve treatment options. Variability in therapeutic responses underscores the different underlying mechanisms. To date only a few reported cases of refractory ITP treated with a TPO-RA are in the literature. These cases suggest the drug is safe and effective when utilized in the 3<sup>rd</sup> trimester of pregnancy. Our case contributes to the literature and suggests consideration for its use in this select group of pregnant patients with ITP. However more clinical studies are required in the pregnant population, to expand the efficacious and less toxic, treatment options for ITP in pregnancy.

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## PV21

### CASE OF THE UNKNOWN MALIGNANCY: HOW AND WHEN TO ADDRESS GOALS OF CARE

D Broderick, T Blair, A Choe, S Nagaraj,

**Learning Objectives:** This case presents a metastatic cancer of initially unknown origin, with multiple lung nodules found on imaging. Further workup revealed enlarging hemorrhagic brain lesion on CT. The case was complicated by a rapid clinical deterioration before further lab results could be obtained. This case presents an interesting diagnostic challenge as well as a very difficult approach to discussing goals of care with family. Due to the uncommon presentation of metastatic melanoma, delay of recognition of the severity of the disease as well as delay in contacting family regarding his prognosis were concerns while his tenuous status was not fully appreciated.

**Case Description:** An 86-year-old Caucasian male with past medical history of hypertension, atrial fibrillation, and 40-pack/year smoking history presented with 3 days of dizziness and trouble balancing. Vitals were completely normal and head CT scan showed left frontal parafalcine hemorrhagic lesion with layering hemorrhage and similar surrounding edema. Subsequent chest CT showed 3.5 cm right lower lung lobe mass suspicious for malignancy, right perihilar nodular density, semisolid left upper lobe lung nodules, few, small subcentimeter bilateral lung nodules. Tissue biopsy of lung lesions revealed metastatic malignant melanoma. While further oncologic workup was pending, his hemorrhagic intracranial mass began to enlarge causing worsening dizziness, hypotension, and new onset focal neurological deficits. Patient was rapidly transferred to the ICU. Due to poor prognosis associated with malignant melanoma with brain metastasis, heavy symptom burden, and inability to tolerate radiation, decision was made by patient's wife to transition him to comfort care.

**Discussion:** He had been transferred from an outside hospital after his mass was found on head CT for further workup. His only presenting symptom was dizziness which may have masked the severity of his disease leading to further delays. The wife was ultimately unable to find reliable transportation to the hospital when the patient did acutely decompensate and unable to attend or participate in end of life discussions. He was already unresponsive by the time his wife arrived. Earlier involvement with the proxy decision maker in how severe the prognosis could have provided the time to process the information and make arrangements and decisions in way that could alleviate the patient's suffering and hospital course.

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## PV22

### MALE BREAST CANCER: DIAGNOSTIC AND THERAPEUTIC CHALLENGES

AN Mohammad, M Muzaffar

**Background:** Male breast cancer (MBC) is considered an orphan disease due to its rarity and lack of clinical research. The MBC share many similarities with female breast cancer but are more likely to be diagnosed at an advanced stage.

**Case:** Our case is a 66-year-old male who presented with worsening lower back pain. Imaging revealed diffuse mixed sclerotic/lytic bone metastasis and pulmonary metastasis. Clinical examination revealed a Left breast retro areolar mass around 2.5cm, adherent to overlying skin and left axillary multiple matted lymph nodes. The patient reported a two-year history of breast lump which was evaluated with mammogram and diagnosed as gynecomastia. The patient did not undergo follow up imaging and reports gradual increase of left breast mass. Left axillary mass biopsy revealed ductal carcinoma, Estrogen receptor 90%, HER2-neu negative. The patient was started on palliative radiation to his thoracic spine. He was initiated on systemic endocrine therapy tamoxifen 20mg daily orally with goserelin 3.6mg S/C and CDK 4/6 inhibitor palbociclib 125mg daily by mouth. The patient also started denosumab monthly. On his last examination his breast mass and lymphadenopathy are decreasing, and pain is under control.

**Conclusion:** Early detection and treatment improves breast cancer outcome. MBC is often diagnosed at an advanced stage due to physical characteristics of male breast, social stigma, lack of awareness and education. Our patient had a firm palpable nodule 2 years prior to his current diagnosis. He was diagnosed with Stage IV breast cancer after seeking medical attention for back pain. Treatment of MBC is often extrapolated from female breast cancer trials and guidelines due to its rarity. More awareness and educational outreach for men and the healthcare professionals especially genetic testing for all male breast cancer patients is warranted.

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## PV23

### INCIDENTAL FINDING OF GIANT CORONARY ARTERY ANEURYSM – SUCCESSFULLY TREATED WITH MEDICAL THERAPY

R Shammam, P Sengodan, A Movahed

**Learning Objectives:** Coronary artery aneurysms (CAA) are defined as a focal dilation of coronary segments of at least 1.5 times the adjacent normal segment, whereas the term coronary artery ectasia is used to define similar, but more diffuse, lesions. The overall incidence ranges from 0.3 to nearly 5%.

With more widespread use of coronary angiography, CAA's have been increasingly identified as an incidental finding. Giant CAA's defined as dilation of the artery greater than 4 times the reference diameter are rare and the management is quite challenging and varies on a case by case basis.

**Case Information:** We report a case of a 30-year-old male who presented with signs and symptoms of respiratory infection with left lower lobe consolidation on a chest radiography. Presence of "cardiomegaly" lead to further cardiac evaluation revealing giant coronary aneurysms. The patient was treated conservatively with coumadin and aspirin and has done well at four years of follow up.

**Summary:** Decisions around treatment should be tailored to each patient and should consider many aspects such as clinical presentation, etiology, aneurysm size, location, association with infections, and the presence and extent of any coexisting atherosclerosis. In general, the smaller the size of the aneurysm and earlier the treatment is initiated, the lower the chance of major adverse cardiac outcomes. CAA's can be medically managed with antiplatelets and/ or anticoagulation alone. Percutaneous interventions are feasible too, however challenges include the amount of thrombus burden, sizing and landing zone assessment. The ideal surgical approach is not clear; however, options include aneurysm ligation, resection, or marsupialization with interposition graft.

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## PV24

### WHEN MISHAP TURNS TO AORTIC INJURY: HOW AN MVA DEVELOPED INTO A THROMBUS NEEDING WARFARIN

L Min, T Blair, S Nagaraj

**Learning Objectives:** Aortic Mural Thrombosis secondary to traumatic aortic injury is rarely seen, and currently there are no guidelines regarding anticoagulation treatment. There are few case reports and no guidelines for such cases. There are reports suggesting these patients have good outcomes when treated medically over surgically which helped guide the decision for anticoagulation. There are likely far more cases than reported similar to this one that fall back on guidelines for other forms of clot burden treatment. There needs to be further research regarding anticoagulation dosing and duration for management as well as some form of outcome data between surgical and medical management that quantify the balance the risk of embolic disease versus bleeding risk in patients highly susceptible to both.

**Case Description:** A 41-year-old female was admitted after being involved in a motor vehicle accident. At initial presentation, patient could not move her lower extremities. During initial surgical workup, CT of her chest, abdomen, and pelvis showed distraction injury in upper thoracic spine at T3-T4 level.

After some initial abnormalities were noticed a CTA chest was ordered and showed a traumatic aortic injury with focal mural thrombus in the aortic lumen at the level of the isthmus and extending into the descending aorta. No periaortic hematoma or pseudoaneurysm was seen in imaging. Patient's blood pressure was maintained with goal of SBP <120 and Heparin was started. Next warfarin was initiated with INR goal 2-3 with heparin bridge.

Vascular surgery was consulted given the literature of aortic thrombi resulted in less than 10 reported cases. The plan was to keep the patient on anticoagulation for at least three months to prevent extension and subsequent embolic events without incidence of embolic disease or bleeding.

**Summary:** Patient presented to the Surgical ICU for spinal cord injury but was found on imaging to also have a AMT. A Traumatic AMT is a rare complication of aortic injury and management involves either anticoagulation or surgical intervention to prevent ischemia from embolization. Despite its difficult management, there are no anticoagulation guidelines including initiation, duration, and necessity of bridging to long-term anticoagulation. This patient tolerated a heparin bridge with warfarin without any surgical intervention and illustrates a potential benefit of avoiding surgery.

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## PV25

### ATRIOESOPHAGEAL FISTULA: A RARE BUT DEADLY COMPLICATION OF ATRIAL FIBRILLATION ABLATION

L. Vaughan, M Moey, H Devineni, V Lakkakula and P Mounsey

**Learning Objectives:** An extremely rare but fatal complication of atrial fibrillation (AF) ablation is the development of an atrioesophageal fistula (AEF). Diagnosis may be challenging as it has varied presentations of gastrointestinal, infective, cardiac and neurological symptoms. Early recognition is crucial as this is lethal without emergent intervention.

**Case Information:** A 49 year-old African American Jehovah's Witness male with a history of AF status post (s/p) ablation in May 2018, hypertension, coronary artery disease, end stage renal disease on hemodialysis, diabetes mellitus, prior stroke, mitral regurgitation s/p mechanical mitral valve (MV) replacement and MV endocarditis in 2011 presented in July 2018 with fever and chills for three days. He was started on IV gentamicin and vancomycin and was discharged. The following day he presented with headache, nausea and vomiting, becoming progressively unresponsive requiring intubation for airway protection. He was noted to have a rightward gaze and left arm flaccidity concerning for a cerebrovascular event. CT head and MRI brain demonstrated innumerable bilateral cerebral foci of hyperintensity suggestive of a thromboembolic source. Pupils were unequal with right greater than left and left-sided flaccidity. An echocardiogram demonstrated an ejection fraction of 45-50% without vegetations or acute valvular pathology. He was continued on vancomycin and gentamicin for suspected endocarditis. Cardiology was consulted for a transesophageal echocardiogram however given the timing of his symptoms from the date of his AF ablation, a CT chest with contrast was urgently recommended. CT chest demonstrated a small focus of gas seen in the posterior aspect of the left atrium concerning for an AEF. Cardiothoracic surgery was emergently consulted however as this was a high-risk surgery in a Jehovah's Witness patient, the family opted against surgery. Palliative care was consulted, and he passed within 48 hours.

**Summary:** AEF is a rare (0.03 to 0.08%) complication of AF ablation with high mortality if not diagnosed early. Studies have shown common presentations include fever and neurological symptoms that typically occur 2 to 4 weeks but may present up to 2 months post-ablation. High suspicion and prompt recognition of this syndrome with CT chest is crucial to facilitate emergent surgical intervention for survival.

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## PV26

### CAT GOT YOUR TONGUE? A RARE CASE OF PASTEURELLA EPIGLOTTITIS

L. Vaughan, K Lambert, M Pickmans, P Singh

**Learning Objectives:** Epiglottitis is a rare condition in adults, but, is life-threatening due to the risk of upper airway compromise if not recognized and treated early. Mortality rates are reported to be 1.2-7.1%. The etiology is typically infectious, with respiratory pathogens including Streptococcus pneumoniae, Staphylococcus aureus, and Haemophilus influenzae being the most common causative organisms. Pasteurella multocida is an exceedingly rare and infrequently cited cause of acute epiglottitis.

**Case Information:** 77-year-old male presented with one-day history of progressively worsening sore throat, difficulty speaking, and odynophagia. Initially, he had minimal secretions and was protecting his airway. However, within an hour, he developed hoarseness and increased work of breathing. Physical examination revealed stridor and desaturations not improved with noninvasive ventilation. The decision was made to intubate due to acute hypoxic respiratory failure and concerns for upper airway obstruction. Computed tomography of the neck revealed edema of the upper aerodigestive tract consistent with epiglottitis. He received dexamethasone and piperacillin-tazobactam. Blood cultures grew gram-negative rods, later identified as pan-sensitive Pasteurella multocida. Antibiotics were narrowed to amoxicillin/clavulanate. The patient rapidly improved and was successfully extubated within 48 hours. Upon further questioning, he endorsed recently being scratched by a neighborhood cat, which was the likely source of the bacteremia. He remained stable and was discharged to complete 10 days of antibiotic therapy.

**Summary:** Epiglottitis can occur at any age, but, is uncommon in adulthood. Incidence in adults ranges from 0.97 to 3.1 per 100,000. It is important for clinicians to be aware of the clinical manifestations of epiglottitis, as early airway management is crucial. Symptoms include rapidly worsening sore throat, dysphagia, and odynophagia. Blood cultures should be drawn to identify the causative organism. P. multocida, commonly found in the respiratory tract of domestic cats and dogs, is a rare cause. Exposure to such animals is implicated in reported cases of P. multocida epiglottitis. The treatment is antibiotic therapy for one to six weeks and upper airway management, typically leading to rapid resolution of patients' symptoms

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## PV27

### CAN HEART-HEALTHY PEOPLE SUFFER FROM A HEART ATTACK? LEARN ABOUT THIS RARE CASE OF SPONTANEOUS CORONARY ARTERY DISSECTION (SCAD)

F. Mohamed, S Jain, L Vaughan, P Sengodan, R Kreeger

#### Learning Objectives:

SCAD is an important cause of ACS and SCD in young persons, particularly women. It most commonly occurs in patients with few or no traditional cardiovascular risk factors. Cardiac ischemia in SCAD has a different pathophysiology than atherosclerotic CAD and should be managed differently. Therefore, early recognition and diagnosis is crucial.

#### Case Information:

A 39-year-old pregnant female G3P1102 (4 weeks) with HTN, preeclampsia presented with sudden onset dyspnea and substernal chest pain while cooking. EKG was significant for ST elevations in V2-V4, I and aVL. She was treated with ASA, nitroglycerin and heparin infusions. Serial EKGs continued to demonstrate resolution of ST elevations. Echo showed LVEF 50% with apical and anterior hypokinesis. Decision was made not to opt for LHC/coronary angiography in the settings of pregnancy and patient's preference. Repeat echo 2 days later showed normalization of regional wall motion abnormality. EKG with resolution of ST changes. It was thought that the patient's symptoms were likely secondary to coronary spasm and she was subsequently discharged on ASA, Plavix, Imdur, Labetalol and Amlodipine with close follow up. At 15 weeks gestation she presented again with chest pain that woke her from sleep. This time EKG was concerning for ST elevations across V1-V3 and III with elevated troponin of 2.56. Patient was started on heparin gtt. She initially declined LHC, but troponin continued to increase with peak of 48.04. Eventually patient agreed and underwent LHC showing LAD proximal eccentric stenosis max 70%. Suspected that patient's past MI was likely SCAD resulting in subsequent thrombus formation. Decision was made for medical management with antiplatelets and anticoagulation over reperfusion therapy as PCI carried a significant risk of distal embolization of thrombus causing further infarction or dissection.

#### Summary:

SCAD is an underrecognized condition, still poorly understood and more research is required. It has unique risk factors and associated conditions. It has different diagnostic, therapeutic, and prognostic implications compared to atherosclerotic coronary disease.

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## PV28

### RETROPERITONEAL FIBROSIS: A CAUSE OF BILIARY OBSTRUCTION AND UROPATHY

S Jain, K Lambert, P Singh

**Introduction:** Retroperitoneal fibrosis (RPF) is a rare fibrotic, inflammatory disease. RPF presents with nonspecific symptoms; however, it can present with obstructive uropathy. Gastrointestinal involvement is a rare complication. We present a case of biliary obstruction and obstructive nephropathy in a patient with idiopathic non-immunoglobulin G4 (IgG4) related RPF.

**Case Summary:** A 68-year-old AA female with no medical history presented with left lower abdominal pain radiating to the groin for five days. She denied fever or urinary symptoms. Physical examination revealed hypertension and left flank tenderness. Laboratory examination was significant for an elevated creatinine. CT of the abdomen and pelvis revealed bilateral hydronephrosis and fascial stranding in the right retroperitoneum. Bilateral ureteral stents were placed with improvement of renal function. Two months later, she presented with recurrent abdominal pain, nausea, and vomiting. Physical examination revealed scleral icterus, jaundice, and diffuse abdominal tenderness. Labs revealed an elevated creatinine and LFTs. CT A/P revealed persistent bilateral hydronephrosis, biliary ductal dilatation, and worsened retroperitoneal stranding. MRCP revealed a biliary ductal stricture. IgG4 was negative and ESR was elevated at 65. She was started on a prednisone taper for idiopathic RPF and she had clinical improvement.

**Conclusion:** Although rare, RPF is treatable and should be considered as a cause of biliary obstruction and obstructive nephropathy. Medical management includes steroids, which can cause regression of disease. The exact cause of renal injury in RPF is unclear. Renal injury is thought to be due to ureteral obstruction from fibrosis in the peri-iliac region or due to renal parenchymal hypoplasia in RPF as the cause of hydronephrosis. It is unclear whether this patient had obstruction or parenchymal injury given initial improvement of renal function after stent placement. Treatment of ureteral obstruction includes stenting or nephrostomy placement. Medical management includes steroids with a gradual taper, which can cause regression of disease within a week seen on imaging. Immunosuppressants have been added with steroids but it is unclear if the benefit is through potentiation of steroid efficacy or as a steroid-sparing agent. Idiopathic RPF patients tend to have good renal outcomes with mortality rates of 3-7%.

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## PV29

### AN UNUSUAL CASE OF OSTEOMYELITIS CAUSED BY ENTEROCOCCUS

S Jain, F Kaleta, R Hunt, E Phan, T Solomon-Tsegaye, J Smalls, P Singh

**Introduction:** Osteomyelitis caused by enterococcus a rare etiology and is only seen in 3% of the affected population. This case discusses a patient who was affected by enterococcus osteomyelitis with a history of leukemia.

**Case Summary:** A 71 year old female with a past medical history of diabetes and CLL presented with 2-3 week history of weakness, fatigue, lower back pain, and lower extremity pain. Symptoms progressed gradually until she was unable to walk. She was afebrile and vital were within normal limits. On physical exam, she was uncomfortable, with tenderness to palpation of the lumbar spinous processes but no neurological deficits. Labs significant for leukocytosis with left shift. Blood cultures grew *Enterococcus faecalis*. MRI Spine showed evidence of osteomyelitis at L3-L4 most notably involving the L3 inferior endplate with extension. Patient was started on ampicillin for treatment. Hospital course was complicated by sudden drop in diastolic blood pressure with a widened pulse pressures and worsening shortness of breath. Physical exam was significant a new holosystolic murmur heard best in right intercostal region parasternally. Ceftriaxone was added for suspected endocarditis. Port-a-cath (placed one year prior for treatment of CLL) was removed for possible source control of the infection. TEE revealed severe aortic insufficiency which confirmed *E. faecalis* endocarditis. Cardiothoracic surgery was consulted and performed an aortic valve replacement. Antibiotic therapy was continued for six weeks from negative blood culture (pending results from her valve culture). **Conclusion:** *Enterococcus faecalis* is a rare cause of vertebral osteomyelitis as this organism is more commonly associated with bacteremia and endocarditis. *Enterococcus faecalis* commonly inhabits the gastrointestinal and urinary tract however almost half the cases of bacteremia have no clear source as in this case. This patient had bacteremia with MRI evidence of osteomyelitis and no prior injury or manipulation to this region. Hematogenous vertebral osteomyelitis secondary to *Enterococcus* is extremely rare. Patient's underlying CLL may have predisposed her to since some patients underlying defects in both cell-mediated and humoral immunities from this disease. This case illustrates an interesting combination of a common infectious manifestation of enterococcus (endocarditis) and a rare form of osteomyelitis. Few cases have described clinical scenarios who had both manifestations.

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## PV30

### A RASH THAT FOLLOWS NONE OF THE RULES: A UNIQUE CASE OF DISSEMINATED HSV-2

T Blair, D Chang, S Nagaraj

**Learning Objectives:** This case presents a diagnostic challenge of a rash that appears consistent with a herpetic form rash. However, the distribution was not at all consistent with typical HSV-1 presentations and exceedingly atypical for HSV-2. The difficulty in obtaining a diagnosis was compounded by the fact that the system no longer retains inpatient hospital consultation services for Dermatology. While HSV-1 and 2 were of low suspicion given the patient's immunocompetent status and rash distribution, direct antibody testing, and culture were obtained as initial workup. The mechanism of traumatic spinal cord injuries in modulating the immune system's response in HSV-2 infections is unknown, but this case suggests some interplay.

**Case Presentation:** A 40-year-old caucasian female was transferred from the surgical ICU to the general internal medicine service for chronic management of medical conditions. The patient had been involved in a motor vehicle accident which involved T1-T6 fracture and had needed chronic tracheostomy management. However, during hospitalization, a new herpetiform rash was noted with vesicles and erythema across bilateral lower extremities and abdomen across multiple dermatomes without any distinguishable pattern except that it was below the level of her previous injury. She was afebrile, not taking any immune-modulating or immunosuppressive agents, and was not systemically ill. HIV antibody screen was negative. Antiviral therapy was initiated using acyclovir and a skin biopsy with culture, VZV, HSV 1&2 fluorescent antibodies, and HSV cultures were obtained. However, HSV culture grew HSV-2. Patient then responded to acyclovir and vesicles begin to scab over.

**Summary:** The uniqueness of an immunocompetent patient developing bilateral herpetic rash only and exclusively underneath the level of their spinal injury as the first presentation of HSV-2 without any documented genital lesions has yet to be reported elsewhere. Herpes simplex virus 2 (HSV-2) infection often presents in a disseminated pattern in immunocompromised hosts. She had no previous known history of HSV-2 and was exposed to VZV as a child with chicken pox, but, presented with a new herpetiform rash disseminated across lower extremities and abdomen after neurosurgical repair.

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## PV31

### SYNCOPE SURPRISE: WHEN ALL YOUR DIFFERENTIALS COME TRUE!

T Blair, S Sundaram, J Garber, S Nagaraj

**Learning objectives:** Syncope is a well-recognized symptom of acute aortic dissection. Aortic dissections can have a fairly typical presentation and syncope has a fairly routine workup. But painless dissections can be quite difficult to appreciate, and syncope is rarely the presenting symptom. Further syncope is rarely the presenting sign of a stroke. However, 10-15% of aortic dissections present as strokes, and mortality from aortic dissection is approximately 1-2% per hour. This case highlights the importance of correlating imaging, physiology and vascular supply with physical exam findings to find the underlying problem.

**Case Description:** Patient is a 53-year-old African American male with past medical history of hypertension who presents with syncope. Has had this episode a total of 3 times, the previous time 1 month prior and the first episode over 1 year prior. Patient had resolution of symptoms 1 month prior and a year prior diagnostic workup did not reveal any. Patient was admitted and underwent CT head and neck given history of fall which were both negative. Given persistent weakness on exam, an MRI head was ordered as well as a carotid ultrasound. Overnight the MRI head showed low turbulent flow into the R MCA territory with multiple infarcts appreciated. CTA Head and neck were ordered and upon review of these; it was determined patient had a Type A Aortic Dissection extending into the aortic arch and neck vessels resulting in marked stenosis of the left proximal common carotid artery true lumen with thrombosis of the false lumen. Dissection flap extended into the innominate artery with thrombosis/occlusion of the right common carotid artery and severe stenosis of the proximal right subclavian artery. CTA chest confirmed dissection after Thoracic surgery was called urgently and rushed to the operating room.

**Summary:** This patient's exam could not fit a common pattern and given history of weakness and loss of consciousness and hypertension, stroke workup was pursued. It was the vascular abnormalities noted on MRI that led to angiograms of the upper extremity vasculature that correlated with his weakness and pattern of symptoms showing an insult to his carotids resulting in his appearance of stroke-like symptoms. Patients with syncope rarely have a determined etiology but the combination of an acute painless type A dissection; missing the diagnosis could have been catastrophic.

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## PV32

### REACTIVATION HEPATITIS: WHERE RITUXIMAB AND LIVER FAILURE COALESCE

T Blair, K Lambert, K Roach, S Nagaraj

**Learning Objectives:** This case represents a diagnostic and therapeutic challenge. Despite appropriate HBV serology screening prior to rituximab initiation, our patient developed fulminant hepatic failure in the setting of acute HBV. Although our patient presented with concerns of septic shock, we believe the liver failure from acute fulminant HBV significantly led to his decompensation. Reactivation of HBV is well studied in patients treated with rituximab, however de novo HBV infection after initiating rituximab is far less well studied. This patient had questions of whether this was true reactivation or de novo infection.

**Case Description:** A 68-year-old Caucasian male with a history of stage IV follicular lymphoma status-post four cycles of rituximab and bendamustine presented with generalized malaise and acute encephalopathy of two weeks. He was hypotensive, and physical examination revealed dry mucous membranes and poor skin turgor. Laboratory examination was remarkable for: creatinine 7.63 mg/dL, alanine and aspartate transaminases 691 U/L and 1194 U/L, respectively, alkaline phosphatase of 321 U/L, total bilirubin 3.5 mg/dL, albumin 2.1 g/dL, and an INR of 2.3. The patient was admitted to the intensive care unit for concerns of septic shock and renal failure. Intravenous fluid, vasopressors, broad spectrum antibiotics, and continuous renal replacement therapy were initiated for ATN complicated by hyperkalemia. HBV core IgM antibody and surface antigen were positive, which were previously negative prior to initiation of rituximab when screened by outpatient oncology. Presuming elevated transaminases were in the setting of septic shock, antivirals were held while the viral load was pending. He was later found to have a HBV viral load of 800 million IU/mL and a positive HBV e-antigen confirming a diagnosis of fulminant hepatic failure. Due to rapid clinical deterioration, family decided to pursue comfort measures and he passed. It was later discovered that years prior he had a positive screening test for HBV IgG.

**Summary:** This patient's serology represented a problem in how to interpret hepatitis treatment. While multiple consultants were contacted early in the process including surgery and critical care, Hepatitis serology in the setting of previous Rituxan should have prompted earlier testing and consultation with gastroenterology and/or infectious disease about whether to start treatment.

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## PV33

### LIFE THREATENING XANTHOGRANULOMATOS IN PARAPLEGIC PATIENT

R Hunt, F Kaleta, S Jain, E Phan, T Solomon-Tsegaye, J Smalls

**Learning Objectives:** Xanthogranulomatous pyelonephritis is a rare, serious, chronic inflammatory disorder of the kidney secondary to long term urinary tract infections and/or infected renal calculi. Paraplegic patients are at a higher risk due to urinary stasis and frequent urinary tract infections; however, they are also frequently unable to sense the early symptoms which may predispose them to more progressive and severe initial presentations.

**Case Information:** A 75-year-old man with a past medical history of diabetes mellitus and paraplegia secondary to a motor vehicle accident in 1970 with a urostomy placed in 2009 was initially admitted for malaise and dizziness. Labs showed leukocytosis and lactic acidosis and urine analysis consistent with UTI. He developed hypotension requiring vasopressors. CT scan of the abdomen and pelvis with contrast showed dilation of the proximal ureter with a 13 x 9 mm calculus causing moderate right sided obstructive uropathy and dense material in the right renal collecting system and ureter. A right sided percutaneous nephrostomy tube was placed and found the calyceal system was extremely distorted having a very dilated and multiloculated- classic Bear Paw sign consistent with xanthogranulomatous pyelonephritis. Blood culture grew *Escherichia coli* in 2/4 bottles and an aspirate from the nephrostomy tube grew *Enterococcus* species and *Escherichia coli*. He responded well to treatment and was able to come off the pressors within 24 hours of antibiotics. Patient was discharged with nephrostomy tube in place, continuous antibiotics until he has a total right nephrectomy.

**Summary:** Early diagnosis in patients with spinal cord injuries (SCI's) is a clinical challenge due to atypical presentations. SCI's can lead to neurogenic bladder leading to urinary stasis and increased risk of UTI's/nephrolithiasis. Visceral efferent fibers from sympathetic and parasympathetic nerves of T12-L2 refer pain to the respected cutaneous regions when ureters are distended. Our patient lacked the classic referred flank pain due to his prior T10 SCI leading him to develop Xanthogranulomatous pyelonephritis highlighting the importance to have a high index of suspicion in patients with SCI's to prevent this form of pyelonephritis which lead to a nephrectomy in this case.

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## PV34

### GASTRIC SARCOIDOSIS: A RARE MANIFESTATION OF THE DISEASE

S Sundaram, SR Gollul Raju, G Harvin

**Learning Objectives:** Sarcoidosis is a chronic systemic inflammatory disease of unclear etiology characterized by non-caseating granulomas. It can affect nearly every organ system. Alimentary tract sarcoidosis is atypical within which gastric sarcoidosis is the most common form. Involvement of the alimentary tract is usually as a part of systemic disease or rarely as an isolated finding. We present a rare case of sarcoidosis initially presenting with gastrointestinal symptoms and without pulmonary symptoms.

**Case information:** A 57 years old morbidly obese African American female with PMH of HTN and DM type II presented with epigastric abdominal pain, nausea, vomiting, and a six-month history of unintentional 60lb weight loss secondary to early satiety and dysgeusia. She was found to have hypercalcemia of 13.4 mg/dL, AKI and lactic acidosis. A non-contrast CT and subsequent CTA of the abdomen and pelvis showed small bowel wall thickening, abdominal lymphadenopathy, patent celiac axis and mesenteric vessels, and numerous ~1mm lung base nodules. EGD revealed erythematous mucosa of gastric antrum with erosions and shallow duodenal erosions. Gastric biopsy revealed granulomatous inflammation. Duodenal biopsy showed mild villous blunting without granulomas. Stains for fungal elements and AFB was negative. No intestinal metaplasia, dysplasia or malignancy was noted. PTH, PTHrP, and TSH were normal. CT chest revealed centrilobular nodular interstitial opacities with extensive bilateral mediastinal and hilar lymphadenopathy. FNA of right hilar lymphadenopathy under EBUS revealed epithelioid histiocytes and lymphocytes suggestive of granulomatous inflammation. No malignant cells were seen. Fungal and AFB stains and AFB culture were negative. PPD skin test was negative. Patient's GI symptoms improved with supportive care. Given the lack of pulmonary symptoms, corticosteroids were not started. Patient has continued to do well during subsequent clinic follow up.

**Summary:** Gastric sarcoidosis is among the rarer subsets of the disease. Most cases have been described as posthumous discoveries on autopsy of known sarcoidosis patients as patients are usually asymptomatic. Biopsy proven pulmonary and gastric sarcoidosis presenting with GI symptoms and an anomalous lack of pulmonary symptoms is exceptionally rare and questions a broader understanding for consideration of sarcoidosis.

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## PV35

### METASTATIC GASTRIC ADENOCARCINOMA MIMICKING PULMONARY TUBERCULOSIS

P Patel, S Sundaram, E Phan, W Leland, P Muthukanagaraj

**Learning Objectives:** Gastric Cancer is a leading cause of morbidity and mortality worldwide, which makes timely and accurate detection critical. The rare presentation of Gastric Adenocarcinoma (GA) with miliary pulmonary metastases, known as Bard's Syndrome, can be easily mistaken for more common primary pulmonary diseases, such as tuberculosis. We present a case of a 43-year-old El Salvadorian male with persistent pleuritic chest pain and fevers despite treatment for disseminated infiltrates suggestive of TB. Diagnostic biopsies obtained after failed treatment confirmed GA which prompted initiation of palliative chemotherapy. **Case Presentation:** A 43-year-old male from El Salvador with no significant medical history presented with a two-day history of fevers, chills and pleuritic chest pain. Chest imaging revealed bilateral miliary infiltrates suggestive of TB as well as PE, which prompted initiation of RIPE therapy and anticoagulation. He returned two weeks later with worsening symptoms and repeat imaging of the chest raised suspicion for pneumonia. He improved and was discharged home on antibiotics. One week later, he developed severe abdominal pain and was found to have abdominal ascites. CT Abdomen revealed extensive clot formation throughout iliac venous system and omental caking, initially worrisome for TB peritonitis versus carcinomatosis. TB therapy was discontinued as prior AFB cultures came back negative. Omental biopsy was consistent with CK7 positive adenocarcinoma. Linitis plastica was observed on EGD and EUS biopsy later confirmed malignant cells from primary gastric adenocarcinoma. The patient was initiated on palliative chemotherapy with Epirubicin, Oxaliplatin, Capecitabine (EOX). **Summary:** Given our patient's demographics, symptoms and radiographic imaging, a diagnosis of TB was initially made with differentials focused on primary pulmonary pathology. However, this limited differential caused an unintentional delay in detection and treatment of gastric adenocarcinoma, a disease of remarkable morbidity and mortality. Gastric carcinoma is the fourth leading cause of cancer world-wide, the second leading cause of cancer related death, and carries a significant cancer burden. GA has a 2:1 male predominance, and while incidence in North America has decreased there is a higher incidence in Hispanic populations. By adding Bard's Syndrome to the differential of miliary pulmonary infiltrates, the burden of this destructive and deadly disease can be decreased.

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## PV36

### NON-SURGICAL MANAGEMENT OF AN EMBEDDED PAPERCLIP IN SIGMOID COLON CAUSING PERFORATION AND ABSCESS

N Gollol-Raju, N Jampala, H Khalid, P Mudiredy

**Learning objectives:** Foreign body (FB) ingestions in adults is uncommon, is usually intentional and mostly seen in prison inmates and psychiatric patients. Ingested sharp FB, including paper clips, can be associated with complications such as perforation and abscess. Surgical treatment is considered mandatory once abscess develops. But, surgical intervention in prisoners is advised to be avoided as it increases the risk for need of future surgeries and potential practice of self-mutilation of surgical wounds. We report a case of a pelvic abscess related to an ingested FB managed non-surgically.

**Case information:** A 42-year-old Caucasian male prisoner presented with abdominal pain. He has had history of multiple FB ingestions. His vital signs were normal. Exam with tender LLQ without peritoneal signs. Labs significant for WBC 12.7 k/ $\mu$ L. CT revealed a perforated sigmoid colon due to a linear metallic FB or two adjacent FBs and an associated 3.5 cm abscess. Patient reported ingesting a paperclip several months back. As the patient was stable and without peritoneal signs, decision was made by a multidisciplinary team to attempt endoscopic retrieval of the embedded FB. A transrectal drain was placed by IR to drain the pelvic abscess. Under anesthesia and fluoroscopy support, flexible sigmoidoscopy showed, at 25 cms from the anal verge, an embedded metal clip with two exit points into the lumen, adjacent to each other. Fluoroscopy showed the paperclip had bent into a U shape with the round end inside the abscess cavity and the two sharp ends protruding into the lumen. Using a rat tooth forceps, the distal sharp end of the clip was grasped and under fluoroscopic guidance the clip was removed requiring significant tension. Re-examination with cap assisted endoscopy showed no obvious colonic perforation. Fluoroscopy did not show any free air. Patient had an uneventful hospital course and was discharged on oral antibiotics with subsequent drain removal abscess resolution.

**Summary:** FB ingestions in adults is mostly intentional. About 10 to 20% require endoscopic intervention and 1% or less requires surgical intervention. In our case, the ingested elongated metallic paperclip had lodged in the sigmoid colon causing perforation and abscess which usually would have warranted surgery. We proceeded with minimally invasive interventions with successful endoscopic removal of the clip and drainage of abscess, avoiding surgery.

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## PV37

### TRANSJUGULAR LIVER BIOPSY CAUSING HEMOBILIA, ACUTE PANCREATITIS AND RARELY REPORTED HEMOCHOLECYSTITIS

N Golloi-Raju, H Khalid, M Rosenblatt, K Regan

**Learning Objectives:** Liver biopsy is a safe and effective tool in the evaluation of liver disease. Serious complications from liver biopsy are uncommon. Hemobilia occurs in less than 1% of patients and hemobilia related acute pancreatitis and hemocholecystitis are very rare. ERCP is warranted for biliary obstruction and its complications. Hemocholecystitis is due to thrombus obstructing the cystic duct. Diagnosing hemocholecystitis is challenging and often leads to a delay in initiation of appropriate treatment.

**Case Information:** A 56-year old Asian male with ESRD on dialysis presented with abdominal pain and melena. Three days before he had undergone a transjugular liver biopsy for evaluation of abnormal LFTs. Exam was significant for epigastric tenderness. Labs with Hb 10.4 gm/d, T Bili 1.1 mg/dL, ALP 307 U/L, AST 131 U/L, ALT 64 U/L, INR 1, and lipase 5069 U/L. CT showed distended gallbladder with a 3.8 cm ovoid debris within. EGD showed bulging papilla with no obvious luminal blood. Over the next few days, his Hb continued to slowly drop along with worsening LFTs. MRCP showed distended gallbladder with a large sludge ball within, 5mm CBD with mild narrowing of the common hepatic duct at the porta hepatis, and mild pancreatic head edema. Tagged RBC scan was negative. With continued worsening of LFTs and ongoing gradual decline in Hb, patient was suspected to have intermittent hemobilia and biliary obstruction. An ERCP showed bulging major papilla with a trace of blood at the orifice. Cholangiogram showed filling defects in the bile duct. Gallbladder was un-opacified except for a small portion of the cystic duct. Biliary sphincterotomy with balloon sweep of CBD removing blood clots was done. A plastic stent was placed in the CBD. Patient continued to have worsening RUQ pain with clinical suspicion for acute cholecystitis. He underwent laparoscopic cholecystectomy revealing an edematous and severely inflamed gallbladder. The gallbladder lumen contained bloody bile and blood clots. Microscopic examination of gallbladder revealed extensive wall necrosis and acute inflammation. Patient had an uneventful post-operative course.

**Summary:** Our patient presented after a liver biopsy with rare combination hemobilia, acute pancreatitis, and hemocholecystitis. Patient was successfully managed with supportive care, ERCP with sphincterotomy and biliary stent, and laparoscopic cholecystectomy.

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## PV38

### HEMOBILIA LEADING TO A DIAGNOSIS OF HEPATOCELLULAR CARCINOMA

N Golloi-Raju, S Jayananda, P Mudireddy

**Learning objectives:** Hemobilia from hepatocellular carcinoma (HCC) is rare and is usually noted in established cases of HCC after an invasive procedure. Hemobilia leading to a diagnosis of HCC is rarely reported. Hemobilia can present with serious complications including acute pancreatitis and cholangitis. ERCP is warranted in the management of hemobilia when biliary obstruction and its complications are evident. We describe an unusual case of hemobilia causing obstructive jaundice, cholangitis and pancreatitis with subsequent work up revealing HCC.

**Case information:** A 61 yr old Hispanic male presented with one day of abdominal pain, vomiting, and fevers. His PMH was significant for recent right portal vein thrombosis of unclear etiology and E coli sepsis for which he was on anticoagulation and antibiotics. Labs with WBC 15 k/ $\mu$ L, T. bili 15.2 mg/dL, ALP 704 U/L, lipase 3463 U/L, INR 2.7 and Hb 11.8 g/dL. CT revealed persistence of PVT, peripancreatic edema and fluid, and biliary dilation with CBD measuring 17mm with hyperdense material within suspicious for blood. ERCP with biliary sphincterotomy was performed. A long-organized clot was swept from the CBD confirming hemobilia. A covered metal stent was placed in the CBD for tamponade effect and to relieve the obstruction. A CT angiogram showed a focus of hypervascularity measuring 19 mm on arterial phase within hepatic segment 5 suspicious for a pseudoaneurysm. A subsequent arteriogram showed the right hepatic lesion to be a hypervascular lesion concerning for HCC with no apparent pseudoaneurysm or active extravasation. Serum AFP level was elevated at 653 ng/ml. Patient was diagnosed with HCC, which likely was the cause of his right PVT and subsequent hemobilia in the setting of anticoagulation. Patient had no prior history of cirrhosis, alcohol abuse, or family history of liver disease. His viral hepatitis panel was negative. Patient's hospital course was otherwise unremarkable. During subsequent follow up, he has continued to do well. He has declined liver transplant evaluation and is being evaluated for either transarterial chemoembolization or radiofrequency ablation.

**Summary:** HCC related hemobilia is usually reported in established HCC patients undergoing procedures. Hemobilia subsequently leading to a diagnosis of HCC is rarely reported. Hemobilia in HCC is a result of invasion of the biliary system by the hypervascular tumor.

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## PV39

### RIGHT ATRIAL THROMBUS: A DIAGNOSTIC AND THERAPEUTIC CHALLENGE IN SUB MASSIVE PULMONARY EMBOLISM

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**Learning Objectives:** Pulmonary Embolism (PE) is a common thromboembolic disease with high morbidity and mortality. It is a 3<sup>rd</sup> leading cause of death related to cardiovascular diseases. Computed Tomography Angiography (CTA) chest is considered a gold standard diagnostic tool for PE. Transthoracic Echocardiography (TTE) is not a part of recommended initial workup for PE to evaluate structural and functional status of right ventricle in haemodynamically stable patients. We present a case of large bilateral proximal PE and concomitant right atrial free-floating thrombus in a normotensive patient.

**Case Information:** 71 Years old male was transferred to our hospital following an episode of pre-syncope. He endorsed one-week history of exertional dyspnea. Lung exam was unremarkable, and he was hemodynamically stable. CTA chest revealed proximal large burden bilateral pulmonary emboli. TTE revealed a large snake-like thrombus in the right atrium, moving back and forth across the tricuspid valve into the right ventricle. It was associated with right atrial and ventricular dilatation. The Left Ventricular Ejection Fraction (LVEF) was preserved. Lower extremities Doppler Ultrasound was negative for Deep Vein Thrombosis (DVT). Laboratory workup was notable for elevated BNP (499pg/mL) and Troponin I (0.38 ng/mL). He was started on anticoagulation and subsequently underwent right atrial clot extraction and bilateral pulmonary embolectomy. Post operatively he had an uneventful hospital course and was discharged home on oral anticoagulation.

**Summary:** Right atrial thrombus (RAT) is an uncommon finding in patients with PE. The reported incidence in literature is about 3-3.5%. Patients with PE and concomitant RAT, independent of their hemodynamic status, have higher PE related mortality as compared to patients without RAT. Early detection and treatment via either thrombolysis or surgical embolectomy are important to improve survival in this patient population since reported mortality of untreated cases is up to 100%. Current data suggests that Echocardiography is superior to CTA chest for definite diagnosis of free-floating right heart thrombus and it needs to be strongly considered as an initial work up for all cases of pulmonary thromboembolic disease.

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## PV40

### A ROCK-SOLID LUNG MASS: A CASE OF RARE INFLAMMATORY MYOFIBROBLASTIC LUNG TUMOR WITH CHALLENGING DIAGNOSIS

P King, S Awadallah, M Sahebazamani

**Objectives:** Inflammatory myofibroblastic tumors (IMT) are extremely rare plasma cell tumors, with an increased frequency of appearance in the lungs. Lesions occur as solitary tumors, and lymph node involvement is extremely rare. Diagnosis is made through surgical excision, and non-surgical methods of confirming diagnosis including transthoracic biopsy is rarely diagnostic. We present a case of IMT with lymph node involvement, which was confirmed by transthoracic biopsy and endobronchial ultrasound (EBUS).

**Case Information:** A 63-year-old male presented with right neck swelling. A neck computed tomography (CT) scan revealed an abscess. He underwent chest CT for further evaluation, which revealed a 5x6 centimeter right upper lung mass with mediastinal lymphadenopathy. He underwent EBUS-guided mediastinal lymph node and transthoracic biopsy revealing atypical spindle cells on a background of inflammatory cells, including plasma cells. Immunohistochemical staining was positive for vimentin but negative for actin smooth muscle (SMA), CD 34, and desmin. A Positron Emission Tomography (PET) scan showed a PET-avid lesion in the right upper lobe and mediastinal lymph nodes. Vasculitis, connective tissue disease, and HIV studies were unremarkable. The patient then underwent mediastinoscopy, but the procedure was terminated due to intraoperative bleeding. The patient declined further procedures. All slides were submitted for further review. Staining for anaplastic lymphoma kinase (ALK)-1 was requested despite the negative SMA stain and was found to be positive. The diagnosis of Inflammatory Myofibroblastic Tumor (IMT) was made. The patient was not a candidate for surgical resection due to lymph node involvement.

**Summary:** IMTs are an extremely rare entity in adults. Lymph node involvement is an uncommon manifestation a finding that is critical as it resulted in a drastic alteration in management. Surgical resection remains the preferred diagnostic method. Notably, only 6.3% of IMT cases are diagnosed based on biopsy specimens alone, largely due to difficulty in sampling as these tumors are well collagenized. However, pursuing non-surgical means of obtaining a diagnosis may have a significant impact on those who are not surgical candidates, especially as data emerges on the efficacy of chemotherapeutic agents and ALK inhibitors.

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## PV41

### RARE CAUSE OF CHRONIC COUGH FROM PULMONARY AMYLOIDOSIS

BK Dunn, MR Bowling, CJ Anciano

**Introduction:** Pulmonary involvement is a rare manifestation of amyloidosis, is caused by extracellular tissue deposition of light chain (AL) immunoglobulin, kappa ( $\kappa$ ), lambda ( $\lambda$ ). Three subtypes: focal or diffuse tracheobronchial amyloidosis (most common), nodular parenchymal, diffuse parenchymal amyloidosis. We report a case of a man admitted for non-resolving and worsening cough.

**Case Presentation:** 45-year-old male former firefighter, history of Von Willebrand's disease, HSP, GERD, tobacco abuse. Presented with one year of shortness of breath, cough, progressing to stridorous cough, yellow sputum, fevers, chills and night sweats. In ED, vital signs and exam were normal, CT chest showed large endobronchial lesion above the carina extending into right upper lobe, containing fat, peripheral calcifications. Treated with antibiotics, prednisone, bronchodilators. Bronchoscopy showed tracheal deviation, large distal endotracheal mass above carina extending into right upper lobe. TBx from right mainstem bronchus showed benign squamous metaplasia, no malignancy identified. BAL normal respiratory flora. FVC 100%, FEV1 40%, DLCO 60%. Was transferred to tertiary center to thoracic surgery where repeat bronchoscopy showed large mass protruding left and right side of distal airways extending distally to bronchial, segmental airways with severe narrowing right upper lobe bronchus. Using CoreCath ablation, biopsies obtained, and mass was removed. Biopsies stained positive for Congo red and apple-green birefringence under polarized light, consistent with AL amyloidosis tracheobronchial amyloidosis (TBA). ANA, RF, ANCA, anti-cardiolipin, IgA, IgG, IgM negative. Serum electrophoresis: borderline hypogammaglobulinemia, essentially normal electrophoresis. Urine electrophoresis: no significant proteinuria, Bence-Jones proteins. Repeat bronchoscopy 4 weeks showed improvement of overall lumen of distal trachea.

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## PV42

### INHALANT REFRIGERANT EXPOSURE: AN UNLIKELY CAUSE OF FULMINANT HEART FAILURE

K Parikh, J Quinn, J Denis, A Mohan

**Introduction:** Hydrofluorcarbon (HFC)-134a is the main refrigerant used in automobile air conditioning systems. We report a case of a man who was admitted to our medical intensive care unit (ICU) after inhalational exposure to HFC-134a causing acute decompensated heart failure.

**Case Presentation:** A 47-year-old Caucasian male with no known history of heart disease presented to the Emergency Department (ED) with acute onset dyspnea. He reported associated nausea, vomiting and two inhalant exposure events while repairing the refrigerant tubing of his long-haul truck. He was fixing the tubing, but it disconnected, spraying inhalant directly on his face. In the ED, he was agitated, tachycardic and in respiratory distress. He was intubated and transferred to the ICU. Based on the chest x-ray and a brain natriuretic peptic of 39 pg/ml, the initial impression was felt to be acute respiratory distress from exposure pneumonitis. Due to his persistent tachycardia and hypertension, beta blocker therapy was initiated, but he shortly experienced a near total cardiac collapse and emergent echocardiogram (ECHO) revealed a markedly reduced ejection fraction (15%) with decreased right ventricular function and no valvular abnormalities. A prior 2013 ECHO and left heart catheterization was normal. At this point, he was treated for acute decompensated heart failure with goal directed therapy. His chest x-ray improved significantly, and he was eventually liberated from mechanical ventilation. A repeat ECHO done prior to discharge showed resolution of his heart failure with an ejection fraction of 70%. He has since been seen in outpatient follow up has returned to work sixty days after admission.

**Discussion:** In 1996, HFC-134a replaced Freon 12 (Dichlorodifluoromethane) due to the harmful effects on the ozone layer. While there have been limited human studies on the impact of HFC-134a, it is thought that the toxicity may be similar to that of other hydrofluorocarbons in a human model. Our case demonstrates the relationship between refrigerant inhalation and cardiotoxicity, and the importance of early recognition of this unlikely causality. To the best of our knowledge, ours is the first report on HFC-134a related to acute cardiac toxicity.

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