

26TH ANNUAL RESEARCH DAY MARCH 24-25, 2014

Oral and Poster Presentations
Marshall University Medical Center
Huntington, West Virginia

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This event is supported annually by educational grants from the following Endowments:

Roland H. Burns Memorial
Anagene Bartram Heiner Memorial
Thelma V. Owen Memorial
Richard J. Stevens Memorial

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No Faculty Disclosure or conflicts of interest are indicated for this CME activity.

Disclosure of Conflicts of Interest

Marshall University Joan C. Edwards School of Medicine (MUJCESOM) requires instructors, planners, managers and other individuals who are in a position to control the content of this activity to disclose any real or apparent conflict of interest they may have as related to the content of this activity. All identified real or apparent conflicts of interest are thoroughly reviewed and resolved by MUJCESOM's planning process for fair balance, scientific objectivity of studies mentioned in the materials or used as the basis of content, and appropriateness of patient care recommendations. Disclosure information will be presented verbally or in print to participants before presentation of the agenda lectures.

Completed faculty disclosure forms are on file in the CME Office.



Marshall University Joan C. Edwards School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

2014 PROGRAM

The program will consist of a series of oral and poster presentations highlighting basic and clinical research performed by School of Medicine students, residents and fellows. Please use pages 11 through 16, to locate presenters, their abstracts, presentation times and location of presentation. The complete agenda is available at <http://www.musom.marshall.edu> (research link)

INTENDED AUDIENCE

The 26th Annual Research Day is designed for physicians, residents, basic scientists, medical students, graduate students, and other interested health professionals.

GOALS

- 1) To involve faculty, medical and graduate students in the process required to formally present their research in either oral or poster presentations.
- 2) To inform and involve the community in ongoing research at Marshall University Joan C. Edwards School of Medicine.
- 3) To encourage the attitude among faculty, residents, and students for Continuing Medical Education in the area of clinical research.

GLOBAL LEARNING OBJECTIVES

By the end of these lectures the participant will be able to:

- 1) Compare different approaches to medical investigation.
- 2) Compare and contrast the importance of basic research and cellular mechanisms as it relates to human disease.
- 3) Discuss and review research related to current and future improvements in the clinical management of patients.
- 4) Interpret and analyze data for medical investigation to potentially determine the effectiveness towards improving patient care.
- 5) Stress the importance of translational research benefits to the basic scientist in support of the practicing physician.

CREDIT STATEMENT

Marshall University Joan C. Edwards School of Medicine designates this live educational activity for a maximum of 5.0 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity. (Session Registration and Evaluation are required).

EVALUATION FORM Completion

Please follow specific instructions for completing the bar coded evaluation form. Keep your "X's" in the bubbles and your written comments in the designated boxes. Your input is needed for planning future events.

ASSISTED SERVICES

If special arrangements are required for an individual with a disability to attend these events, please contact Continuing Medical Education at (304) 691-1770 no later than 1 week before the event date or See a CME Representative at the Registration Area on the day of the event.

PLANNING COMMITTEE - NO CONFLICTS INDICATED

David N. Bailey, MBA, Assistant Dean, CME

Todd Gress, MD, Assistant Dean,

Clinical Research and Associate Professor of Medicine

Richard Niles, PhD, Conference Chair, Professor & Chair

Department of Biochemistry and Microbiology,

Vice-Dean for Biomedical Sciences

Monica Valentovic, PhD, Professor,

Department of Pharmacology, Physiology and Toxicology

Brian Patton, Director, Digital Media Services

STAFF COORDINATORS - NO CONFLICTS INDICATED

Anita MathisBMS Coordination & Registration

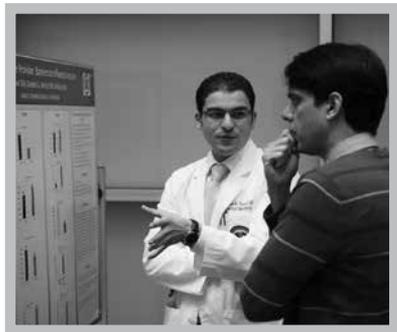
Patricia "Trish" MartinRegistration

Brian PattonWeb Publications, Online Abstract

Submission Form Design and Content

Retrieval, Judging tabulations summary

RESEARCH DAY



PAST INVITED LECTURERS

2013 - John J. Cannell, MD

Executive Director
Vitamin D Council
San Luis Obispo, CA
1) *The Use of Vitamin D in Clinical Practice*

2012 - William Thies, Ph.D.

Vice President, Medical Scientific Affairs
Alzheimer's Association
Chicago, IL
1) *Alzheimers Today and the Future*

2011 – Susan S. Smyth, MD, Ph.D.

Professor of Medicine
Director, MD/Ph.D. Program
University of Kentucky
1) *Cardiovascular Complications of Obesity*

2010 – Gregory Germino, MD

Deputy Director of the National Institute of Diabetes and Digestive & Kidney Disease (NIDDK) at the National Institutes of Health (NIH)
Bethesda, Maryland
1) *Dia-besity: converging problems, emerging science*

2008 – Gregory Alan Hale, MD

Associate Professor of Pediatrics
University of Tennessee
1) *Transplantation and Cellular Therapies: Current Research and Future Opportunities*
2) *An introduction to Hematopoietic Cell Transplantation*

2007 –Daniel D. Bikle, M.D., Ph.D.

Professor of Medicine and Dermatology
In residence University of California
1) *The skin game: Calcium and vitamin D regulated cellular differentiation*
2) *Vitamin D: how much do we need and why*

2006 - Mark E. Shirtliff, Ph.D.

Assistant Professor, Department of Biomedical Sciences
Dental School, University of Maryland-Baltimore
Baltimore, Maryland
1) *Staphylococcus aureus biofilms: in vitro and in vivo studies*

2006 - J. William Costerton, Ph.D.

Director & Professor, Center for Biofilms, School of Dentistry
University of Southern California
Los Angeles, California
1) *Biofilms in Device-related and other Chronic Bacterial Diseases*

PAST INVITED LECTURERS

2005 – William F. Balistreri, MD

Director, Gastroenterology
Cincinnati Children's Hospital Medical Center

- 1) *Inborn Errors of Bile Acid Biosynthesis*
- 2) *Viral Hepatitis 2005*

2004 – Joseph S. McLaughlin, MD

Professor Emeritus of Surgery
University of Maryland

- 1) *Traumatic Ruptured Aorta*
- 2) *Strange Tumor I Have Known*

2003 – W. Jackson Pledger, Ph.D.

Professor, Interdisciplinary Oncology
University of South Florida College of Medicine
Tampa, Florida

- 1) *Regulation of proliferation by cyclin dependent kinase*
- 2) *Functional genomics and cancer therapy*

2002 – Alan H. Jobe, M.D., Ph.D.

Professor of Pediatrics
Cincinnati Children's Hospital Medical Center
Cincinnati, Ohio

- 1) *Mechanisms of lung injury in the preterm*
- 2) *Translational research on lung maturation based on clinical observations*

2001 - Arnold Starr, M.D.

Director, Alzheimers' Research Center
Institute Brain Research of California, Irvine

- 1) *Hearing but not understanding: auditory nerve dysfunction in the presence of preserved cochlear receptors*
- 2) *Patients' stories and their seminal importance for research*

2000–Fredrick L. Brancati, M.D., M.H.S.

Associate Professor, Medicine and Epidemiology
John Hopkins Medical Institute

- 1) *Novel risk factors for type 2 diabetes mellitus and their implications for treatment*
- 2) *Prevention and clinical epidemiology in the new millennium*

1999 – Robert B. Belshe, MD

Director and Professor, Div. of Infectious Diseases and Immunology
St. Louis University

- 1) *Live attenuated influenza vaccine: using genetics to defeat the flu*
- 2) *Vaccines for the 21st century*

1998 – Jerome S. Brody, MD

Vice-Chairman of Medicine for Research, Professor of Medicine
Director, Pulmonary Center
Boston University School of Medicine

- 1) *Lung development: lesson from flies connections to cancer*
- 2) *Molecular approaches to the diagnosis of lung cancer*

PAST INVITED LECTURERS

1997 – Rochelle Hirschhorn, MD

Professor of Medicine, Department of Medicine
NYU School of Medicine

- 1) *Advances in defects in host defense*
- 2) *Reflection on the changing face of medicine*

1996 – Stuart F. Schlossman, MD

Baruj Benacerraf Professor of Medicine
Harvard Medical School

Chief, Division of Tumor Immunology
Dana-Barber Cancer Institute, Boston

- 1) *Human T-cell activation*
- 2) *What's in a name – cd nomenclature*

1995 – Frank M. Torti, MPH, MD, FACP

Director, Comprehensive Cancer Center
Professor Charles L. Spurr Professor of Medicine
Section Head for Hematology/Oncology, Wake Forest University
Chairman, Department of Cancer Biology
Bowman Gray School of Medicine

- 1) *New pathways for the regulation of iron*
- 2) *Popeye spinach and iron: the politics*

1994 – Abner Louis Notkins, MDB

Director, Intramural Research Program
Chief, Laboratory of Oral Medicine National Institute of Dental Research,
National Institutes of Health, Bethesda, MD

- 1) *Polyreactive antibody molecules and matter*
- 2) *The Bethesda experiment*

1993 – Erling Norrby, MD, Ph.D.

Dean of Research and Professor of Virology
Karolinska Institute, Department of Virology Sweden

- 1) *Immunization against HIV-2/SIV in monkeys*
- 2) *The selection of Nobel Prize winners*

1992 – Simon Karparkin, MD

Professor of Medicine
New York University School of Medicine

- 1) *Role of thrombin, integrins and oncogenes*
- 2) *How scientific discoveries are made*

1991 – Robert M. Chanock, MD

Chief, Laboratory of Infectious Diseases
National Institute of Allergy & Infectious Diseases
National Institutes of Health, Bethesda, MD

- 1) *Epidemiology, pathogenesis, therapy*
- 2) *New approaches to development of treatment plans*

PAST INVITED LECTURERS

1990 – Dewitt S. Goodman, MD

Director, Institute of Human Nutrition
Director, Arteriosclerosis Research Center
Tiden-Weger-Bieler Professor of Preventative Medicine
Professor of Medicine, Columbia University,
College of Physicians and Surgeons
Director, Division of Metabolism and Nutrition
Department of Medicine
Columbia-Presbyterian Medical Center, New York
Retinoid and retinoid-binding proteins

1989 – Michael A. Zasloff, MD, Ph.D.

Charles E.H. Upham, Prof of Pediatrics
University of Pennsylvania School of Medicine
Chief, Division of Human Genetics & Molecular Biology
The Children's Hospital of Philadelphia
1) *The flow of genetic information*
2) *Magainin peptides*

25TH RESEARCH DAY CONFERENCE PRESENTATION WINNERS

Basic Science

Yanling Yan (Winner)

Na/K-ATPase Signaling in Dahl R and S Rats; A potential for salt sensitivity

Miranda B. Carper (Finalist)

Investigation of RGS16 mediated inhibition of pancreatic cancer metastasis

Clinical Vignette

Douglas von Allmen (Winner)

Use of Polyflex Stents in Refractory Benign Esophageal Strictures

Jared Brownfield (Winner)

Ectopic Pregnancy in a previous cesarean section scar: case report

Aviral Roy (Finalist)

Cryptococcal Renal Invasion as a complication of disseminated cryptococcal disease in an AIDS patient

Ross Dechant (Finalist)

Wernicke's Encephalopathy in a patient following bariatric surgery

Kacey O'Malley (Finalist)

Diagnosis and treatment of anaplastic ependymoma in an infant

Jillian Douglas (Finalist)

Elevated PTH: True of false positive

Clinical Research

Jonathon Salava (Winner)

Constraining function as a means of reducing OR traffic

Jennifer Gerlach (Finalist)

Assessment of nurse satisfaction with bedside nurse presence at family centered rounds

ORAL WINNERS

Basic Science

M. Allison Wolf

Benzyl isothiocyanate enhances chemotherapy and reduces migration and invasion of head and neck squamous carcinoma cells

Clinical Research

Kelli Brown

Tic disorders and functional constipation as complicating conditions in children presenting for evaluation for attention deficit hyperactivity disorder

Education

Iliia Iliev

Teaching the millennial student: how well have the baby boomer/generation x teachers adapted in an academic orthopaedic department?

**RICHARD J. STEVENS, MD MEMORIAL LECTURE
MARCH 25, 2014, 11:30 AM - HARLESS AUDITORIUM
INVITED LECTURER**

"Breaking bad and Breaking good"



Jose S. Pulido, MD, MS, MBA, MPH
Professor of Ophthalmology and Molecular Medicine
Mayo Clinic College of Medicine
Associate in Neuro-oncology
Mayo Clinic Cancer Center
Rochester, MN

No Conflicts Indicated

Learning Objectives:

March 24, 2014 - 5:30 to 7:30 p.m.

The Topology of Blinding Eye Disease

1. to describe the difference in blinding eye diseases in the past and present
2. to describe the obstacles to decreasing the incidence of vision loss from the present eye diseases
3. to describe possible future causes of blinding eye diseases

March 25, 2014 - 11:30 a.m.

Breaking bad and Breaking good

1. to describe certain paraneoplastic eye diseases
2. to describe oncolytic viruses
3. to describe the use of oncolytic viruses to induce an immunogenic response

ABOUT THE RICHARD J. STEVENS, MD MEMORIAL LECTURE

The Richard J. Stevens, MD Memorial Lecture is supported annually by the family of Dr. Stevens. Dr. Stevens was an outstanding medical practitioner characterized by Dean Charles H. McKown, Jr., of the Marshall University Joan C. Edwards School of Medicine as a pioneer “who was never in a hurry but always on the move.”

Born in Portsmouth, Ohio, Dr. Stevens received his undergraduate degree from Marshall University, attended West Virginia School of Medicine for two years, then went on to earn his medical degree from Rush Medical School in Chicago.

Dr. Stevens returned to Huntington in 1941 as one of the first board certified practitioners in internal medicine in the area. He was a member of the Alpha Omega Alpha, the medical honorary, as well as gastroenterology and research societies.

Dr. Stevens was one of three physicians who first researched prothrombin testing for guidance in administering anticoagulants to patients with coronary occlusion.

Remembered as genuinely committed to his profession, his community and those around him, he had the unique ability to bring about a meeting of the minds among colleagues, patients and families.

The memorial lecture is presented each year at the Marshall University Joan C. Edwards School of Medicine’s Research Day. It was established by Dr. Steven’s wife, Dr. Sarah Louise Cockrell Stevens, and their seven children: Chari Louise Stevens Singleton, Mary Alice Stevens, Richard J. Stevens II, Johanna Stevens Holswade, Robert C. Stevens, and Randall C. Stevens.

List of Presenters' Abstracts

No apparent Conflicts of Interest as supported by Disclosure

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RESEARCH DAY AGENDA

MARCH 25, 2014

Specific learning objectives will be presented with each oral presentation.

Questions and answers encouraged throughout all sessions.

No apparent speaker conflicts indicated as supported by disclosure.

7:00AM Registration

8:00AM Welcome Joseph I. Shapiro, MD, Dean

8:15AM Opening Remarks Richard Niles, PhD, Vice Dean and Chair

ORAL SESSION 1 - Page 21

Time	Format	Presentation Order	Name/Abstract Title	Department
8:30AM	Oral	1	Christopher Adams <i>Perivascular Fat Relation to Hypertension: WV-Appalachian Heart Study</i>	Cardiovascular Medicine
8:42AM	Oral	2	Rounak Nande <i>Vitamin C increases the potential therapeutic benefit of mda7 gene therapy in pancreatic cancer</i>	Department of Biochemistry and Microbiology
8:54AM	Oral	3	Sarah Johnson, Shayne Gue <i>Substance Abuse in Adult Trauma Patients in Appalachia</i>	Department of Emergency Medicine
9:06AM	Oral	4	Sarah Mathis <i>Chemo-predictive assay for patients with primary brain tumors</i>	Department of Biochemistry and Microbiology
9:18AM	Oral	5	Tilahun Belay <i>Intrahepatic Cholestasis of Pregnancy in HCV Infection</i>	Department of Internal Medicine
9:30AM	Oral	6	M. Allison Wolf <i>Benzyl Isothiocyanate Sensitizes HnscC Cells To Cisplatin, And Inhibits HnscC Cell Migration And Invasion</i>	Department of Biochemistry and Microbiology

9:45AM BREAK

POSTER SESSION 1, PAGE 47 - ATRIUM

ORAL SESSION II - Page 29

10:30AM	Oral	7	Rezwan Ahmed <i>Using Capsule Endoscopy to Determine the Diagnostic Yield in Patients with Obscure GI Bleeding in an Academic Affiliated Hospital in West Virginia</i>	Department of Internal Medicine
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RESEARCH DAY AGENDA

10:42AM	Oral	8	Adam P. Fischer	Department of Biochemistry and Microbiology
<i>Tetracycline antibiotics and tamoxifen induce apoptosis in MCF7 by disrupting mitochondrial translation</i>				

10:54AM	Oral	9	Alaa Gabi	Department of Internal Medicine
<i>Heightened Anti-inflammatory Interleukin-10 Cellular Response to Cardiac Troponin I Is Associated with Better Patient-Reported Health Status in Patients with Chronic Systolic Heart Failure</i>				

11:06AM	Oral	10	Miranda Carper	Department of Biochemistry and Microbiology
<i>Regulation of pancreatic cancer cell migration and invasion by RGS16</i>				

11:18AM	Oral	11	Allison Hamilton	Department of Obstetrics and Gynecology
<i>Umbilical Cord Buprenorphine Tissue Levels and Neonatal Abstinence Syndrome</i>				

11:30AM

Guest Speaker Jose S. Pulido, MD
 Mayo Clinic -Rochester, MN
BREAKING BAD AND BREAKING GOOD (Page 11)

12:40PM BOX LUNCH

ORAL SESSION III - Page 35

1:15PM	Oral	12	Kristeena Ray	Department of Pharmacology, Physiology and Toxicology
<i>MicroRNAs serve as potential potential regulators of endometriosis-associated pain</i>				

1:27PM	Oral	13	Jesse N. Cottrell	Department of Obstetrics and Gynecology
<i>Fetal Vitamin D Levels at Parturition: Does location matter?</i>				

1:39PM	Oral	14	Yanling Yan	Department of Pharmacology, Physiology and Toxicology
<i>Overstimulation of Redox-Sensitive Na/K-ATPase Signaling Contributes to Salt Sensitivity</i>				

RESEARCH DAY AGENDA

ORAL SESSION III - Page 35

Time	Format	Presentation Order	Name/Abstract Title	Department
1:51PM	Oral	15	Rebecca Hayes <i>Effect of Brief Physical Activity Program on Physical Fitness of Elementary School Students</i>	Department of Pediatrics
2:03PM	Oral	16	Michael Wright <i>S-Adenosyl-L-Methionine Reduces Acetaminophen Hepatic Toxicity, Hepatic Mitochondrial Protein Carbonylation and Nitrosylation of Manganese Superoxide Dismutase</i>	Department of Pharmacology, Physiology and Toxicology

2:30PM BREAK **Poster Session 2, Page 79 - Atrium**

ORAL SESSION IV - Page 41

3:15PM	Oral	17	Jodi Pitsenbarger <i>Total Postnatal Opiate Exposure Using Two Different Weaning Methods in Infants with Neonatal Abstinence Syndrome</i>	Department of Pediatrics
3:27PM	Oral	18	Shea Goodrich <i>After-Hours Pediatric Care Compared to Emergency Department Care: A Retrospective Cost Analysis</i>	Department of Pediatrics
3:39PM	Oral	19	Heather Saffel <i>Incidence and Functional Outcome of Nonoperative Management of Displaced Oblique Spiral Fractures of the Fifth Metatarsal Shaft (Dancer's Fracture).</i>	Rothman Institute of Orthopaedics
3:51PM	Oral	20	Philip Riley IV <i>Should All Cardiology Patients Be On a Multivitamin?</i>	Department of Internal Medicine

4:30PM Research Day Awards Presentation - Harless Auditorium

RESEARCH DAY AGENDA

9:45AM - 10:30AM

POSTER PRESENTATIONS SESSION 1 - ATRIUM - PAGE 47

No.	Name/Abstract Title	Dept	Category
1	Sumaiya Chaudhry <i>Incorporating sensory signals of substrate grip/adherence in force control</i>	Anatomy and Pathology	Basic Science
2	Caroline Hunter <i>Mitochondrial Elongation Factor Tu: Translational Regulation by Phosphorylation</i>	Department of Biochemistry and Microbiology	Basic Science
3	Yanling Yan <i>The Involvement of the Na/K-ATPase in HO-1 Induction by Ouabain and CoPP</i>	Dept of Pharmacology, Physiology and Toxicology	Basic Science
4	Yanal Masannat <i>A Case Of Nephrogenic Di After 6 Years Of Cessation Of Lithium Therapy</i>	Department of Internal Medicine, Division of Endocrinology	Case Study
5	Arifa Khokar <i>23 year old 16 week pregnant female with radial artery embolism from intravenous drug abuse</i>	Department of Obstetrics and Gynecology	Case Study
6	Bakri Alzarka <i>A case of atypical presentation of SLE complicated with posterior reversible encephalopathy syndrome in an adolescent patient</i>	Department of Pediatrics	Case Study
7	Andrea Lauffer <i>A Case of Exposure to Raccoon Feces Contaminated with Baylisascaris Procyonis</i>	Department of Pediatrics	Case Study
8	Susan Lopata <i>A Case of Hyperbilirubinemia, Non Immune Hemolysis and Decreased RBC Production in a 13 Day Old</i>	Department of Pediatrics	Case Study
9	Osiyemi Osinowo <i>A Case of Post Cholecystectomy Gall bladder Remnant Syndrome</i>	Department of Internal Medicine	Case Study
10	Richmond Gyamfi <i>A Case of Primary Hyperparathyroidism in Pregnancy- Challenges in management in late third trimester</i>	Department of Internal Medicine, Division of Endocrinology	Case Study
11	John Liu <i>A Case Presentation of Phlegmasia Cerulea Dolens</i>	Department of Internal Medicine	Case Study
12	Haitem Muafa <i>A Case Study Illustrating the Rare Development of a Liver Hematoma after Percutaneous CT-guided Liver Biopsy</i>	Department of Internal Medicine	Case Study
13	Olajide Omolara A <i>A Case Curious Case Of Hypotension</i>	Department of Internal Medicine	Case Study
14	Basel Katerji <i>A Case Rare Case of Familial Periodic Hypokalemic Paralysis in 2 Year-old Patient</i>	Department of Pediatrics	Case Study
15	Basel katerji <i>Rare case of Group A streptococcus (GAS) resistant for out patient treatment with oral azithromycin and clindamycin</i>	Department of Pediatrics	Case Study
16	Maali M Milhem <i>A Case Rare Case of Papillary Thyroid Cancer Arising In Struma Ovarii</i>	Department of Internal Medicine	Case Study
17	Haytham Aljoudi <i>Acute MI with severe diffuse coronary and systematic aneurysms, what is the treatment of choice?</i>	Cardiovascular Medicine	Case Study
18	Lawrence M. Wyner <i>All Out: The Inglorious End of "Buckyballs"</i>	Department of Surgery	Case Study
19	M. Adeel Mahmood <i>An Atypical Presentation of Adrenal Insufficiency in Pregnancy as Recurrent Abdominal Pain</i>	Department of Internal Medicine, Division of Endocrinology	Case Study
20	Andrea Lauffer <i>An Internist's Med-Peds Surprise: A Case of Unexplained New Onset Broca's Aphasia</i>	Department of Internal Medicine	Case Study
21	Ross DeChant <i>Breast Enlargement Following AICD Placement</i>	Department of Internal Medicine	Case Study

RESEARCH DAY AGENDA

No.	Name/Abstract Title	Dept	Category
22	O.A Irvibogbe Case Report of Twiddler's Syndrome in pregnancy	Departments of Cardiovascular Medicine and Internal Medicine	Case Study
23	Melissa A. Rowe Chronic Kidney Disease in a Pregnant Patient: A Case Report	Department of Obstetrics and Gynecology	Case Study
24	Maali Milhem Denosumab Use in Patient with Bisphosphonate-Resistant Hypercalcemia of Malignancy	Department of Internal Medicine	Case Study
25	Stephen Roy Dieulafoy's Lesions, A Case Series	Department of Internal Medicine	Case Study
26	Sangeeta Chandramahanti Dyslipidemia in Suspected Primary Biliary Cirrhosis	Department of Internal Medicine, Division of Endocrinology	Case Study
27	Muhammad Waqas Giant Left Circumflex artery fistula draining into Superior Vena Cava	Cardiovascular Medicine	Case Study
28	Jai Kumar Khatri Granulomatous Inflammation As An Unusual Cause Of Of Acute Respiratory Distress Syndrome(Ards)	Department of Internal Medicine	Case Study
29	Ebrahim Sabbagh I can't walk!!: Acute Paraplegia Secondary to Ankylosing Spondylitis.	Department of Internal Medicine	Case Study
30	Sangeeta Chandramahanti Management of Hyperthyroidism in Neutropenia: A case of Graves disease in multiple myeloma	Department of Internal Medicine, Division of Endocrinology	Case Study

2:30PM - 3:15PM

POSTER PRESENTATIONS SESSION 2 - ATRIUM - PAGE 79

31	Lisa Carey Myasthenia Gravis In The Elderly: Diagnosis Enigma	Department of Medicine/Pediatrics	Case Study
32	Yousef Hattab Non-Hodgkin's lymphoma with pleural and abdominal chylous effusions	Department of Internal Medicine, Division of Pulmonary Medicine	Case Study-
33	James David Perry III Not the Typical Lung Nodule	Department of Internal Medicine, Division of Pulmonary Medicine	Case Study
34	Jill Goodwin Posterior Tibial Tendon Dislocation: A Case Report	Department of Orthopaedic Surgery	Case Study
35	Samhar Alali Pott's Puffy Tumor: Not really a tumor!	Department of Pediatrics	Case Study
36	Brian Kilgore Primary Gastric Burkitt Lymphoma (in situ) in a Teenage Male	Department of Medicine/Pediatrics	Case Study
37	Eric Riley Primary Intestinal Lymphangiectasia In a Patient with 6q Duplication Syndrome	Department of Internal Medicine, Division of Gastroenterology	Case Study
38	Jason P. Mader Prochlorperazine, A Rare Cause of Neuroleptic Malignant Syndrome	Department of Internal Medicine	Case Study
39	Mounif Rifkah Selective Case Study Describing the Use of Apligraf® on Necrobiosis Lipoidica Associated with Diabetes	Dermatology and Podiatry	Case Study

RESEARCH DAY AGENDA

No.	Name/Abstract Title	Dept	Category
40	Jai Kumar Khatri Spontaneous Infected Biloma Managed by percutaneous Drainage Followed by ERCP due to Persistent Bile Leak	Department of Internal Medicine, Division of Gastroenterology	Case Study
41	Yousuf E Elgaried Stenotrophomonas maltophilia endocarditis of Mitral Valve	Department of Internal Medicine	Case Study
42	Brian Kilgore Thrombotic Thrombocytopenic Purpura Presenting in Pregnancy after IV Oxycontin (OP-40) Use	Department of Medicine/Pediatrics	Case Study
43	Vikrant Agrawal Thyroid Storm And Its Rare Complication: Thrombocytopenia	Department of Internal Medicine	Case Study
44	Jacob Kilgore Transient Vision Loss in a Chronically Noncompliant, Subtherapeutic INR Patient	Department of Medicine/Pediatrics	Case Study
45	Mostafa Shalaby Unilateral Hyperlucent Lung in a Teenager	Department of Internal Medicine, Division of Pulmonary Medicine	Case Study
46	Matthew Snyder An Educational Model for School Personnel Response to School Shootings	Department of Surgery	Clinical Science
47	Jennifer K. Gerlach Assessment Of Nurse Satisfaction With Bedside Nurse Presence At Family Centered Rounds	Department of Pediatrics	Clinical Science
48	Mohammad Mozayen Delaying Chemotherapy in the Treatment of Stage IV Non-Small Cell Lung Cancer Does Not Adversely Affect Survival Outcome.	Department of Oncology	Clinical Science
49	Rebecca Hayes Development of Phone Application for Congestive Heart Failure Patients in a Rural Setting	Department of Internal Medicine	Clinical Science
50	Zachary Sanford E cigarettes: an up to date review and discussion of the controversy	Department of Internal Medicine	Clinical Science
51	Bakri Alzarka Hematologic manifestations associated with Influenza infection in children.	Department of Pediatrics	Clinical Science
52	Farah Al Khitan Homocysteine, An Independent Risk factor for Essential Hypertension	Cardiovascular Medicine	Clinical Science
53	Mohammad Halaibeh Impact of School-Sponsored Research Day at West Virginia's Allopathic Medical Schools	Department of Orthopaedic Surgery	Clinical Science
54	Khalid Al Katranji Importance of insulin boluses and blood glucose checks in patients on insulin pumps	Department of Pediatrics	Clinical Science
55	Ashleigh Clickett Pathological analysis of hysterectomy specimens following prior endometrium ablation: identification of risk factors for abnormal pathology and need for hysterectomy	Department of Obstetrics and Gynecology	Clinical Science
56	Elke Fahrmann Resting Heart Rate, Heart Rate Variability and Mild Hypoglycemia during the Diabetes Control and Complications Trial and Follow-up Study (DCCT/EDIC).	Department of Internal Medicine	Clinical Science
57	Heidi Michael Retrospective analysis of patients entering the Maternal Addiction and Recovery Center (MARC) program evaluating pregnancy and neonatal outcomes	Department of Obstetrics and Gynecology	Clinical Science
58	Atef Hassan El Gassier Stress Induced Cardiomyopathy, a Case Series	Department of Internal Medicine	Clinical Science
59	Indira Bhavsar, Nafeeza Hussain The challenges of exploring the impact of genogram construction on an Appalachian extended family's health consciousness	Department of Community & Family Health	Clinical Science
60	Ashley Litchfield Type I Diabetes in Children and Vitamin D: A Systematic Review	Department of Pediatrics	Clinical Science
61	Laura Wilson Withdrawing into Society: Characteristics of Neonatal Abstinence Syndrome on Final Day of Admission	Department of Pediatrics	Clinical Science





ORAL SESSION I • 8:30 AM – 9:30 AM

**26TH ANNUAL
RESEARCH DAY
ORAL SESSION**

Perivascular Fat Relation to Hypertension:

WV-Appalachian Heart Study

Christopher Adams, MD., Carla Cook, BS., Todd Gress, MD., MPH,
Nepal Chowdhury, MD., Paulette Wehner, MD.,
Nalini Santanam, PhD, MPH.

Dept. Medicine (Cardiology); Dept. Pharmacology, Physiology, &
Toxicology, Dept. Cardiothoracic Surgery, Joan C Edwards
School of Medicine, Marshall University, Huntington, WV

Obesity levels have increased alarmingly in the Appalachian Region. This has resulted in an increase in the incidence of hypertension, hyperlipidemia and Type 2 diabetes in this region. Adipose tissue plays an important role in these diseases. Perivascular fat (PVF) that surrounds the heart and vasculature has an immediate paracrine and autocrine effect on cardiac and vascular function. Increase in body weight increases both PVF size and inflammatory milieu, thereby altering its ability to regulate vascular function. Anti-contractile factors released by PVF plays a role in vasodilation. The objective of this study was to investigate if changes in PVF size and secreted factors correlate with presence of hypertension in patients undergoing coronary artery by-pass graft (CABG) surgery.

We recruited men and women (n=30/sex; ages 30-80 yrs) with coronary artery disease undergoing CABG surgery at St. Mary's Heart Center, Huntington, WV (IRB approved). At the time of surgery, blood, PVF and subcutaneous fat (SF) were obtained after consent. PVF size was determined using non invasive 2D Transthoracic Echocardiogram. Gene expression analysis of adipose derived factors in the PVF and SF was determined using quantitative PCR. In addition circulating levels of inflammatory factors and adipokines were determined. PVF size (ECHO) and biochemical parameters were correlated to clinical endpoints obtained from the Society of Thoracic Surgery database.

Rank sum Mann Whitney analysis showed sex differences in PVF size within patients with CAD. A significant correlation was observed between PVF size and BMI. Gene expression of adiponectin and PPAR γ (anti-inflammatory) were lower but pro-inflammatory markers CX3CL1 and CCL22 were higher in the PVF of patients with hypertension compared to normotensive patients.

PVF size correlated positively with BMI and expression of pro-inflammatory markers CX3CL1 and CCL22 correlated with hypertension.

Vitamin C increases the potential therapeutic benefit of mda7 gene therapy in pancreatic cancer

Rounak Nande, Pier Paolo Claudio
Biochemistry and Microbiology, Surgery

Pancreatic cancer is still one of the most deadly cancers in spite of recent improvements in conventional treatment modalities. Pancreatic cancer hallmarks are several molecular changes in cell cycle proteins such as p53, p16, and K-RAS that hamper treatment options resulting in chemo- and radio-resistance. A well-established immunomodulatory/pro-apoptotic cytokine gene used in gene therapy, the mda-7 (melanoma differentiation associated gene)/IL-24 (interleukin-24) gene, has been found universally toxic to human cancers. However, pancreatic cancer has an inherent resistance to mda-7 due to “protein translational block” which prevents the induction of apoptosis. This mechanism has been shown associated with the expression and mutation of K-RAS (Kirstein rat sarcoma), which is found in 90-95% of pancreatic carcinoma.

Several studies have acknowledged that inducers of reactive oxygen species (ROS) can reverse protein translation block. We tested the possibility of sensitizing normally resistant pancreatic cancer cells with ionizing radiation and pharmacological ascorbate (ascorbic acid, vitamin C), which induces the expression of reactive oxygen species (ROS), to reverse the translational block against adenoviral transcription of mda-7. Neutral red assay was used to assess the viability of BxPC3, AsPC1 and Panc1 pancreatic cancer cell lines with differentially expressed K-RAS to pre-treatment with ionizing radiation and/or ascorbate before adenoviral exogenous transcription of mda7. Further studies are required to quantify and analyze the cell death of these pancreatic cell lines after treatment and to confirm the increase of ROS and subsequent reversal of translational block for mda7.

All preliminary studies suggest that mda7/ascorbate treatments were able to reduce the viability of pancreatic cancer cell regardless of expression of K-RAS indicating a possible reversal of the mda7 translational block. Limitations in therapeutic mda7 transcription and translation could thus be circumvented by the presence of a non-toxic nutrient such as vitamin C, leading to potential therapeutic benefits in mda7 refractory cancers.

Substance Abuse in Adult Trauma Patients in Appalachia

Shayne M. Gue, Sarah E. Johnson, and P. Mitchell Charles
Department of Emergency Medicine, Marshall University
Joan C. Edwards School of Medicine, Huntington, WV

Recent studies have shown that substance abuse in adult trauma patients is widespread. However, the literature is lacking in respect to data pertaining to Appalachia. This study was conducted to determine the prevalence and association of alcohol and drugs of abuse in adult trauma patients presenting to a regional emergency department in a Level-II trauma center in Appalachia.

A retrospective chart review was conducted of patients seen over a 12-month period designated as trauma who were also at least 18 on the day of evaluation. Certain portions of their records--their financial account number, date of admission, age, sex, mode of transport to the ED, mechanism of injury, and BAC and urine toxicology status and results--were obtained from the Trauma Services department and reviewed for type of substance(s) found and mechanism of injury. Testing was at the discretion of the attending physician, and blood alcohol concentrations and urine toxicology screens were performed on an ADVIA 1800® Clinical Chemistry System. A standard screen included detection of amphetamines, barbiturates, benzodiazepines, cannabinoids, opiates, cocaine, and phencyclidine.

A total of 1177 patients (mean age, 45.3 years) were evaluated for trauma-related injuries. 819 were subjected to blood alcohol concentration measurement, and 510 were subjected to urine drug screen. Of the 819 tested for BAC, 181 (22.1%) were positive. Of the 510 subjected to urine screening, 391 (76.7%) were positive for at least one substance, and 211 (41.4%) were positive for multiple substances. The most common substances detected were opiates. More patients (882) were evaluated for blunt trauma than penetrating injuries (74).

A significant number of patients in our Appalachian facility evaluated for trauma-related injuries had a toxicology screen positive for alcohol and/or drugs of abuse. A urine toxicology and BAC screening should be standard laboratory testing in patients evaluated as a result of trauma.

Chemo-predictive assay for patients with primary brain tumors

Sarah E. Mathis, Walter Neto, Anthony Alberico, Terrence D. Julien,
Rida S Mazagri, Rounak Nande, Logan Lawrence,
Danielle R. McCallister, James Denvir, Gerrit A. Kimmey, Mark Mogul,
Aneel Chowdhary, Maria Tirona, Mohamad Khasawneh, Toni Pacioles,
Gerard Oakley III, Krista L. Denning, Thomas Dougherty, Linda Brown,
Jagan V. Valluri, Pier Paolo Claudio
Departments of Biochemistry and Microbiology, Neurosurgery,
Pediatrics, Medical Oncology, Pathology, and Surgery, Edwards Cancer
Center, Joan C. Edwards School of Medicine, Marshall University.

Cancer stem-like cells (CSLCs) in primary brain tumors can resist certain chemotherapies, thereby causing relapse of the disease. Thus, development of a test that identifies the most effective chemotherapy management offers great promise for personalized anticancer treatments. We have developed an ex vivo chemosensitivity assay (ChemolD®) designed to predict the sensitivity and resistance of CSLCs and bulk of tumor cells of a given patient's solid tumor to a variety of chemotherapy agents by measuring cellular viability following chemotherapy treatments at clinically relevant doses. In a retrospective study of 7 patients with malignancies of the central nervous system (2 Ependymoma Grade III, 4 Glioblastoma Grade IV, and 1 Medulloblastoma), we assessed the accuracy of the ChemolD® assay by comparing the results to the actual clinical response. Tumors were classified as responsive (60-100% cell kill), intermediately responsive (30-60% cell kill), and non-responsive (0-30% cell kill) to chemotherapy. Treatment selection was blinded to assay results. MRI and CT scan determined response to therapy. Additionally, the effectiveness of the ex vivo ChemolD® predicted drugs and clinical response was compared to the response of patients' derived xenografts treated with the most effective and least effective ChemolD® predicted drugs.

The ChemolD assay performed on the tumor bulk produced a correct prediction in 7 out of 7 cases ($p=0.02857$, Fisher's Exact Test; PPV=100% (3/3), NPV=100% (4/4)) when compared to the drugs received. Results from an animal study conducted using tumor xenografts derived from 3 patients' biopsies were also found in agreement with the clinical outcomes. An assay such as ChemolD® that measures cell death of CSLCs and bulk of tumor cells appears to be beneficial in the ex vivo selection of specific standard-of-care chemotherapy agents for malignancies of the central nervous system.

Intrahepatic Cholestasis of Pregnancy in HCV Infection

Tilahun Belay, MD, MPH, Hailegiorgiorgis Woldegiorgis, MD,

Todd W Gress MD, MPH, and Yaser Rayyan, MD,

Department of Internal Medicine, Marshall University, Huntington, WV

Intrahepatic cholestasis of pregnancy (ICP) is a disease characterized by elevation of bile acids and itching. The incidence of ICP has varied widely (ranging from 0.1 to 15.6 percent). It has been observed more commonly among hepatitis C virus (HCV)-infected women. The aim of our study was to examine clinical characteristics of pregnant woman HCV infection and ICP.

We reviewed records of pregnant women 18 to 45 years of age with a diagnosis of HCV and/or ICP seen between Jan 2007 and May 2013. A diagnosis of HCV infection was based on the presence of serum HCV antibodies and/or a positive serum HCV polymerase chain reaction (PCR). A diagnosis of ICP was based on the clinical presentation, liver function tests, and bile-salt levels.

There were 98 pregnant woman with a diagnosis of either HCV or ICP. There were 91 woman with HCV and 45% (N=41) of these had a diagnosis of ICP. Conversely, among 47 woman with ICP, 87% (N=41) had a diagnosis of HCV. Median age was 26 for HCV patients with and without ICP ($p=0.56$). Age (median 26), gestational age (31.5 weeks), parity (2.5 pregnancies/person), and history of injection drug use (68%) were similar for women with HCV with and without ICP (all $p>0.05$). HCV-PCR was available for 76 woman with HCV. Of these, median levels of HCV were higher among patients with ICP compared to those without ICP (495K vs. 8k; $p<0.001$). Median total charges were \$12,753 for HCV patients with ICP and \$8,970 for HCV patients without ICP ($p=0.01$).

Most woman in our institution with a diagnosis of ICP also have underlying HCV infection. Women with both HCV and ICP have a much higher viral load compared to women with HCV only. Our results suggest that woman suspected of having ICP should be tested for HCV.

Benzyl Isothiocyanate Sensitizes Hnscc Cells To Cisplatin, And Inhibits Hnscc Cell Migration And Invasion

M. Allison Wolf and Pier Paolo Claudio

Department of Biochemistry and Microbiology, McKown Translational
Genomic Research Institute, Joan C. Edwards School of Medicine,
Huntington, WV

Despite recent improvements in cancer treatment, overall survival of advanced head and neck squamous cell carcinoma (HNSCC) has not improved in the past three decades. Metastasis and chemoresistance represent two detrimental events that greatly hinder the outcome for those suffering with HNSCC. Consequently, the need for new therapeutic options to enhance survival of patients with advanced HNSCC is needed. Benzyl isothiocyanate (BITC), a natural compound found in cruciferous vegetables, is showing promising results in targeting chemoresistant and metastatic HNSCC cell lines.

MTT assay and trypan blue dead/live assay were used to assess changes in HNSCC cell viability. An Annexin-V assay was used to measure apoptosis induction. Immunofluorescence and Western blot analysis allowed for examination of vimentin expression. A wound-healing and Boyden chamber invasion assay were utilized to determine changes in cell migration and invasion.

Our data suggests that treatment with BITC significantly reduced the viability of multiple HNSCC cell lines tested (HN12, HN8, and HN30) after 24 and 48 hours. When compared to either BITC or cisplatin treatment alone, the reduction in HNSCC cell viability was greater if a pretreatment of BITC was followed by a treatment of cisplatin. BITC treatment also decreased migration and invasion of the HN12 cell line in a dose dependent manner. Additionally, the expression of the epithelial-mesenchymal transition (EMT) marker, vimentin, in the HN12 cell line was significantly reduced after a BITC treatment. We also observed that BITC significantly increased the amount of reactive oxygen species (ROS) in HNSCC cells. Blocking BITC induced ROS with catalase and NAC significantly inhibited BITC's ability to inhibit cellular migration.

Taken together these data suggest that BITC has the capacity to inhibit processes involved in metastasis and enhance the effectiveness of chemotherapy. Consequently, the results indicate that further investigation, including in vivo studies, are warranted.



ORAL SESSION II • 10:30 AM – 11:30 AM

**26TH ANNUAL
RESEARCH DAY
ORAL SESSION**

Using Capsule Endoscopy to Determine the Diagnostic Yield in Patients with Obscure GI Bleeding in an Academic Affiliated Hospital in West Virginia

Rezwan Ahmed, Neha Goyal, John Davitt, Yaser Rayyan
Department of Internal Medicine, Department of Gastroenterology

Capsule endoscopy (CE) allows for visualization of the small bowel and can be used to investigate patients with obscure gastrointestinal bleeding. It can be used to detect regional enteritis, vascular malformations, and neoplastic processes. The objective of our study was to determine the diagnostic yield of CE in an academically affiliated hospital in West Virginia.

A retrospective chart review of 200 patients that underwent a CE study between January 1, 2007 and December 30, 2012 was conducted. Our study sample included 92 males and 108 females, with a mean age of 56 years. The major indications for CE study were iron deficiency anemia (IDA), melena, and positive fecal occult blood test (FOBT), diarrhea, and IBD. The patients with IDA, melena, and positive FOBT were combined to calculate the diagnostic yield for obscure gastrointestinal bleeding.

Out of the 200 studies performed, 86 capsule studies were normal and the other 114 studies demonstrated findings that weren't otherwise detected by traditional scoping modalities. Positive findings included ulcers, tumors, and arteriovenous malformations. In our analysis, we saw that CE identified 39/92 patients with IDA, a diagnostic yield of 42.4%. For patient with melena and positive fecal occult blood test, CE attributed a source of bleeding in 30/68 patients, or 44.1%. Overall, when combined, the diagnostic yield for obscure GI bleeding was 43.1%. The complication rate due to capsule retention was 6.5% for our study.

CE is a useful imaging modality to detect a variety of gastrointestinal pathologies. It serves an important role to diagnose disorders of the stomach, small bowel, and colon. Although our diagnostic yield using CE was 43.1% for patients with obscure gastrointestinal bleeding, our data is consistent with the reported literature and supports the role of CE as the minimally invasive gold standard investigation for small bowel imaging.

Tetracycline antibiotics and tamoxifen induce apoptosis in MCF7 by disrupting mitochondrial translation

Adam P. Fischer, Hasan Koc, Emine C. Koc

Department of Biochemistry and Microbiology, Marshall University
School of Medicine, Huntington, WV 25755

Mitochondria are essential components of eukaryotic cells. They are responsible for several key cellular processes including energy metabolism and the regulation of apoptosis. The role of mitochondria in the cell makes their function or dysfunction critical for the development of many metabolic diseases including Parkinson's disease, diabetes, and cancer. It has long been taught that oxidative phosphorylation (OXPHOS) is not a critical part of cancer cell metabolism. The Warburg Effect suggests that tumorigenic cells shift their energy metabolism away from OXPHOS and towards a predominantly glycolytic state. The importance of mitochondria in cancer cells has been considered to be minimal; however, recent evidence shows that mitochondrial metabolism is needed for providing certain metabolites for the survival of cancer cells. In the pursuit of more effective cancer therapies, drug combinations have been used to successfully treat certain cancers. Unfortunately, the combined toxicity of two or more chemotherapeutic drugs cannot be tolerated by some patients. An increasing effort has been made to discover less harmful alternatives that are able to induce apoptosis in cancer cells. One possible combination is a treatment that targets mitochondria of cancer cells. Tetracycline derived antibiotics inhibit ribosomal function and, consequently, protein synthesis in bacteria. The homology shared between mammalian mitochondrial and bacterial translation would make mitochondria susceptible to tetracycline antibiotics. Our laboratory is currently investigating the use of tetracycline antibiotics chloramphenicol and minocycline in combination with the hormone therapy drug tamoxifen to treat breast cancer. Our hypothesis is that the combination of tetracycline antibiotics and tamoxifen will sensitize and/or induce apoptosis in MCF7 breast cancer cell line by inhibiting mitochondrial translation.

Heightened Anti-inflammatory Interleukin-10 Cellular Response to Cardiac Troponin I Is Associated with Better Patient-Reported Health Status in Patients with Chronic Systolic Heart Failure

Alaa Gabi MD, Kristen M. Westfall BS, Michael Finucan BS,
Anne C. Cotleur MS, Andres Schuster MD, W. H. Wilson Tang MD
Cleveland Clinic Foundation, Ohio.

Background: Interleukin-10 (IL-10) is an anti-inflammatory cytokine with a proposed role of inhibiting inflammation and attenuating the left ventricular remodeling after myocardial infarction. We have previously demonstrated the association between IL-10 cellular response to cardiac troponin I (cTnI) and lower high-sensitivity C-reactive protein in patients with dilated cardiomyopathy.

Methods: We prospectively measured pro-inflammatory tumor necrosis factor alpha (TNF-alpha) and anti-inflammatory IL-10 cellular response to cTnI with ELISpot assay in 51 consecutive ambulatory patients with chronic (>3 months) stable heart failure who were evaluated with the Kansas City Cardiomyopathy Questionnaire (KCCQ).

Results: In our study cohort (mean age 57 ± 9 years, 94% Caucasian, 55% male, 67% non-ischemic etiology), median KCCQ score was 83 [69-94]. Patients with above-median IL-10 responses to cTnI were associated with higher Clinical Summary KCCQ score than those with below-median IL-10 responses to cTnI (Figure). There was no significant difference between the two groups regarding LV ejection fraction, history of CAD, gender, or age. In contrast, median KCCQ scores were similar between those above- versus below-median TNF-alpha responses to cTnI (Figure).

Conclusion: Heightened anti-inflammatory IL-10 (but not pro-inflammatory TNF-alpha) cellular response to cTnI is associated with better patient-reported health status in patients with chronic systolic heart failure.

Regulation of pancreatic cancer cell migration and invasion by RGS16

Miranda B. Carper^{1, 2}, and Pier Paolo Claudio^{1,2,3}

¹Department of Biochemistry and Microbiology, Marshall University, Huntington, WV 25755; ²McKown Translational Genomic Research Institute, Marshall University, Huntington, WV 25701; ³Department of Surgery, Joan C. Edwards School of Medicine, Marshall University, Huntington, WV 25701.

Pancreatic cancer is ranked as the fourth cause of cancer-related deaths in the United States with a five-year survival rate <5%. The majority of patients newly diagnosed with pancreatic cancer present with highly progressed and/or metastatic disease. Due to the aggressive nature of this cancer, new therapies are needed. A study aimed at identifying markers for pancreatic cancer metastasis found that Regulator of G protein Signaling 16 (RGS16) is downregulated in patients with lymph nodes metastasis compared to patients with non-lymph node metastasized pancreatic cancer. RGS16 belongs to a large family of proteins that play a role in swiftly shutting down G protein-coupled receptor pathways and is implicated in turning off signaling of several oncogene pathways that are involved in proliferation, migration, and invasion of cancer cells. Currently, it is unknown what role RGS16 may play in pancreatic cancer. The aim of this study is to determine the role of RGS16 in pancreatic cancer cell migration and invasion.

In order to investigate the role of RGS16 in inhibiting pancreatic cancer migration and invasion, RGS16 was over-expressed in BxPC-3, and PANC-1 pancreatic cancer cell lines that differentially express several pancreatic cancer proteins. Impact of RGS16 over-expression on migration and invasion, were investigated using wound-healing assays and Boyden chambers, respectively. Immunoblots were used to determine expression of proteins implicated in cancer cell migration and invasion.

Overexpression of RGS16 inhibited pancreatic cancer cell migration in BxPC-3 but not PANC-1 cells. Immunoblot analysis showed that overexpression of RGS16 altered expression of proteins linked with cancer cell migration and invasion in BxPC-3.

RGS16 has been implicated in regulating other pathways associated with pancreatic cancer migration and invasion that were not tested in this present study. Further research is needed to determine if RGS16 can regulate other pathways in vitro and in vivo.

Umbilical Cord Buprenorphine Tissue Levels and Neonatal Abstinence Syndrome

Allison Hamilton, Ryan Stone, David Chaffin, David Jude
Obstetrics and Gynecology

We have seen an increase in the use of buprenorphine for the treatment of the opiate dependent in our obstetrical community. Thus, further knowledge of the fetal effects of buprenorphine given to mothers may be useful in future management of the opiate addicted mother. This was a prospective study to determine if the level of buprenorphine measured in samples of cord tissue is an independent risk factor for neonatal abstinence syndrome.

At the time of vaginal or cesarean delivery, 44 samples of cord tissue were collected from infants' cord whose mothers were treated with buprenorphine during pregnancy for their opiate addiction. These samples were stored at -80 degrees followed by gas chromatography with quantitation of norbuprenorphine. Bivariate correlation was performed for buprenorphine dosage, days in neonatal intensive care unit, and neonatal abstinence scores.

Maternal dose at the time of delivery was well correlated with cord tissue levels ($p < 0.005$). Cord norbuprenorphine level and maternal dose were not related to neither NICU days or NAS scores.

The results of this study indicate a direct correlation of maternal buprenorphine dose to level of metabolites within umbilical cord tissues; however, this quantitative dose relationship is not indicative of need for intervention for neonatal opiate dependence. Thus, focus should be on maintaining maternal compliance with individual patient dosing needs versus risking relapse with attempts to taper maternal dose when there is no beneficial decrease in neonatal abstinence. Future research in determining differences in phase I metabolism of buprenorphine in neonates and mothers may find the answer to varying levels of NAS in neonates of the opiate dependent.



ORAL SESSION III • 1:15 PM – 2:15 PM

**26TH ANNUAL
RESEARCH DAY
ORAL SESSION**

MicroRNAs serve as potential potential regulators of endometriosis-associated pain

Kristeena Ray(1), Carla Cook(1), Brenda Mitchell(2), Nalini Santanam(1)
(1)Department of Pharmacology, Physiology, and Toxicology, (2)
Department of Obstetrics and Gynecology,
Joan C. Edwards School of Medicine, Marshall University

Chronic pain is one of the major symptoms associated with endometriosis, though the etiology of this pain is still unknown. One of the recent theories involves a role for epigenetics (including microRNA) in pain. The objective of this study was to determine the regulatory role of microRNAs in pain caused by endometriosis.

A whole-genome human microarray was used to analyze peritoneal or ovarian endometriotic tissues obtained from IRB-approved and consented patients with +endometriosis/+pain, +endometriosis/-pain, and -endometriosis/-pain. Ingenuity pathway analysis and TargetScan were used for bioinformatics analysis of the differentially expressed microRNAs and target genes. RNA was isolated from tissues from all groups of patients. After purity and integrity were analyzed using Nanodrop technology, samples were used for a human pain and inflammation PCR array.

Statistical and Bioinformatics approaches of the microarray revealed microRNAs that were differentially expressed between patients who had pain versus controls who did not have pain. While a number of microRNAs had elevated expression in endometriotic tissues (e.g. miR-29a, miR-148a, and let-7i and -7g), markedly fewer had decreased expression (e.g. miR-548l and miR-1227). Such microRNAs have been identified as targeting key components of inflammatory/nociceptive pain. The human pain array revealed differential expression of genes involved in nociceptive pathways such as interleukins, prostaglandin receptors, voltage-gated sodium channel genes and opioid receptors in patients with pain compared to controls.

Our studies suggest a regulatory role for microRNAs in pain associated with endometriosis. The differentially expressed microRNAs target not only inflammatory and nociceptive genes but also other epigenetic genes such as DNA-methylases. Validation of these target genes and their association with pain in endometriosis will identify potential targets for therapy.

Fetal Vitamin D Levels at Parturition: Does location matter?

Jesse N. Cottrell, Anne M. Silvis, Brenda L. Mitchell,
Monica A. Valentovic

Department of Obstetrics and Gynecology, Marshall University,
Huntington, WV, Department of Pharmacology, Physiology,
and Toxicology, Marshall University, Huntington, WV

The aim of this study was to compare fetal cord blood levels of vitamin D [25(OH)D] in rural versus urban areas in the Appalachian region. The primary physiologic function of Vitamin D is to regulate and maintain serum levels of calcium and phosphorus. There is a positive correlation between maternal and cord blood vitamin D levels, and prior studies have shown that maternal vitamin D insufficiency is associated with multiple adverse maternal and fetal outcomes during pregnancy, including increased risk of gestational diabetes, pre-eclampsia, and small for gestational age infants. A comparative cross-sectional study was conducted on 95 patients, 48 rural and 47 urban. Collection of samples was performed from June through September, 2013. Rural and urban locations were based on Rural-Urban Commuting Area Codes, determined by the U.S. census tracts using measures of population density, urbanization, and daily commuting. Cord blood was collected at the time of delivery and analyzed for serum concentrations of vitamin D in ng/mL.

Vitamin D levels (mean +/- SEM) were 23.8 +/- 2.4 ng/mL in rural samples versus 27.2 +/- 3.0 ng/mL in urban. One-way ANOVA showed no significant difference ($p = 0.055$). There was also no significant difference between urban and rural samples based on the month of collection.

At the time of delivery 68.4% of neonates were vitamin D deficient (<30 ng/ml). Our findings indicate that in the Appalachian region routine maternal testing of vitamin D levels should be performed in the first trimester as vitamin D deficiency is prevalent regardless of location. Further studies are needed in other geographic locations as hypovitaminosis D is a significant but correctable source of perinatal morbidity.

Overstimulation of Redox-Sensitive Na/K-ATPase Signaling Contributes to Salt Sensitivity

Yanling Yan, Muhammad Chaudhry, Kyle Maxwell, Zi-jian Xie,
Nader G. Abraham, Joseph I. Shapiro and Jiang Liu
Dept of Pharmacology, Physiology and Toxicology

Impairment of renal proximal tubule (RPT) Na/K-ATPase/c-Src signaling contributes to Dahl salt-sensitive hypertension, but there is no difference in $\alpha 1$ gene (*Atp1a1*) coding, ouabain-sensitivity, and $\alpha 1$ expression between Dahl salt-resistant (R) and salt-sensitive (S) rats.

A high salt diet (2% NaCl for 7 days) significantly stimulated RPT Na/K-ATPase signaling, protein carbonylation (whole cell lysate and Na/K-ATPase $\alpha 1$ subunit) and heme-oxygenase-1 (HO-1) expression in isolated RPTs in Dahl R but not S rats (12-14 week old). Compared to the age- and gender-matched R rats fed with a low salt diet (0.3% NaCl), isolated RPTs from the S rats have a significantly higher basal level of protein carbonylation and HO-1 that do not respond to a high salt stimulation. In isolated R rat RPTs, ouabain (10 μ M)-stimulated $\alpha 1$ carbonylation, HO-1 expression and Na/K-ATPase signaling. However, the effect of ouabain on carbonylation was not observed in overstimulated S rats.

In porcine RPT LLC-PK1 cells, ouabain-stimulated protein carbonylation of the $\alpha 1$ subunit and HO-1 expression depend on Na/K-ATPase signaling, suggesting a redox-sensitive Na/K-ATPase signaling as well as a dynamic cellular adaptation (HO-1 and alike) to counterbalance ouabain-induced oxidative stress.

Oxidative stress affects RPT Na/K-ATPase signaling and sodium handling. Overstimulation of ROS/carbonylation in the S rats at baseline might desensitize the Na/K-ATPase/c-Src signaling that is no longer able to be regulated by a high salt diet or ouabain.

Effect of Brief Physical Activity Program on Physical Fitness of Elementary School Students

Rebecca Hayes, Lauren Thompson, Christine Gilkerson, Isabel Pino
Joan C. Edwards School of Medicine, Department of Pediatrics

West Virginia consistently ranks among the worst states for childhood obesity. Children have limited control over their caloric intake; therefore, targeting physical activity may be a better approach to improving the health of children. Recently, schools have been contributing less to the amount of exercise in which children are involved and in West Virginia, the law mandates only 90 minutes of physical education classes be provided to elementary school students each week (W. Va. Code §18-2-7a). There is no requirement that schools provide students with time for recess.

We aimed to determine whether the addition of brief periods of exercise during school and incentives (pedometers and prizes) increased the physical fitness levels of elementary school students.

For 4 months, Crum Elementary School participated as an experimental group (n= 130) and Salt Rock Elementary School as the control (n= 130). In August 2013, we obtained baseline physical fitness data (resting pulse, number of 75ft laps completed in 2 minutes and maximum heart rate).

Subsequently, the experimental school received pedometers for every student and was asked to implement 6 minutes of additional exercise a day into their routine. Monthly prizes (helmets, basketballs etc.) were awarded to the student in each classroom who took the most steps.

In December 2013, we visited the schools to measure the physical fitness data again.

There was a significant difference in number of 75 ft. laps completed at the intervention school (+0.53) after the 4 months as compared to the control school (-0.08), (p value 0.026). There was also a significant difference in heart rate after exercise for the intervention school (-21.4 BPM) as compared to the control school (+16 BPM) after the 4 months, (p<0.001). Adding a brief period of exercise and competitive prizes to the daily routine of elementary school students improves their physical fitness.

S-Adenosyl-L-Methionine Reduces Acetaminophen Hepatic Toxicity, Hepatic Mitochondrial Protein Carbonylation and Nitrosylation of Manganese Superoxide Dismutase.

Michael J. Wright¹, Anthony J. Schnelle², Link K. Vu³, John G. Ball¹, J. Mike Brown¹, Travis Salisbury¹ and Monica Valentovic¹.

¹Department of Pharmacology, Physiology and Toxicology, Marshall University School of Medicine, Huntington, WV. ²Wheeling Jesuit University, Wheeling, WV and ³University of Charleston, Charleston, WV.

The over the counter analgesic acetaminophen (APAP) is relatively safe. However, in overdose APAP can induce severe hepatotoxicity. APAP toxicity requires biotransformation by P450 enzymes to a toxic metabolite which eventually induces oxidative stress. Previous results in our lab has indicated that S-Adosylmethionine (SAME) protects mice from APAP overdose. The overall hypotheses for this study is that SAME attenuates APAP hepatic toxicity by reducing oxidative stress, diminishing protein carbonylation and nitrosylation of proteins including the antioxidant enzyme, Manganese Superoxide Dismutase (MnSOD).

Male C57Bl/6 mice were divided into 4 groups (N=5-10/group) and injected intraperitoneal (ip) as indicated: vehicle (VEH, 15 ml/kg water ip), SAME (1.25 mmol/kg 5 ml/kg ip), APAP (250 mg/kg ip), SAME and APAP (SAME administered 1h after APAP). Livers were collected 4 h following APAP. Subcellular fractions were isolated from mitochondria and cytosol. Equal amounts of protein were processed for Western analysis and immunoprecipitation for Mn SOD.

SAME administered 1 h after APAP reduced APAP hepatic toxicity when measured 4 h post APAP injection. Protein carbonylation was increased by APAP and attenuated by SAME. 3-Nitrotyrosine (3-NT) formation was increased in mitochondria by APAP and reduced by SAME. Mitochondrial MnSOD nitrosylation was increased by APAP and reversed in the APAP+SAME group.

In summary, our results showed that APAP induced protein carbonylation and nitrosylation of proteins which was reversed by SAME treatment 1 h post APAP. APAP increased nitrosylation of MnSOD which was reduced by SAME treatment. Further studies need to evaluate whether the alterations in proteins by APAP are part of the mechanism for reduced MnSOD activity in APAP overdose. (Supported by NIH Grant 5P20RR016477 to the West Virginia IDeA Network for Biomedical Research Excellence).



ORAL SESSION IV • 3:15 PM - 4:30 PM

26TH ANNUAL RESEARCH DAY ORAL SESSION

Total Postnatal Opiate Exposure Using Two Different Weaning Methods in Infants with Neonatal Abstinence Syndrome.

Jodi Pitsenbarger, John Bruyere, Paul Viscuse, and Sean Loudin
Department of Pediatrics, Marshall University Joan C. Edwards
School of Medicine, Huntington, WV

The national incidence of neonatal abstinence syndrome tripled from 2000-2009. Prescription drug abuse and supervised treatment programs with methadone and buprenorphine have grown as well. Our institution is in the heart of this epidemic and sees 13% of all deliveries at risk for withdrawal. Opiates are commonly used to wean these infants suffering through withdrawal symptoms. Our hospital changed from a hybrid inpatient/outpatient program (protocol A) to a strictly inpatient weaning program (protocol B) in April 2012. Our institution began a weight based, symptom driven weaning process and utilized a specialized hospital unit and staff dedicated specifically to infant withdrawal.

Retrospective chart review of a sample of infants treated for NAS between 2008 and 2013. Total methadone dose was determined for each patient. Total exposure with protocol A was determined by the addition of the dose according to the medication administration record (MAR) and the prescribed home dose. The total exposure for protocol B was gathered from the MAR.

There were a total of 152 patients in our index cohort. A sample of 76 patients from Protocol A and a sample of 76 patients from Protocol B were analyzed. Instituting a new weaning protocol significantly reduced the postnatal opiate exposure. Infants in Protocol A received a mean of 12.16 mg of methadone vs only 6.49 mg with Protocol B ($p < .0001$, unpaired t-test). Length of stay significantly increased with the requirement of inpatient weaning.

This study demonstrates that the current weaning protocol used at our institution has succeeded in reducing the burden of postnatal opiate exposure. Utilizing a weight based, symptom driven protocol allows for more individualized treatment, safer medication delivery, and closer observation for these fragile infants. Long term studies are still crucial in determining the outcomes in these infants exposed to both prenatal and postnatal opiates.

After-Hours Pediatric Care Compared to Emergency Department Care: A Retrospective Cost Analysis

Shea M. Goodrich, MD; Joseph Evans, MD; Todd W. Gress, MD, MPH;
Joseph W. Werthammer, MD. Pediatrics and Internal Medicine,
Marshall University School of Medicine, Huntington, WV, United States.
Pediatrics, Marshall University School of Medicine

Twenty percent of children under the age of 18 years visit the emergency department (ED) at least one time per year with an annual cost of \$7.5 billion. Ninety-six percent of these visits are discharged home after treatment. Twenty-five to forty percent of primary care physicians in the United States offer an after- hours (AH) care setting as an alternative to the ED.

A retrospective review of medical records was performed for a 6 month period for 200 children <15 years of age seen in an ED and compared to 200 children seen in an after- hours pediatric clinic. Patient who were admitted to the hospital from either setting were excluded. Information about demographics, diagnoses, ancillary testing, and financial charges was collected. The main outcome was median overall patient charges by clinical setting, and we additionally looked at charges by the 6 most common disease diagnoses.

Median charges for children treated and released from the ED were \$460 (IQR \$320-\$640) compared to \$140 (IQR \$140-\$140) for those treated in the AH ($p<0.01$). Median charges were higher for the ED setting in the 6 most common disease classes, both overall and for individual disease class comparison between study groups (All $p<0.01$). We examined the association between charges and clinic setting in multiple quantile regression model while simultaneously adjusting for age, gender, insurance status, and diagnosis. Median costs were \$305 (95%CL-\$348to-\$261: $p<0.001$) more for the ED compared to the AR group.

Financial charges for pediatric health care delivered in the AH setting were less than those in the ED. Significantly higher charges were found for the ED when like diagnoses were compared. Despite savings to the health-care system, reimbursement under the fee-for-service model is at best borderline to incentivize physicians and ancillary staff to work evenings and weekends.

Incidence and Functional Outcome of Nonoperative Management of Displaced Oblique Spiral Fractures of the Fifth Metatarsal Shaft (Dancer's Fracture).

Heather Saffel, Michael Aynardi, David Pedowitz, and Steven Raikin.
Rothman Institute of Orthopaedics, Thomas Jefferson University
Hospital, Philadelphia, PA; Joan C. Edwards
School of Medicine, Huntington, WV.

Nonoperative management has been the preferred treatment for displaced oblique spiral fractures of the fifth metatarsal shaft (dancer's fracture); yet, a paucity of literature supports this claim. The purpose of this investigation is to report the incidence and long-term outcome in the largest cohort of dancer's fractures reported to date.

From 2006 through 2010, 2990 patients sustaining closed metatarsal fractures were seen and treated. Displaced, oblique, spiral fractures of the distal shaft of the fifth metatarsal were identified and follow-up was conducted. Only patients who were initially treated with nonoperative management were included. Patients were seen at 6 and 12 weeks and two year minimum follow-up was conducted. Additionally, demographic information was obtained, and the SF-12 and Foot and Ankle Ability Measure (FAAM) were administered.

142 acute dancer's fractures were managed for an incidence of 4.75% of all metatarsal fractures. Average follow-up was 3.5 years. There were 117 females and 25 males, average age 55. FAAM activities of daily living subscale scores averaged 95.5 (± 5.7), while FAAM sports subscales were 92.7 (± 9.1). SF-12 physical and mental scores averaged 51.4 (± 4.9) & 50.3 (± 4.6) respectively. There were two delayed unions, one asymptomatic nonunion treated nonoperatively, and two painful nonunions which required open reduction internal fixation with bone grafting.

This large cohort describes the incidence, natural history, and functional outcomes of displaced oblique fracture of shaft of the fifth metatarsal bone. Most importantly, nonoperative management of these fractures results in excellent, long-term functional outcomes.

Should All Cardiology Patients Be On a Multivitamin?

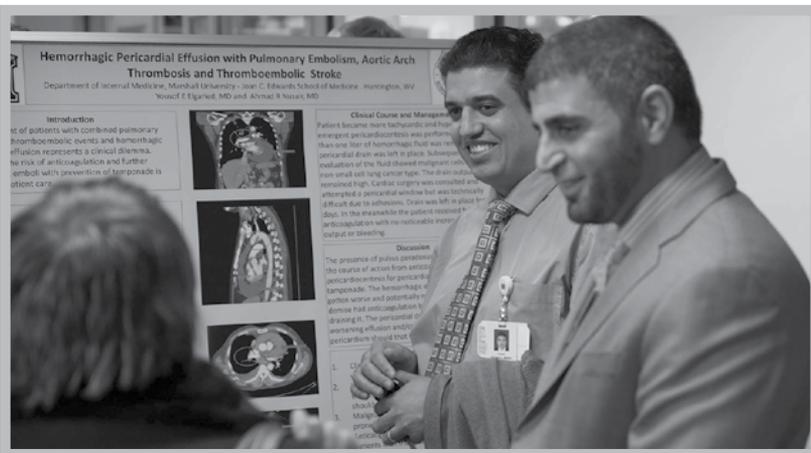
Philip Riley IV, Kim L. Day, Tracy Hawthorne, George Yousef,
Sirisha Devabhaktuni, Lynne J. Goebel
Internal Medicine, Marshall University Joan C. Edwards
School of Medicine, Huntington, WV

The finding of vitamin C deficiency in a warfarin clinic patient led us to study diet in similar patients. We hypothesized that warfarin patients consume a diet limited in vitamin K and this may put them at risk for nutrient deficiencies. We compared the diet of patients taking warfarin with a control group.

The warfarin and control groups comprised convenience samples of cardiology patients over age 60 years. Control patients were not taking warfarin and were similar to warfarin patients in average age and % male. Patients completed a prospective 3-day food diary and reported use of vitamins. We used Foodworks software to develop a nutrient analysis. We used Vasserstats to compare the frequency of nutrient deficiencies in the warfarin and control groups.

We found nutrient deficiencies in 100% of warfarin (N=59) and control group patients (N=24). The most common deficiencies were vitamin D (100% both groups), vitamin A (71% both groups), vitamin E (93% warfarin, 92% control), vitamin K (66% warfarin, 58% control), and pantothenic acid (69% warfarin, 71% control) with no significant differences between warfarin and control groups. Most warfarin patients (86%) and control patients (79%) took supplements.

Our control group was not different in nutritional deficiencies from our warfarin study group. It seems prudent to recommend multivitamin intake, however, universal multivitamin supplementation has not been supported by randomized controlled trials. Among a population of male physicians, daily multivitamin use did not reduce major cardiovascular events, myocardial infarction, stroke, and cardiovascular disease mortality following a decade of treatment. A Cochrane review found no evidence to support the use of antioxidant supplements for primary or secondary prevention and some vitamins such as beta-carotene and vitamin E increase mortality. More study is needed before we recommend multivitamins for everyone.





POSTER PRESENTATIONS • SESSION I • 9:45 AM – 10:30 AM

**26TH ANNUAL
RESEARCH DAY
POSTER SESSION**



Incorporating sensory signals of substrate grip/adherence in force control

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Bielefeld, Germany

Sense organs of the feet could play an important role in control of posture and walking but their specific functions have not been determined. In engineering and robotics, load cells placed at the feet can monitor forces generated by the legs as effectively as force plates. In the present study, we characterized the structure and responses of campaniform sensilla of the tarsi (feet) of stick insects to understand how those signals are integrated in force control.

Morphological studies were performed using confocal and scanning electron microscopy. Sensory and muscle activities were recorded extracellularly.

One to four campaniform sensilla are found on the distal ends of the tarsal subsegments. Measurements of the conduction velocities of the tarsal sensilla (Ta4 2.7 m/s) indicate that their ability to serve as ongoing monitor for forces may be limited but they could readily serve as signals of the effectiveness of substrate grip after the start of the stance phase of walking. We studied the effects of forces developed by the retractor unguis, the single muscle that moves the tarsus, upon sensory discharges. The tarsal receptors effectively encoded both the rate and amplitude of muscle forces when movement was resisted. We also characterized the effects of sensory discharges upon muscle activities. Mechanical stimulation of the sensilla produced activation of retractor motor neurons (mean latency 34.7 msec). The sensilla also excited motor neurons in the tibia flexor muscle (active in stance) and inhibited firing of the slow extensor motor neuron (active in swing).

These findings strongly suggest that the campaniform sensilla provide information about the effectiveness of muscle contractions in generating substrate adherence. They can also produce positive force feedback that could contribute to the development of substrate grip. These results can serve as a useful model system in understanding force feedback in animals and walking machines.

**Mitochondrial Elongation Factor Tu:
Translational Regulation by Phosphorylation**

Caroline A. Hunter, Jennifer L. Miller-Lee, Hasan Koc, and Emine C. Koc
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Mitochondria have their own DNA and translation machinery. Deficiencies in mitochondrial translation, a fundamental process for energy production, contribute to the development of diseases, including heart disease, diabetes, and cancer. Mitochondrial elongation factor Tu (mtEF-Tu) is responsible for bringing the aminoacyl-tRNA to the A-site of the ribosome during the elongation phase of protein synthesis. Regulation of mitochondrial translation by phosphorylation of mtEF-Tu at serine/threonine residues has been previously shown. In this study, we are investigating the phosphorylation of mtEF-Tu at a highly conserved Tyr residue, Tyr266, near the aminoacyl-tRNA binding site. Site-directed mutagenesis of Tyr266 to Glu266 caused a decrease in the *in vitro* translation activity of mtEF-Tu. Our preliminary studies revealed that the phosphorylation of mtEF-Tu by Fyn tyrosine kinase, a Src family kinase, regulates protein synthesis in mammalian mitochondria.

The Involvement of the Na/K-ATPase in HO-1 Induction by Ouabain and CoPP

Yanling Yan, Muhammad Chaudhry, Kyle Maxwell, Zi-jian Xie,
Nader G. Abraham, Joseph I. Shapiro and Jiang Liu
Department of Pharmacology, Physiology and Toxicology

Both CoPP (Cobalt protoporphyrin, an inducer of heme-oxygenase-1, HO-1) and ouabain induce HO-1 expression in porcine renal proximal tubule LLC-PK1 cells.

In LLC-PK1 cells, ouabain-stimulated c-Src activation, ROS generation and protein carbonylation of the Na/K-ATPase α 1 subunit were significantly attenuated by the antioxidant N-acetyl-L-cysteine (NAC) and disruption of the Na/K-ATPase signaling.

Interestingly, both ouabain and CoPP also significantly induced HO-1 expression in LLC-PK1 cells. To determine the role of the Na/K-ATPase and its signaling, we used three stable cell lines generated from LLC-PK1 cells, PY-17 (the Na/K-ATPase α 1 subunit knock-down cells), C2-9 (caveolin-1 knockout cells), and AAC-19 (PY-17 cells only expressing rat α 1) cells. Both PY-17 and C2-9 show disrupted Na/K-ATPase signaling. Both ouabain and CoPP significantly induced HO-1 expression in AAC-19 cell as seen in LLC-PK1 cells. However, depression of Na/K-ATPase expression and disruption of Na/K-ATPase signaling not only prevented ouabain-induced HO-1 expression, but also prevented CoPP-induced HO-1 expression. Induction of HO-1 by CoPP partially but significantly attenuated ouabain-induced c-Src activation.

In LLC-PK1 cells, ouabain stimulated a dynamic antioxidant adaptation (HO-1 and alike) to counterbalance ouabain-induced oxidative stress. Furthermore, the Na/K-ATPase and its signaling function as a functional receptor of CoPP-induced HO-1 expression.



A Case Of Nephrogenic Di After 6 Years Of Cessation Of Lithium Therapy

Yanal Masannat, Omolola Olajide
Endocrinology, Marshall University

Chronic Lithium use for bipolar disorders can cause impaired kidney concentrating ability in up to 50% of the patients resulting in nephrogenic DI (NDI).Lithium accumulates in the distal tubule with chronic use and causes impairment of the ADH signaling mechanism.Effects of Lithium can persist for many years after cessation of therapy.

A 56 year old female with a history of bipolar disorder ,DM, COPD and atrial fibrillation who was admitted to the ICU after she had a flame burn causing inhalational injury for which she was placed on mechanical ventilation. She developed polyuria 7 days after admission with urine output of 6-8 liters per day and serum sodium ranging from 150-162 mEq/L.

She was started on IV D5W at 150 ml/hr initially, DDVAP, HCTZ and Indomethacin through PEG feeding tube.However, the response was suboptimal and an endocrinology consultation was obtained when serum Na was 160 meq/L and urine output was 8100 ml in the past 24 hours prior to consultation.

Review of her past history was significant for Lithium use 1977-2007.The patient was started on DDVAP 0.1 mcg SQ on PRN basis when polyuria of >300 ml/hr in two consecutive hours develops.Patient had a total of 6 doses of DDAVP over the course of three weeks and serum Na has improved and stabilized at 140-145 meq/L upon discharge.

Our patient showed partial response to SQ DDAVP. With fluid adjustment and DDAVP on a PRN basis,a normal Na level was achieved.However, it must be mentioned that maintaining fluid balance is a challenge for clinicians especially in sedated patients who cannot utilize their thirst mechanism.

Patients who have been treated with Lithium should be closely monitored for development of DI especially in situations where access to water or the thirst mechanism are impaired.

23 year old 16 week pregnant female with radial artery embolism from intravenous drug abuse

Arifa Khokar, MD

OB/Gyn

23 year old Caucasian female G6 P3114 at 16 weeks and 1 day gestational age presents with purple discoloration of digits one and two of her left hand. Patient has long standing history of intravenous drug use and was admitted for detoxification from Subutex. Orthopedic Surgery was consulted and initially prescribed Nitroglycerin gel but patient continued to have discoloration and worsening pain in her digits. Orthopedic hand surgery was consulted and a left upper extremity arteriogram was ordered. Arteriogram revealed suggestive of embolic occlusion of the distal left radial artery branches supplying the first and second digits. Patient underwent embolectomy of digital radial arteries of the first and second digits. Patient was discharged home stable following embolectomy with closed follow up in Obstetrics High risk clinic and orthopedic hand clinic. Hand surgery determined distal first and second digit not viable and will need to be amputated after digits demarcate areas of non-viable tissue.

A case of atypical presentation of SLE complicated with posterior reversible encephalopathy syndrome in an adolescent patient

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Department of Pediatrics, Section of pediatrics intensive care,
Joan C. Edwards School of Medicine, Huntington, WV.

Systemic lupus erythematosus is a multisystem disease that is caused by antibodies and complement fixing immune complex depositions that result in tissue damage including the brain and cerebral vessels.

One of the rare manifestations of juvenile SLE is posterior reversible encephalopathy syndrome (PRES), a syndrome with unknown etiologies appears to be caused by disordered autoregulation of the cerebral vessels accompanied with vasoconstriction and endothelial damage which can lead to cerebral edema and brain ischemia.

A 14 year old female presented to the emergency department with a new onset generalized tonic -clonic seizure lasting 20 minutes. No history of previous seizure activity but she has been complaining of worsening headache and vision changes for 2 months.

Vital signs revealed a blood pressure of 160/100 and were otherwise normal. Physical exam was normal except for macular erythematous rash on cheeks.

Renal function test showed BUN of 31 mg/dl and Creatinine of 2.26 mg/dl. Urinalysis showed elevated Albumin / Cr ratio and 24 h urine protein of 4 grams.

Systemic lupus erythematosus work up was positive for ANA, Anti-DS DNA, Anti- Cardiolipin, Anti-smith antibodies and Anti-chromatin antibodies. Low complement C3 and C4 in serum.

Brain MRI showed an increase signal in the cortex affecting the parietal and occipital lobes bilaterally resembling Posterior Reversal Encephalopathy Syndrome.

Patient required multiple doses of Labetalol and a dose of Hydralazine to control her blood pressure.

Kidney biopsy showed a grade IV Lupus nephritis and patient was started on Prednisone in addition to Azathioprine and cyclophosphamide. Posterior reversible encephalopathy syndrome is rare complication of poorly controlled hypertension and it should raise a concern of Systemic Lupus Erythematosus.

Brain MRI is essential in the diagnosis of PRES with a symmetrical white matter edema of the posterior cerebral hemispheres sparing the paramedian part of the occipital lobes

A Case of Exposure to Raccoon Feces Contaminated with Baylisascaris Procyonis

Andrea Lauffer, Susan Flesher, Patricia Lutz
Department of Pediatrics, Joan C. Edwards School of Medicine,
Marshall University, Huntington, WV

We report a case of exposure to raccoon feces which was found to be contaminated with *Baylisascaris procyonis*. The exposure was recognized early enough by the family to allow prophylaxis with Albendazole. Because of the potential fatal or neurologically catastrophic effects of this disease immediate treatment is indicated. This is started in advance of environmental studies that are done to determine if the feces in indeed contaminated.

An eleven year old boy and his father were exposed to raccoon feces in a tree stand while they were hunting. They cleaned the feces out with their hands and later ate a sandwich without washing their hands. The physical exam was essentially normal except for clear nasal drainage. We contacted the West Virginia Bureau for Public Health and they faxed recommendations from the Centers for Disease Control (CDC). We obtained enzyme linked immunosorbent assay (ELISA) testing for baylisascaris for both the child and his father. The results were not available for 7-14 days and there is only a three day window for prophylactic treatment. We prescribed Albendazole 25 mg/kg/day with fatty meals for twenty days for both father and son per CDC recommendations. No maximum dose is listed per CDC. The raccoon feces was also tested and found to be positive, although we did not have this information at the time we started treatment.

Raccoons are the host animal of baylisascaris. *Baylisascaris neural larva migrans* is often associated with devastating neurologic outcomes or death. There is a real possibility of children in our area being exposed to raccoons, yet the disease is rare enough that many physicians may not be familiar with appropriate early management. The purpose of this case report is to discuss the importance of prophylactic treatment for baylisascaris in cases of high risk exposure.

A Case of Hyperbilirubinemia, Non Immune Hemolysis and Decreased RBC Production in a 13 Day Old

Susan Lopata and Susan Flesher

Department of Pediatrics, Joan C. Edwards School of Medicine,
Marshall University, Huntington, WV

We report a case of an infant with hyperbilirubinemia and subsequently found to have non-immune mediated hemolysis as well as decreased RBC production. The enzyme defects G6PD and pyruvate kinase deficiency can cause both increased RBC destruction and decreased RBC production. In contrast, the RBC membrane disorders hereditary spherocytosis and elliptocytosis cause increased RBC destruction but show an increased RBC production to compensate unless there is another cause for suppression.

This baby was admitted with a BUBC of 23.6/1.0. He was formula fed and was taking appropriate feedings. Birthweight was 5-15 and weight on day of admission was 5-10, but he had gained 2 ounces in the past five days. Birth history was 35 weeks gestation, vaginal delivery, GBS negative, no maternal history of hepatitis, mom O negative, baby O positive, Direct Coombs negative. Newborn screen was negative. No family history of hemolytic disorders. Physical exam was normal except for obvious jaundice and tachycardia of 170-180. Otherwise he was well appearing with good muscle tone and activity. Laboratory results included WBC 13, H/H 11.8/34.5, platelets 453. CRP < 0.4. Direct coombs was repeated and was negative again. Peripheral smear showed hemolytic anemia with many schistocytes and helmet cells and a few spherocytes. Retic count was 1.5. Haptoglobin was < 7. Because of the combination of hemolysis and decreased RBC production an enzyme defect was thought to be likely and testing was sent for G6PD deficiency and pyruvate kinase deficiency. G6PD testing was found to be abnormal. H/H continued to decrease to a low of 7.8/22, he developed a flow murmur, and required several blood transfusions. Hyperbilirubinemia was treated with triple phototherapy. This is a probable case of G6PD deficiency. If testing for G6PD is done during hemolytic anemia it should be repeated later when the RBCs have replenished and matured.

A Case of Post Cholecystectomy Gall bladder Remnant Syndrome

Nick Bailey, Osinowo Osiyemi, James Buchanan, Yasser Rayyan.

Department of Internal Medicine, Joan C. Edwards

School of Medicine, Huntington, WV

Post-cholecystectomy syndrome (PCS) is quite common in patients with cholecystectomy. Patients exhibit a heterogeneous group of symptoms, such as upper abdominal pain, vomiting, gastrointestinal disorders, jaundice, and dyspepsia. Choledocholithiasis, biliary dyskinesia, and Sphincter of Oddi dysfunction are among the common causes of this syndrome. We present a case of PCS due to Gallbladder (GB) remnant.

The patient initially presented nine months post-cholecystectomy for symptoms of epigastric pain diagnosed as biliary pancreatitis secondary to retained common bile duct (CBD) stones and was thus, managed with ERCP. Two CBD stones were removed with complete symptom resolution. Two months later, she presented with a recurrence of mild right upper quadrant (RUQ) pain. A RUQ ultrasound performed was unremarkable without presence of stones or dilatation of the CBD reported. A month later, she presented to the ER with severe RUQ pain of 24 hours duration suggestive of biliary pancreatitis. A CT scan showed a possible enlarging cystic duct (CD) remnant, which prompted further evaluation with MRCP. This investigation revealed a 5mm stone in the CBD, dilatation of the CD and multiple calculi within the CD and GB remnant confirming a diagnosis of post-cholecystectomy remnant syndrome. She underwent successful ERCP for stone removal. Subsequent exploratory laparotomy was performed with removal of the CD and the GB remnant containing multiple stones. She has since been asymptomatic.

Though the exact incidence is unknown, GB remnant with or without stones seems to be emerging as one of the leading causes of PCS, especially in this era of minimally invasive surgery. This case illustrates that recurrent choledocholithiasis with biliary pancreatitis within a short period of time after initial successful ERCP should raise the suspicion of GB remnant syndrome. MRCP is the imaging modality of choice, and is mandatory in all patients during pre-operative assessment. Definitive treatment is completing cholecystectomy.

A Case of Primary Hyperparathyroidism in Pregnancy-Challenges in management in late third trimester

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Huntington, WV. , Section of Endocrine Surgery, University of Kentucky
College of Medicine, Lexington, KY

Primary hyperparathyroidism is a common endocrine disorder but it's a rare presentation in pregnancy (1-3). We present a 33 year old female who was seen with hypercalcemia and primary hyperparathyroidism in the third trimester.

A 33 year old woman G3 P1 A1 presenting at 33 weeks of gestation with asymptomatic hypercalcemia for more than 2 years. Patient had the diagnosis of hyperparathyroidism before pregnancy that was managed conservatively. Physical examination findings were normal except a Blood Pressure of 146/84mmHg. On initial laboratory assessment, she had corrected calcium of 11.3 and an intact PTH of 95. It was decided that surgery was the most suitable option even in late pregnancy. Parathyroidectomy was done at 36 weeks. A 3 cm parathyroid adenoma was removed with a significant decrease in PTH. Patient delivered a healthy fetus by cesarean section at 39 weeks without any complications. Management of primary hyperparathyroidism in pregnancy can be a challenge. Pregnant women are more predisposed to hypocalcemia due to increase in total circulating volume associated with hemodilution.

Hypercalcemia in pregnancy is associated with both maternal and fetal complications. Maternal complications include pancreatitis, hyperemesis gravidarum, hypercalcemic crisis, and nephrolithiasis. Fetal complications include neonatal hypocalcaemia with associated tetany. Other complications include low birth weight, preterm delivery and intrauterine death (2-6). Management decisions are based on the severity of symptoms, level hypercalcemia, and gestational age. Management is conservative in most cases but surgical management (parathyroidectomy) is preferred in certain situations (4). Patients with primary hyperparathyroidism who plan to get pregnant should undergo evaluation for parathyroidectomy before conception (7).

Untreated Primary Hyperparathyroidism in pregnancy can cause significant mortality and morbidity for both mother and fetus and needs utmost attention by the treating obstetricians. In most cases, the situation can be avoided by timely pre-pregnancy management.

A Case Presentation of Phlegmasia Cerulea Dolens

John Liu, Rezwan Ahmed, Eva Tackett

Department of Internal Medicine at Marshall University
School of Medicine

Phlegmasia cerulea dolens (PCD) is a rare, extensive form of deep vein thrombosis that causes severe venous outflow obstruction. The widespread thrombosis affects the deep veins, collaterals, and capillaries and may lead to fluid sequestration, edema, and ultimately systemic shock. The discoloration is caused by arterial collapse due to severe edema. PCD is commonly associated with malignancy, femoral vein catheterization, heparin induced thrombocytopenia, and APS. In the following case report, we present a patient with PCD who did not have any known risk factors and had a rapid onset of symptom presentation.

A 58 year-old Caucasian male with PMH of CAD s/p PCI, HTN, and DMII presented with sudden leg pain with blue discoloration. The patient had a sudden onset of nausea, vomiting and dyspnea. The patient's LLE was cold, edematous and tender with +1 pulse and normal sensation. His left great toe became gangrenous, and the patient underwent immediate thrombectomy and IVC filter placement. The extensive thrombosis could not be completely removed, and he was started on tPA for 24 hours. A heparin drip was initiated and a stent was placed in his left iliac vein. After treatment, his edema and pain resolved; however, his left great toe remained tender with slow capillary refill. The patient was appropriately recommended to continue warfarin for 3-12 months and was started on hydroxyurea.

This case highlights the importance of recognizing the signs and symptoms needed to promptly make the diagnosis of PCD in patients with no commonly known risk factors. Edema, violaceous discoloration, pain, and severe venous outflow obstruction help to make the diagnosis. Although our patient presented with all these signs, he presented with dyspnea several hours earlier, which made the diagnosis of PCD more difficult to establish. Thus, delaying such a diagnosis may lead to increased patient morbidity and mortality.

A Case Study Illustrating the Rare Development of a Liver Hematoma after Percutaneous CT-guided Liver Biopsy

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Yaser Rayyan, MD
Marshall University, Joan C. Edwards School of Medicine,
Internal Medicine

To diagnose a suspicious liver mass, a tissue sample must be obtained to determine its nature. Generally regarded as a safe procedure, percutaneous CT-guided liver biopsy is the gold standard for obtaining liver tissue. A rare complication of liver biopsy is bleeding. Others include puncturing visceral organs and infection. We present a patient with a delayed presentation hematoma formation following elective percutaneous CT-guided liver biopsy.

A 66 year old Caucasian male presented to the ED with severe abdominal pain. Four days prior he had undergone elective percutaneous CT-guided liver biopsy due to persistently elevated liver enzymes and positive anti-mitochondrial antibodies. He had normoactive bowel sounds and severe tenderness with light palpation of his RUQ. AST was 90, ALT 149, and bilirubin 0.6. Abdominal CT with intravenous contrast revealed an actively bleeding 10cm liver hematoma involving the right hepatic lobe. He was hemodynamically stable. Emergent embolization of the distal branch of the right hepatic artery was performed. Abdominal pain continued the next day with markedly elevated LFTs of AST 1346, ALT 2361, and bilirubin 1.2. Follow-up CT showed hematoma enlargement involving nearly all of the right hepatic lobe. IR performed coil embolization. The patient required volume resuscitation due to blood loss. He was monitored in the ICU, his ischemic liver injury improved, and became hemodynamically stable.

This case highlights a rare complication of percutaneous CT-guided liver biopsy. Bleeding incidence following liver biopsy is 0.5%. Bleeding typically occurs immediately following the procedure. Our patient did not have any gastrointestinal symptoms until four days after his procedure. The timely management of this patient with close monitoring in the ICU and coil embolization was effective in stopping his bleeding and ultimately stabilizing his condition. It is important to recognize this delayed presentation so that this rare, but life-threatening complication can be properly managed.

A Curious Case Of Hypotension

Olajide Omolara; Elkadry Ayman

Internal Medicine, Joan C. Edwards School Of Medicine

Hypopituitarism is defined as the partial or complete insufficiency of the Anterior Pituitary Gland secretions resulting from Pituitary or Hypothalamic disease. It could be congenital or acquired. Adult presentations vary from fatigue, cold intolerance and hypotension to impotence or infertility.

A 54 year old man presented with a 4 day history of Gastroenteritis, fevers up to 104 F and anuria of 24 hours. His Medical History was significant for rectal melanoma with lymphatic metastasis status post resection and chemotherapy 7 years earlier (in remission). He had commenced treatment for hypothyroidism 2 months prior to presentation. He was persistently hypotensive with a BP of 70s-80s/40s despite adequate Intravenous fluid resuscitation. He denied any recent steroid use. He had one episode of hypoglycemia in the 40s. Cortisol levels were found to be <0.2 so he was commenced on Intravenous Stress doses of the Hydrocortisone with improvement. CT imaging ruled out recurrence of the melanoma. Prolactin and IGF-1 levels were normal. ACTH was almost undetectable, LH and FSH were inappropriately normal with low testosterone levels. Secondary hypogonadism was diagnosed. MRI showed little pituitary tissue and the diagnosis of Partial Empty Sella Syndrome with Hypopituitarism was made. He was discharged home on Oral Hydrocortisone and Levothyroxine and did well.

Hypopituitarism can result from head trauma, neoplasms, radiation to the hypothalamic region or inflammatory and granulomatous diseases. Diagnosis is made by measuring basal and stimulated secretions of the Anterior Pituitary Hormones, along with Pituitary MRI which may reveal empty sella.

Prolactin deficiency generally follows global pituitary function failure.

Features of hypopituitarism include hypogonadotropic hypogonadism causing decreased libido or infertility. This is diagnosed by low to normal LH and FSH with low testosterone in Males and irregular menses or amenorrhea in females.

Replacement therapy is important after excluding Corticotrophin deficiency to avoid precipitation of acute adrenal insufficiency, particularly in patients with neurologic dysfunction.

A Rare Case of Familial Periodic Hypokalemic Paralysis in 2 Year-old Patient

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Periodic hypokalemic paralysis is a rare medical condition that presents with sudden attacks of generalized weakness associated with a low potassium level in the plasma. It is an autosomal dominant inherited defect in calcium or sodium ion channels.

A 2 year-old previously healthy male was admitted to the hospital for a sudden onset of lower extremity weakness and refusing to bear weight. PMH was unremarkable except for a mild viral URI a week prior to the presentation

The family history revealed a similar attack in the father at age 16 which has resolved completely. Physical exam showed proximal muscle weakness in the lower extremities with muscular strength 1/5 bilaterally, deep tendon reflexes were diminished. Labs at time of admission showed potassium 2, other studies were normal.

The potassium was corrected slowly over 36 hours and this was accompanied by marked improvement of the weakness with no complications. The patient was discharged home on low carb diet in addition to potassium supplementation to prevent future attacks.

Even though Familial Periodic Hypokalemic Paralysis is a rare medical problem; physicians should be familiar with the presentation, diagnosis and management of this condition and should have a high index of suspicion even in children younger than 5 years.

Hypokalemic Familial Periodic Paralysis is a rare neuromuscular disorder characterized by sudden attacks of generalized weakness that involves striated muscles; cardiac and respiratory muscles usually are not involved. Attacks may be preceded by heavy exercise, stress, or a high-carbohydrate meal which lead to an increased release of epinephrine or insulin.

Between attacks, the patient is completely normal.

Dietary modifications with a low carb diet as well as potassium supplementation and potassium sparing diuretics are essential to prevent attacks.

A Rare case of Group A streptococcus (GAS) resistant for out patient treatment with oral azithromycin and clindamycin

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Group A streptococcus is the most common cause of bacterial pharyngitis in children; complications of this infection are usually uncommon with optimal antimicrobial treatment.

Even though penicillin is still the drug of choice, the treatment can be a challenge in some cases with penicillin and cephalosporin allergies.

A 13 year old female presented to the ER with a sore throat and fever of 103 degrees after a failed 5 day course of azithromycin for strep pharyngitis.

She had a history of penicillin and cephalosporin allergies.

Physical exam was remarkable for: HR 120, temperature 102 and grade three symmetrical enlarged tonsils with exudate on the right as well as cervical lymphadenopathy. Laboratory and radiology evaluations were positive for leukocytosis and a right peri-tonsillar abscess.

The abscess was drained successfully and intravenous clindamycin was started.

After an initial clinical improvement; the patient started to spike fevers up to 102.8 and neck rigidity was noticed on exam.

A repeat CT-scan showed an abnormal fluid collection in the retropharyngeal area. ENT recommended another abscess drain, but no pus was found. Vancomycin was added to the treatment course.

In spite of maximum antibiotic coverage the patient continued to spike fevers with no clinical improvement.

Another facial and neck CT with insta-track protocol showed a para-pharyngeal abscess up high in the neck toward the skull base. The abscess was drained successfully and the culture grew group A streptococcus which was resistant to clindamycin and azithromycin. Moxifloxacin was started based on sensitivity records and clinical and laboratory findings were shortly improved.

Even though GAS pharyngitis is usually easily treated, the physician must have high index of suspicion of multiple drug resistant strep pharyngitis, be aware of the treatment options in cases of penicillin and cephalosporin allergic patients, We also recommend a closer follow up for those patients.

A Rare Case of Papillary Thyroid Cancer Arising In Struma Ovarii

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Struma ovarii is a tumor of the ovaries in which thyroid tissue comprises over 50% of the overall tissue. Most cases are asymptomatic from a thyroid standpoint. Hyperthyroidism is seen in about 8% of patients. Malignant transformation comprising only 0.5-5%.

A 35 year-old Caucasian female without significant past medical history was incidentally found to have right ovarian mass on MRI done for evaluation of back pain. Pelvic ultrasound showed a 12cm complex appearing right ovarian cystic mass near the bladder with no invasion. Endometrial biopsy revealed hyperplasia with atypia. She subsequently underwent total abdominal hysterectomy and bilateral salpingo-oophorectomy. Pathology showed struma ovarii with a 2-cm well-differentiated papillary carcinoma of the thyroid, follicular variant, confined to the ovary. Tissue testing for BRAF V600E mutation was negative. She was referred to the endocrine clinic, and denied symptoms suggestive of thyroid dysfunction. On exam there was mild enlargement of the thyroid gland and laboratory testing revealed low serum thyroid stimulating hormone (TSH) level 0.318uU/ml (0.35-5.5uIU/ml) with normal thyroxine (T4) and tri-iodothyronine (T3) levels, consistent with subclinical hyperthyroidism. Ultrasound of the thyroid showed an enlarged heterogeneous gland with several small nodules. Fine needle aspiration of the dominant right-sided nodule was benign. She underwent total thyroidectomy which revealed benign findings. Her post-operative course was complicated by transient hypoparathyroidism. Recently she received I-131 radioablation.

Malignant struma ovarii are an exceedingly rare entity, comprising 0.5-5% of all struma ovarii cases. Due to its rarity, there are no standardized treatment guidelines. In cases of malignant struma ovarii with distant metastasis, aggressive treatment including total thyroidectomy to facilitate adjuvant I-131 radioablation is less controversial.

Acute MI with severe diffuse coronary and systematic aneurysms, what is the treatment of choice?

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Coronary artery aneurysm was first described by Morgagni in 1761, but the first case series was reported in 1929. The mean incidence of coronary artery aneurysm is 1.65% with the right coronary artery (RCA) being the most commonly involved artery, followed by the left circumflex (LCx) and/or the left anterior descending artery (LAD). Three-vessel involvement is very rare.

A 65 year old male with past medical history of COPD and hypertension, presented to the ED with chest pain. The EKG demonstrated sinus rhythm without any acute changes, and the troponin was mildly elevated. Diagnosed as NON-STEMI, Due to persistent chest pain, emergent left heart catheterization revealed a severely ectatic, occluded LAD with heavy thrombus burden. The RCA was also ectatic, as was the LCx. A 3.0/12 Resolute stent and an 8/20 EverFlex stent were used to open the LAD. On the second day, the patient developed chest pain with ST elevation and emergent left heart catheterization was done, revealing acute stent thrombosis. This was treated again with 7x17mm Express stent with IABP placement and surgery evaluation was requested.

Later, the patient developed pneumonia and severe hemoptysis that necessitated discontinuation of heparin, aspirin and Plavix. Out-patient preoperative CT angiogram of the abdomen was done and revealed 6.4 cm infra-renal abdominal aortic aneurysm. Limited workup for connective tissue disease was negative and arterial wall biopsy was suggested.

The treatment of coronary aneurysms involves anti-platelet and anticoagulant therapy, although this is based on anecdotal reports only when coronary thrombosis is present. Lesions causing definite myocardial ischemia have been treated with coil embolization, autologous saphenous vein-covered stent grafts, PTFE-covered JOSTENT grafts and CABG. These treatments are only described in case reports and have not been subjected to any controlled scientific investigation. The restenosis rate and effectiveness for a covered stent is unknown.

All Out: The Inglorious End of “Buckyballs”

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The medical community should be aware of recent successful efforts by the U.S. Consumer Product Safety Commission to ban small but powerful rare earth toy magnets manufactured in China from an alloy of neodymium, iron, and boron, then nickel plated to resemble harmless BBs about 4 millimeters in diameter. Introduced in 2009 as “Buckyballs,” they are almost ten times stronger than similar-sized ordinary magnets. If ingested, they may damage tissue and cause bowel necrosis. After several hundred cases of serious enteral complications nation-wide and one fatality, the CPSC filed suit in July 2012 to block their sale and in April 2013 subsequently recalled all of the estimated half billion Buckyballs in circulation.

A 17-year-old young man presented to the emergency department last year shortly after inserting several dozen Buckyballs into his urethra, presumably for self-stimulation purposes. Aside from taking dexamethylphenidate for ADHD, his medical history was unremarkable. An attempt was made to remove the Buckyballs by exerting gentle traction on the tail end of the chain; however, about 50 balls had contorted in the bulbar urethra, causing the chain to separate just inside the meatus. The patient was taken for cystoscopy, where under general anesthesia, the remaining balls were successfully removed individually with a 22 French sheath and flexible cold cup biopsy forceps. Retrieval of the spheres was aided by pushing their tangled mass up into the bladder, then teasing them apart one by one until all of them had been removed. A foley catheter was placed, and following its removal the next day, he made an uneventful recovery. He was released to the custody of his parents, both of whom are physicians.

The Buckyball recall would not have occurred without physicians advocating for their patients of a tender age who were tempted to experiment with these dangerous magnets.

An Atypical Presentation of Adrenal Insufficiency in Pregnancy as Recurrent Abdominal Pain

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To describe an unusual case of adrenal insufficiency (AI) in pregnancy. A 26 year-old G1P0 female with microprolactinoma presented at 32 weeks gestation with sudden onset sharp right upper quadrant (RUQ) pain associated with malaise and vomiting. She was afebrile and normotensive, with mild RUQ tenderness. Laboratory evaluation was unremarkable except leukocytosis. Abdominal ultrasonography was normal. CT scan of abdomen showed a 4.2 x 3.1 cm right adrenal mass likely representing hemorrhage and normal left adrenal. Endocrinology was consulted. Patient recalled that her father had underwent adrenalectomy for unknown reason. Plasma metanephrines/normetanephrines were normal. MRI two days later demonstrated stability of adrenal mass and changes consistent with hemorrhage. Her hematocrit was stable. She was discharged, but readmitted four days later with recurrence of abdominal pain. Vitals were stable and laboratory evaluation unremarkable. Repeat MRI showed stability of right adrenal mass. A morning serum cortisol was 7.2ug/dL (>21ug/dL normal in 3rd trimester). Cosyntropin stimulation showed baseline cortisol of 7.5ug/dL, 8.2ug/dL at 30 minutes, and 7.7ug/dL at 60 minutes indicative of AI. Serum ACTH was 286.4pg/mL (normal 7.2-63.3pg/mL). Twenty-one hydroxylase antibodies were ordered, but specimen lost. The patient started hydrocortisone 20mg in the morning and 10mg in the afternoon, leading to resolution of her symptoms. She delivered a healthy baby at 37 weeks gestation via elective Cesarean section. She was lost to endocrine follow-up.

With a reported incidence of 1/3,000, the diagnosis of AI in pregnancy should be entertained in those with significant malaise and emesis beyond the 1st trimester. Primary AI manifests when >90% of adrenal tissue is destroyed, making autoimmune disease likely in our patient. As cortisol binding globulin levels rise in pregnancy, levels of serum cortisol should be higher, leading to higher diagnostic cutoffs. Recognition of AI is vital to prevent maternal adrenal crisis, IUGR and fetal demise.

An Internist's Med-Peds Surprise: A Case of Unexplained New Onset Broca's Aphasia

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Moyamoya disease is often erroneously labeled as a pediatric vasculopathy occurring in the Asian population. However, it is now being detected in all ethnic groups worldwide with a bi-modal age distribution at presentation. Asymptomatic and symptomatic patients have high rates of disease progression, and the neurologic outcome is poor without prompt medical therapy. We report a case of Moyamoya disease in an adult Caucasian female presenting with new onset Broca's aphasia.

A 39 year old Caucasian female presents to the Cabell Huntington Hospital emergency room after losing her ability to speak. Her other concurrent neurologic symptom is headache. Family history is consistent with a first degree relative with multiple cerebrovascular accidents. Computed tomography angiography shows an occlusion of the M1 segment of the left middle cerebral artery without perfusion defects. Her aphasia is intermittent and resolves with medically induced increases in her blood pressure via Trendelenburg positioning, intravenous boluses of normal saline, and per os Midodrine Hydrochloride. A cerebral angiogram is performed which shows high grade stenosis of the left M1 segment with diminutive M2 and M3 branches. The angiogram also shows the left hemisphere being supplied by anterior cerebral artery collateral vessels consistent with Moyamoya disease. Patient subsequently undergoes middle cerebral artery bypass surgery but continues to have intermittent periods of expressive aphasia despite surgical intervention.

While there are certain patient groups who may have a predilection for Moyamoya disease based on family history and certain genetic conditions, there are currently no firm screening guidelines. Because the neurologic status at the time of presentation predicts long term outcome, this calls for the clinician caring for patients of all ages to be astute in symptomatic detection in high and low risk groups alike so commencement of intervention can take place to prevent further neurologic sequelae and deterioration.

Breast Enlargement Following AICD Placement

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Tetralogy of Fallot (TOF) is a congenital heart disease characterized by right ventricular outflow tract obstruction, ventricular septal defect, rightward deviation of the aorta, and right ventricular hypertrophy. Long-term prognosis worsens with increased risk of arrhythmias and sudden cardiac arrest, treated with an automatic implantable cardioverter defibrillator (AICD). After AICD placement, patients rarely (less than 0.4%) present with symptoms of venous obstruction including pain, swelling, and enlarged chest wall. Patients who develop post-AICD pain and edema not associated with infection do not require additional surgical intervention as these symptoms usually resolve spontaneously.

A 29 year-old African American male with a history of TOF with pulmonary atresia presented to the clinic with a 3-year history of painless enlargement of the left breast following AICD placement. The AICD was placed due to an episode of sudden cardiac arrest.

On physical exam, blood pressure was 112/74, pulse 80, respiratory rate 20, and oxygen saturation 98%. The chest wall was not painful to palpation, no lumps were present, and no nipple discharge was noted. The left breast was significantly larger in size than the right. Auscultation revealed a previously noted systolic murmur heard best over the right upper sternal border that radiated bilaterally to the carotids.

When a patient presents with unilateral breast enlargement, it is important to consider the following etiologies: breast carcinoma, lymphatic or venous obstruction, and mastitis. Because of the patient's gender, age, chronicity and painlessness of his breast enlargement, and temporal relationship to the AICD placement, a seroma was suspected and surgical consultation was obtained. The surgeon will remove the seroma at the time of battery replacement for his AICD. Primary care physicians are likely to see more of these patients given the increasing frequency of AICD placement.

Case Report of Twiddler's Syndrome in pregnancy

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Twiddler's Syndrome, an uncommon complication of pacemaker placement first described in 1968 by Bayliss et al involves the manipulation and rotation of the pulse generator within its pocket leading to lead dislodgement with resultant poor sensing or loss of capture, and stimulation of structures like the diaphragm or pectoral muscles.

25 year old female who was 32 weeks pregnant with history of bioprosthetic tricuspid valve replacement for endocarditis and dual chamber permanent pacemaker placement for persistent heart block post-operatively that was subsequently upgraded to a dual-chamber defibrillator for cardiac arrest. She presented with complaint; "it feels like I'm being punched from inside out and my baby is having convulsions". No history of trauma to her device.

Device check in the ER showed Right Atrial lead malfunction, undersensing, loss of capture and notable diaphragmatic stimulation. Device was programmed to a DDD in with RA lead pacing set at minimal output to avoid diaphragmatic stimulation. A lead revision done under fluoroscopy post-delivery showed coiling of the leads in the pocket of the device with evidence of retraction of the right atrial lead to the cavoatrial junction. The lead was changed due to noted insulation breaks and it was sutured to the underlying fascia to prevent recurrence.

Frequency of this syndrome is about 0.07-7%, with predisposition being device implantation in lax subcutaneous tissue like in obese or the elderly. Variations of this syndrome and extends to manipulation of other devices e.g ICD and chemotherapy infusion pumps. The sequence of events usually involves loss of capture, and stimulation of ipsilateral phrenic nerve leading to diaphragmatic stimulation with resultant abdominal pulsations as it was the case in our patient. Further reeling of the leads, results in brachial plexus stimulation causing rhythmic arm twitching. Excluding RV perforation, an important differential in diaphragmatic pacing is paramount.

Chronic Kidney Disease in a Pregnant Patient: A Case Report

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Introduction:

Chronic Kidney Disease (CKD) is clinically silent until renal impairment is advanced. GFR has already decreased significantly and renal function has been lost before symptoms are noticed. CKD is sometimes diagnosed for the first time in woman during their pregnancy. Pregnancy requires many physiologic adaptations. Pregnant woman with CKD are often unable to make the renal adaptations that are normally seen and essential to a healthy pregnancy. For the woman with CKD, pregnancy is a challenge.

Case Presentation:

Our patient was a 27yo G5P0131 who had a past medical history of type II diabetes with nephropathy diagnosed at 18 years of age and a 5 year history of hypertension. She also had a right pelvic kidney. She presented for prenatal care to our service at 5.5 weeks gestation when she was admitted for hypertensive crisis and diabetes management. On admission, she was found to have severe renal impairment with a serum creatinine level of 2.3 mg/dL. This patient's management during her nearly 5 month hospital course was an arduous case for our obstetric service as well as for nephrology.

Discussion:

Most women with CKD will have a successful pregnancy outcome. The primary predictor of how renal disease and pregnancy interplay is the degree of renal insufficiency. Pregnancy is a risk factor for the advancement of chronic nephropathies. Women with the worst pre-pregnancy renal function are at the greatest risk for accelerated decline in renal function during and after pregnancy. These women are at the highest risks for deterioration in maternal renal function. Other risks for these women are preeclampsia, cardiovascular and cerebrovascular complications associated with uncontrolled hypertension and death.

Denosumab Use in Patient with Bisphosphonate-Resistant Hypercalcemia of Malignancy

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Hypercalcemia has been reported to occur in up to 20 to 30 percent of patients with cancer. It has 30-day mortality of 50%. We describe a patient with humoral hypercalcemia of malignancy (HHM) refractory to bisphosphonate and prednisone with apparent response to denosumab, a therapeutic monoclonal antibody that blocks RANK ligand.

A 62 year old male with stage IV laryngeal squamous cell carcinoma with lung metastases was admitted for asymptomatic hypercalcemia with an albumin-corrected calcium level 13.8mg/dl (reference range, 8.5-10.3). He had been getting zoledronic acid 4mg every 3 weeks for the prior two months for hypercalcemia of 12-13mg/dl. He denied using HCTZ, calcium or vitamin D. The patient had no known bone metastases. Phosphorus and creatinine levels were normal. Intact PTH 9pg/ml (11-54), PTH-related peptide 16pmol/l (<1.8), 25(OH)D 17ng/ml (30-100) and 1,25(OH)2D 134pg/ml (10-75) were diagnostic of HHM. After IV pamidronate, intravenous fluid hydration and calcitonin, he was discharged with corrected calcium down to 12. Despite an increase to weekly zoledronic acid and adding prednisone for elevated 1,25(OH)2D, he had four subsequent admissions with elevated corrected calcium as high as 14.2. Denosumab 120mg subcutaneously was added. His corrected calcium remained at 11.6 for the next two weeks. Subsequently, he experienced rapid disease progression and decided for comfort care. In summary, 52 y/o male with bisphosphonate-refractory HHM was treated with denosumab and had improvement of hypercalcemia.

1: Denosumab, currently approved only for osteoporosis and bone metastases, may be an additional choice for refractory hypercalcemia. The literature suggests it may be more potent than zoledronic acid.

2: HHM with increased PTH-rp usually does not result in elevated 1,25(OH)2D (5,6). Our patient with elevated 1,25(OH)2D did not respond to prednisone unlike a similar reported case.

Dieulafoy's Lesions, A Case Series

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Dieulafoy's lesions are dilated aberrant submucosal vessels that erode overlying epithelium in the absence of primary ulcers. They're rare causes of GI bleeding with unknown etiology and not well understood bleeding triggers. We present 5 cases of GI bleeding related to Dieulafoy's, three being in rare locations with descriptions of therapeutic intervention and outcome.

74 year-old male with atrial-fibrillation on Dabigatran presented with hematochezia, dyspnea, dizziness, and weakness. Hemoglobin was 6.2g/d with hemoccult positive stools. Colonoscopy revealed Dieulafoy in ascending colon. Bleeding was controlled via epinephrine/clipping.

65 year-old male with atrial-fibrillation on warfarin presented with hematochezia. BP was 93/54 and HR 129. Colonoscopy demonstrated Dieulafoy in the rectum with adherent clot. Bleeding was controlled via epinephrine/clipping. Bleeding continued following day which was controlled by surgical ligation.

63 year-old normotensive male presented with hematemesis. NG tube showed bright red blood and patient had hemoccult positive stools. EGD revealed a 2mm Dieulafoy in fundus with no active bleeding. Bleeding was controlled with clipping/epinephrine.

52 year-old female taking aspirin/ibuprofen presented with melena, postural-dizziness, weakness, and tachycardia. Hemoglobin was 6.0g/dL. EGD revealed Dieulafoy in fundus. Bleeding was controlled with epinephrine/bipolar-diathermy.

59 year-old female presented with BRBPR. Month prior she had clipping of an ulcer in mid-transverse colon to control bleeding. Colonoscopy showed Dieulafoy at the site of previous intervention. Bleeding was controlled via bipolar-diathermy.

Dieulafoys are commonly located in the stomach along the lesser curvature near the esophagogastric junction and have unknown etiology without well understood bleeding triggers. Endoscopy is the diagnostic modality of choice. Treatment — Endoscopic hemostasis with a combination of epinephrine injection followed by bipolar-probe coagulation and/or hemoclip placement to control acute bleeding and to prevent rebleeding. Endoscopic band-ligation, argon plasma coagulation, and cyanoacrylate injection are other treatment options. Surgical wedge resection should be reserved for difficult-to-control bleeding.

Dyslipidemia in Suspected Primary Biliary Cirrhosis

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Primary biliary cirrhosis (PBC) is an autoimmune disorder, described as the prototype of cholestatic liver diseases. LDL cholesterol is often markedly elevated in PBC.

48 y/o AA male with past medical history of hypertension, mildly elevated LDL, and GERD was found to have lipemia retinalis during annual ophthalmological examination. Evaluation revealed markedly elevated LDL 689 (50-100), triglycerides 525 (30-170), and alkaline phosphatase 225 (40-120) for 3 months. He was referred to Endocrinology Clinic. On review he had a mildly elevated LDL for 5 years prior to the marked elevation and was treated with low dose statin. There was no history of prior liver disease or family history of lipid or liver disorders. He had no evidence of diabetes mellitus, hypothyroidism, or nephrotic syndrome. Tendon xanthoma, xanthelasma or hepatosplenomegaly were not present on physical exam. Testing was ordered for the differential diagnosis of liver disorders, which included viral hepatitis, hemochromatosis, Wilson's disease, PBC (anti-mitochondrial antibody, anti-nuclear antibody, anti-smooth muscle antibody), and a-1 antitrypsin deficiency, which he did not obtain. He presented for follow up 2 months later and his LDL 111 was now at baseline and alkaline phosphatase 79 was normal. Testing for etiology of liver disorders at that time was unrevealing, including PBC. In summary, a 48 y/o male presented with transient elevation of LDL and alkaline phosphatase suggestive of PBC, which resolved spontaneously within 5 months.

1. The marked elevation of LDL with cholestatic liver disease is suspect of PBC.
2. The elevation of clinically measured LDL in PBC is due to an abnormal lipoprotein, LP-X.
3. The spontaneous resolution of suspected PBC is unusual; however, it is not uncommon for autoimmune diseases to remit and relapse. The patient will need continued follow up.

**Giant Left Circumflex artery fistula draining into
Superior Vena Cava**
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Cardiology

Coronary arteriovenous (AV) fistula is a congenital coronary anomaly that diverts blood flow from the mainstream artery thereby resulting in hypo-perfusion and possible ischaemia of the downstream myocardium. When superimposed with atherosclerotic occlusion of a neighbouring coronary artery, the resulting myocardial ischaemia could potentially be even more severe.

78 year old male presented with typical anginal symptoms of one day duration, along with shortness of breath and diaphoresis. Initial physical exam, hemodynamic data and EKG was unremarkable. Cardiac biomarkers were elevated and suggestive of Non ST elevation Acute Coronary Syndrome. Patient was started on treatment according to NSTEMI-ACS guidelines along with early invasive strategy. Coronary angiography was significant for multivessel CAD and a large ectatic left circumflex artery making fistulous communication with either pulmonary artery or superior vena cava. Coronary CT was performed to further delineate the fistula, which confirmed a tortuous left circumflex artery (LCx) to superior vena cava (SVC) fistula. In view of multivessel disease, patient underwent coronary artery bypass grafting and successful ligation and excision of LCx-SCV fistula.

Most CAFs are small, and patients are asymptomatic because myocardial blood flow is not compromised. Early surgical correction is indicated because of the high prevalence of late symptoms and complications, especially when the shunt is significant (Qp-to-Qs ratio > 1.5). Coronary angiography is usually required for a definitive diagnosis and planning management, magnetic resonance imaging (MRI) and computed tomography (CT) are useful, noninvasive, and accurate imaging techniques for the detection of major coronary artery anomalies. Many fistulas are small, present as incidental findings on angiography, and do not require attention. Symptomatic patients have angina or volume overload due to left-to-right shunt. The current treatment options for CAF include surgical ligation alone (with or without CPB) or accompanied by coronary artery bypass grafting, and transcatheter closure.

Granulomatous Inflammation As An Unusual Cause Of Of Acute Respiratory Distress Syndrome(ARDS)

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ARDS is an uncommon presenting manifestation of granulomatous lung disease. Most of the granulomatous disease like Hypersensitivity pneumonitis or sarcoidosis may present with an acute onset with constitutional symptoms but rarely present with acute hypoxic respiratory failure requiring mechanical ventilation. When presented with severe ARDS/ hypoxia, it becomes a diagnostic challenge in these acutely sick patients because an invasive diagnostic procedure can further compromise respiratory status.

We are presenting a case of 50 year old female without any significant past medical history. She presented with acute onset of shortness of breath and productive cough for 3 days. On presentation patient was febrile and hypoxic with PaO₂ of 53 on 4 liters oxygen. Chest x-ray showed bilateral pulmonary infiltrates and bilateral hilar fullness. Chest CT chest showed mediastinal lymphadenopathy with bilateral pulmonary infiltrates, hence the patient was started on broad spectrum antibiotics. Patient required intubation on the following day, because of worsening hypoxia and respiratory distress. Given presence of significant mediastinal lymphadenopathy, flexible fiberoptic bronchoscopy was performed for BAL and washings. Endobronchial ultrasound guided biopsies of lymph nodes could not be performed because of severe hypoxia; hence esophageal ultrasound guided lymph node biopsies were performed safely. Lymph node biopsies revealed epithelioid histiocytes and lymphocytes suggested granulomatous process. Serology for fungal infection, Tuberculosis, and vasculitis disorder came negative. All cultures were negative and BAL cell count showed only 1% eosinophils. Patient was started on dexamethasone and by day 11, she was extubated with marked improvement in hypoxia and pulmonary infiltrate.

We are reporting this interesting case to highlight a non-infectious cause of ARDS. Patients with acute hypoxic respiratory failure also pose a diagnostic dilemma. We were able to safely perform mediastinal lymph node biopsies through the esophageal approach without compromising patient's oxygenation at the bed side

I can't walk!!: Acute Paraplegia Secondary to Ankylosing Spondylitis.

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Spinal cord ischemia is rare and acutely debilitating, especially in patients with prior neurological and musculoskeletal disorders. As in this clinical vignette, a prior history of ankylosing spondylitis can increase risk of cord infarction.

A 51-year-old patient with a thirty-year history of ankylosing spondylitis presented to the clinic with bilateral leg paresthesias that started suddenly on his right thigh and progressed to involve both legs, feet, and lower back. Within 24 hours, the patient's symptoms evolved, leading to gait instability and near paraplegia. He presented to the clinic and was noted to be paraplegic and in distress. The patient denied history of rash, tick bite, or trauma. He did complain of inguinal and perianal paresthesias, but denied symptoms of urinary or fecal incontinence or obstruction. Exam was unremarkable with the exception of neurologic findings. Motor and sensory function was intact in his upper extremities bilaterally. In the lower extremities, sensation was diminished and strength was 0/5 bilaterally. The lower extremities were hyperreflexic, with preserved rectal and cremasteric reflexes. On admission to the hospital, lumbar and thoracic MRI showed areas of acquired neural foramina narrowing and ischemia around T9-T10. The patient was treated supportively and was referred to physical therapy. Residual symptoms quickly resolved, and he began ambulating again with the aid of a walker. Currently, the patient lives an active lifestyle and has had no recurrence of paraplegia.

This case demonstrates how a patient with a history of ankylosing spondylitis can present with spinal cord ischemia and acute paraplegia. Early diagnosis with physical exam findings and MRI imaging made it possible to observe for the sequelae of spinal cord infarction, which are usually irreversible. We recommend practitioners utilize MRI for diagnosis of acute paraplegia, as it is helpful for diagnosis and for ruling out other causes of paraplegia.

Management of Hyperthyroidism in Neutropenia:

A case of Graves disease in multiple myeloma

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Graves' disease (autoimmune thyroid disease with diffuse overactivity of the thyroid) may lead to acute (arrhythmias and heart failure) as well as chronic complications (osteoporosis, orbitopathies) if untreated. Management of hyperthyroidism can be challenging in situations of leucopenia since anti-thyroid medications are associated with low neutrophil counts and radioactive iodine may take time to take full effect. We present a case of Graves disease in multiple myeloma and review its treatment in the face of severe neutropenia.

58 y/o female presented with pancytopenia on routine laboratory testing. Her hemoglobin was 8.4 gm/dl (12-16), white blood cells (in K/cmm) 2.4 (4.5-10), platelets 115 (150-440) and absolute neutrophil count 0.6 (2- 8). Her chemistry panel demonstrated elevated total proteins 13.2 gm/dl (6 - 8.3) and globulin 9.4 gm/dl (2.3-3.5) and decreased albumin to globulin ratio 0.4(1 – 2). Further testing confirmed a diagnosis of multiple myeloma.

She was started on high dose chemotherapy and referral was made for stem cell transplantation. She was also noted to have suppressed TSH 0.008 mIU/L (0.37 – 4.4), which was confirmed along with normal free T4 1.79 ng/dl(0.75-2.00) and elevated free T3 9.08 pg/dl(2.3-4.2). T3 toxicosis was confirmed since her nuclear medicine scan showed 46% uptake in the right thyroid lobe. After careful consideration of risks and benefits, she underwent total thyroidectomy after pretreatment with saturation solution of potassium iodide for 7 days. She is currently euthyroid on levothyroxine and awaiting stem cell transplant.

Hyperthyroidism in persons with neutropenia is a challenge. Absolute neutrophil count of < 500/mm³ is a contraindication to antithyroid medications. Total thyroidectomy after pretreatment with SSKI within a reasonably short time is the only option.



POSTER PRESENTATIONS • SESSION II • 2:30 PM – 3:15 PM

26TH ANNUAL RESEARCH DAY POSTER SESSION

Myasthenia Gravis In The Elderly: Diagnosis Enigma

Lisa Carey, Shirley Neitch, Guillermo Madero

Internal Medicine, Joan C. Edwards School of Medicine, Huntington, WV

Myasthenia Gravis is an autoimmune disease that can have a severe impact on a person's quality of life, especially in the time leading up to the diagnosis. In elderly patients, oftentimes the symptoms of myasthenia gravis are misinterpreted as being cerebrovascular in origin or even just a normal aspect of aging, leading to a delay in diagnosis.

A 78 year old female presented to a new PCP's office complaining of blurry and double vision, unstable gait, and right eye ptosis for 6 weeks. MRA of the head was performed and interpreted by the radiologist as a "persistent filling defect in the superior sagittal sinus. Dural sinus thrombosis is not excluded." The patient was admitted for anticoagulation. The patient's symptoms did not improve. After personally reviewing the films, the neurology consultant decided that there was no thrombus. The patient was tested for myasthenia gravis, and her acetylcholine receptor antibodies came back positive. She was started on steroids and pyridostigmine. A search for a primary cause for her myasthenia gravis was undertaken, however none were found.

It is important for physicians in both the outpatient and inpatient setting to be familiar with the signs and symptoms of myasthenia gravis and include it in the differential diagnosis of an elderly person complaining of weakness and visual disturbances. Their complaints may be attributed to cataracts, macular degeneration, or stroke- common ailments in the elderly population. A neuromuscular disorder is rarely considered. Though myasthenia gravis does have a lower disease activity in the elderly than the young, they have a higher mortality rate as well as multiple comorbidities, thereby highlighting the importance of an early diagnosis and treatment. This case study demonstrates an atypical presentation of a common disease and serves to create awareness about how to prevent potential mismanagement of elderly patients.

Non-Hodgkin's lymphoma with pleural and abdominal chylous effusions

Yousef Hattab , Loui Abdulghaney m Fuad Zeid
Internal medicine, Pulmonary

Chylothorax can be categorized as traumatic or non traumatic . The largest study included 203 patient treated over 21 years period and found equally incidence of traumatic (50%) and non traumatic (44%) , Idiopathic chylothorax was diagnosed in 6% of patient after extensive evaluation 2 . Malignancy is the leading cause of nontraumatic chylothorax 2 , we are presenting a case of chylous pleural and abdominal effusions diagnosed finally as non Hodgkin Lymphoma .

82 year old man presented with worsening shortness of breath and abdominal distention , associated with fever, chills , night sweats and weight loss . Chest X-ray showed moderate left sided pleural effusion , bedside ultrasound guided paracentesis and thoracentesis revealed milky ascetic and pleural fluid respectively . Triglyceride levels were 271 in ascetic fluid and 221 in pleural fluid , pleural fluid was exudative with lymphocytic predominant cell count , cytology was negative , CT scan of chest , abdomen and pelvic showed multiple bulky lymphadenopathy involving pelvic , retroperitoneal and mediastinal region . Left axillary Exicisional lymph node biopsy confirmed lymphoblastic non-Hodgkin Lymphoma .

The present case described an old male with NHL involving chylous pleural and abdominal effusions. Chylous effusions are common in lymphomas, particularly those of a high grade, including Burkitt's and lymphoblastic lymphomas. However, it is rare for a lymphoma patient to have Chylous effusions in the pleural and abdominal cavities. The present case further indicates that chylous effusions are formed due to the mechanism of lymphatic trunk obstruction, and that the appearance of chylous effusions is associated with a poor outcome, particularly in patients with malignant lymphoma

Not the Typical Lung Nodule

Dr. Yousef Shweihat M.D., Dr. James Perry III D.O.
Pulmonary Medicine

Pulmonary Candidiasis of the lung is rare. Cases reported have been immunocompromised eg; HIV, chemotherapy, and immunodeficient patients. Typically positive cultures in the lung are untreated and considered respiratory flora.

This is a 75 year old male with COPD admitted to the Huntington VA with dizziness, syncope, and weakness. The patient had a 70 pack years smoking history; did carpentry work and denied any Tuberculosis or coal dust exposure. Patient mentioned shortness of breath, denied fever, weight loss, sputum production.

Chest x-ray revealed a left upper lobe lung nodule and CT showed a speculated nodule in the left upper lobe suspicious for malignancy and an opacity abutting the descending thoracic aorta in the left lower lobe.

Pulmonary ordered fine needle biopsy of the nodule that was non-diagnostic. The Nodule was positive on PET-CT. The patient refused open lung biopsy.

A second fine needle biopsy of the lung nodule that was positive for candida species. Infectious disease recommended ketaconazole along with transaminase monitoring. Aspergillosis and fungal serology were negative.

Outpatient follow up visits have shown improvement on repeat CT images and patient has not required admission since beginning treatment.

Pulmonary candidiasis is quite rare even more so in patients with few systemic symptoms. Primary pneumonia due to candidiasis is commonly found through hematogenous spread rather than oropharyngeal secretions and images usually are found to have microabcesses scattered through the lung parynchema and rarely lobar infiltrates. This case was just a lung nodule.

When should candida sputum cultures be treated? Is it possible to have higher sensitivity and specificity with the tools used today? Often BAL washings and cultures grow candida species, but how accurate is this? This case initial tissue specimen was not adequate. Tools that are used today to establish a diagnosis have proven to not always be reliable.

Posterior Tibial Tendon Dislocation: A Case Report

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School of Medicine, Huntington, WV.

Our case report adds to a growing number of studies describing the diagnosis and surgical management of posterior tibial tendon dislocation. While this injury is relatively rare, it is becoming more commonly identified and is frequently a clinical diagnosis.

We describe a sports-induced injury to an 18-year-old female collegiate volleyball player.

At the time of injury, the young woman landed awkwardly and heard a “pop” in her ankle, which immediately preceded swelling.

She presented to our orthopedic clinic 1 week after the injury was sustained. She was wearing a boot, using crutches, and was able to bear weight but walked with a limp. The patient indicated that the pain was moderate and localized to the medial aspect of her ankle.

Physical exam demonstrated a tender, edematous left ankle with ecchymoses over the medial malleolus. The posterior tibial tendon appeared to be subluxed medially and anteriorly over the medial malleolus.

The patient’s injury was diagnosed as a left ankle sprain with dislocation of her posterior tibial tendon. MRI supported the diagnosis.

Our patient underwent surgical repair 3 weeks after the injury. Because the edges of the tendon subluxed with the tendon sitting in the retromalleolar groove, a groove deepening procedure was performed.

Post-operatively, the patient progressively achieved her previous level of activity, and complained of no pain with activities of daily living at 6 months post-op.

This case follows the developing pattern that describes most posterior tibial tendon dislocations: it was an injury induced by high-intensity activity, diagnosed clinically, confirmed by MRI, and treated surgically.

Our report differs in that the diagnosis was made earlier than the average time until correct diagnosis, and in that we elected to deepen the retromalleolar groove during surgical repair. This report gives further evidence that surgery provides an excellent outcome to posterior tibial tendon dislocations.

Pott's Puffy Tumor: Not really a tumor!

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Pott's puffy tumor (PPT) is a complication of frontal sinusitis, a frontal bone osteomyelitis with an associated subperiosteal abscess. Patients present with fluctuant scalp swelling and the diagnosis is confirmed with computed tomography (CT). Treatment includes drainage and antibiotic therapy. To date, there are approximately 72 documented cases of PPT in the English literature. We present a case and a review of the literature. A 16-year-old male patient presented with a one week history of nausea, vomiting and diarrhea. The symptoms resolved but he then developed severe frontal headaches, for which he presented to the emergency department. Physical exam revealed a large, well demarcated, erythematous, fluctuant swelling on the forehead. Antibiotics had been started empirically prior to transfer to our facility. Head CT without contrast showed left frontal sinusitis and to a lesser degree left ethmoid sinusitis, subgaleal abscess ventral to the left frontal sinus and a possible epidural abscess ventral to the left frontal lobe. No skull osteomyelitis was noticed. Magnetic resonance imaging (MRI) confirmed the head CT findings. Surgical evacuation of the abscesses was performed. Gram stain did not show any organism but many neutrophils were observed. All aerobic and anaerobic bacterial and fungal cultures were negative. Acid fast bacilli was negative too. Patient recovered well after surgery and antibiotics were continued for 4 weeks.

Although imaging and intraoperative observation did not show features of osteomyelitis, venous drainage is a possible explanation for intracranial seeding. Negative cultures were most likely due to starting antibiotics prior to evacuation.

Primary Gastric Burkitt Lymphoma (in situ) in a Teenage Male

Brian Kilgore, Mark Mogul, Yasser Al-Jebawi, Doreen Griswold,
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Burkitt lymphoma in children comprises 30% of all non-Hodgkin lymphomas of which gastric lymphoma is very rare. Localization and grading of the disease plays a crucial role in the prognosis. We present a rare case of primary gastric Burkitt lymphoma (in situ).

A 15 year old was referred for 3 months of abdominal pain. Repeated endoscopy by an outside surgeon revealed peptic gastric ulcerations and negative H. pylori. Therapy with proton pump inhibitors and Carafate provided no relief. In our center, examination revealed only mild epigastric pain and ten pound weight loss. Endoscopy revealed moderate to severe gastric inflammation and mild nodularity of the duodenal bulb. Biopsies confirmed gastritis, negative H. pylori, and normal esophagus/small intestine. Repeat endoscopy showed no improvement in gastric inflammation, and ulceration of the gastric fundus was identified. Biopsies showed severe gastritis and normal small intestine. CT abdomen showed gastric wall thickening with no lymphadenopathy. Labs revealed normal gastrin levels. Due to lack of response, lympho-proliferative disorder was considered. The final endoscopy, revealed a white base, deep ulceration in the fundus. Biopsies from the rim and base were obtained. A single biopsy from the base showed significant lymphocyte proliferation suggestive of lymphoma. Biopsy stains for CD20, CD10, bcl-6 and ki-67 were positive. In situ hybridization for EBV virus was diffusely positive. Molecular analysis indicated MYC/IGH fusion [t(8;14)] in 100% of nuclei. The final diagnosis of Burkitt lymphoma was made. PET scan of the abdomen, bone marrow aspiration, and lumbar puncture showed no extra gastric involvement.

We present a teenage male diagnosed with “in situ”, Stage I, primary gastric Burkitt lymphoma. The high degree of suspicion and persistent investigation resulted in the diagnosis of Burkitt lymphoma at its earliest stage leading to a better prognosis. The patient continues to do well after receiving chemotherapy.

Primary Intestinal Lymphangiectasia In a Patient with 6q Duplication Syndrome

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Marshall University Joan C. Edwards School of Medicine

Primary Intestinal Lymphangiectasia (PIL) is a rare protein-losing enteropathy characterized by dilated intestinal lacteals and leakage of lymph into the bowel lumen. This disorder typically presents in childhood. Although the etiology of PIL remains unclear, it has been associated with numerous congenital syndromes. We present a case of PIL in a patient with 6q Duplication Syndrome, suggesting that there may be a link between the two conditions.

A 28-year-old male with 6q Duplication Syndrome presented with acute respiratory failure, abdominal distention, and bloody diarrhea. He underwent exploratory laparotomy for radiographic evidence of pneumoperitoneum; however, no perforation was identified. He was readmitted 9 days later with fever, generalized swelling, and right-sided pleural effusion. Abdominal CT demonstrated increasing abdominal ascites, proximal small bowel wall thickening, and bilateral pleural effusions. Diagnostic paracentesis obtained milky-white fluid with triglyceride level of 412 mg/dL with benign mesothelial and chronic inflammatory cells. Laboratory examination revealed hypoproteinemia, hypoalbuminemia, and lymphocytopenia. EGD visualized edematous small bowel, and biopsies showed dilated lymphovascular spaces consistent with PIL. Patient experienced improvement in gastrointestinal symptoms after initiation of treatment with medium-chain triglycerides, albumin, and octreotide.

Although most commonly diagnosed in childhood, it is important to consider PIL in the setting of recurrent pleural effusions and chylous ascites. Treatment of PIL involves adoption of a low-fat diet with medium-chain triglycerides. These are directly absorbed into the portal venous system, bypassing the lymphatics and preventing lacteal engorgement. We highlight this case to bring awareness of the potential link between 6q Duplication Syndrome and PIL and to encourage further investigation to elucidate any such association.

Prochlorperazine, A Rare Cause of Neuroleptic Malignant Syndrome

Jason P. Mader, Rezwan Ahmed, Fahad Sheikh, Yousef Shweihat
Department of Internal Medicine/Pulmonary and Critical Care

Neuroleptic Malignant Syndrome (NMS) is a life threatening neurologic emergency. It is usually triggered by the use of neuroleptic agents. Patients present with a tetrad of mental status changes, rigidity, hyperthermia, and dysautonomia. In this report, we present an unusual association of NMS with the use of Prochlorperazine, a rare but known complication.

A 51 year old female presented to the Intensive Care Unit with status epilepticus, a temperature of 109F, muscular rigidity, altered mental status, tachypnea, tachycardia, and acute renal failure secondary to rhabdomyolysis. She presented intubated to our institution. She was sedated and paralyzed. A Lumbar Puncture ruled out central nervous system infection. The patient's troponin were greater than 50, CPK elevated at 64,000, and she demonstrated lactic acidosis. Her only known medications upon presentation didn't include any neuroleptic agents; however, it was discovered that the patient had begun taking large amounts of Prochlorperazine for stomach issues. The patient's condition quickly declined in the intensive care unit and the patient's heart arrested twice before she expired.

NMS is a neurologic emergency with a 10-20% mortality rate. Generally comprised of a tetrad of symptomology presenting in a stepwise fashion, beginning with altered mental status, then generalized rigidity/tremor, hyperthermia, and finally dysautonomia. Other associated manifestations include rhabdomyolysis, cardiac arrhythmias, respiratory failure, acute renal failure, and hepatic failure. NMS is most commonly associated with the typical antipsychotics, but all neuroleptic drugs including atypical antipsychotics and antiemetics (such as Prochlorperazine) may be causative agents. Our case represents an excellent example of how all neuroleptic agents, regardless of how uncommon, have the potential to cause NMS and result in a poor outcome for the patient.

Selective Case Study Describing the Use of Apligraf® on Necrobiosis Lipoidica Associated with Diabetes

Harry L. Penny, Michael Faretta, Mounif Rifkahn, Adam Weaver,
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Blair Medical Associates Foot and Ankle Clinic, UPMC Altoona

Necrobiosis lipoidica (NL) is a rare skin disease characterized by large, well-demarcated, symmetric plaques with overlying telangiectasias and atrophic, fibrotic features. The disease is associated with diabetes mellitus (1 in 300), but can also be linked to other diseases such as rheumatoid arthritis. Ulcerations are the most serious type of complications in necrobiosis lipoidica, and they occur most frequently on the legs of patients. However, the etiology of necrobiosis lipoidica still remains unclear. In this case study, a patient with necrobiosis lipoidica that has been refractory to conventional therapy received treatment with Apligraf® bioengineered wound dressings. In this study, Apligraf® was shown to be effective in managing the patient's multiple hard-to-heal wounds. It was more successful than previous therapies in achieving granulation tissue formation and wound volume reduction, in addition to being a more rapid form of treatment.

Patient was a 13 year-old female with a 10-year history of necrobiosis lipoidica located bilaterally on the lower extremities and was refractory to multiple modes of treatment. Her initial diagnosis was made at the age of three. Six years later she was concurrently diagnosed with type-1 diabetes.

Apligraf® was effective in managing the patient's multiple ulcerations due to necrobiosis lipoidica. The Apligraf® treatment protocol not only avoided further complications but proved to be more successful than previously attempted therapies. Apligraf® achieved both granulation tissue formation and wound volume reduction, doing so in a more rapid pace than the aforementioned therapies. Whereas prior treatments were conducted in a 6-12 month span, our initial application of Apligraf® resolved wounds 1 and 2 in 45 days with wound 3 resolving in 68 days. The hope is that the treatment protocol with Apligraf application, which we used, can be a future indication for the treatment of necrobiosis lipoidica.

Spontaneous Infected Biloma Managed by percutaneous Drainage Followed by ERCP due to Persistent Bile Leak

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A biloma is a loculated collection of bile outside the biliary tree. It is mainly iatrogenic or post abdominal trauma. Spontaneous biloma is a rare condition. We report a case of a spontaneous infected biloma, managed with percutaneous drainage followed by endoscopic biliary decompression.

A 54 year old male patient presented with one week h/o of epigastric pain, fever, chills, nausea and vomiting. Patient presented in septic shock. He was tachypenic, tachycardic with a BP of 70/40. P/E was unremarkable except for morbid obesity. Labs showed WBC count 45000, Hb 10.8, platelets 229, Cr 2.19, Alkaline phosphate:247, AST: 52, ALT 56, Bili: 1.2. Ultrasound showed an (8.6x6x2 cm) cystic fluid collection adjacent to gall bladder. A transcutaneous pigtail drain was placed. 50 ml of green material suspicious for a biloma. Fluid analysis revealed infected biloma with 850 neutrophils. Culture positive for E coli. CT scan Tubogram and HIDA scan showed no communication between gallbladder and Biloma & patent cystic duct. Due to persistent drainage of 200-300 ml of bile daily, an ERCP was performed to decompress the system and to r/o Biliary tree disease. It was normal. A stent was placed with complete resolution of the leak

Spontaneous biloma have rarely been reported to date. Underlying causes included choledocholithiasis, cholangiocarcinoma, acute cholecystitis, liver infarction, obstructive jaundice, hepatic abscess, nephrotic syndrome, sickle cell anemia & tuberculosis. The clinical symptoms are nonspecific. The diagnosis can be achieved by ultrasonography, abdominal CT and MRI. A definite diagnosis can be made by a DISIDA scan, percutaneous aspiration or by ERCP. Treatment for small bilomas is not always necessary. The main approach to treatment is percutaneous & endoscopic. Surgery is reserved for persistent bile leak or for treatment of underlying disease.

Stenotrophomonas maltophilia endocarditis of Mitral Valve

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Stenotrophomonas maltophilia is an environmental bacterium increasingly involved in nosocomial infections. A prominent feature of this organism is its resistance to multiple antibiotics, including, β -lactam agents, quinolones, aminoglycosides, and carbapenems, thus leading to frequent therapeutic failures. Early recognition and management is very important to reduce mortality risk.

We present a 34-year-old female, case of *Stenotrophomonas maltophilia* native valve endocarditis secondary to intravenous drug use. The patient presented with chest pain to the emergency room and was found to be hypotensive and CT scan of the chest showed pneumonia with probable septic emboli. Blood cultures were obtained and grew *Stenotrophomonas maltophilia* susceptible to Trimethoprim-Sulfamethoxazole and Levofloxacin, and with intermediate susceptibility to ceftazidime. Echocardiography revealed large vegetations on the mitral valve with severe valvular dysfunction. She was started on a high dose of Ceftazidime and high dose Tigecycline. Repeat blood cultures were negative. The patient reported urticarial with exposure to Bactrim as well as levofloxacin. that combined with cardiogenic shock and acute congestive heart failure were deterrents from attempting to challenge with either antibiotic. Patient required mitral valve replacement. Trimethoprim-Sulfamethoxazole and Levofloxacin were introduced one at a time in a graded challenge fashion in the early post-operative period after stabilization of hemodynamics. The patient didn't react to either medication and she was continued on both for 2 weeks. The patient was discharged home with oral Trimethoprim-Sulfamethoxazole and Levofloxacin. *S. maltophilia* endocarditis is a rare disease that has been reported in intravenous drug users. The bacterium is inherently resistant to commonly used antibiotics. β -lactam-antibiotic-based regimen is typically preferred for serious infections such as endocarditis. In the era of increasing antimicrobial resistance the treatment options are becoming very limited. In addition to valve replacement, the combination of Trimethoprim-Sulfamethoxazole and Levofloxacin can be effective for β -lactam-resistant *S. maltophilia* infective endocarditis.

Thrombotic Thrombocytopenic Purpura Presenting in Pregnancy after IV Oxycontin (OP-40) Use

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Microangiopathic hemolytic anemias are rare causes of intravascular hemolysis and thrombocytopenia that have been linked to several conditions including infection, pregnancy and drug use. We discuss a case of a 12 week gravid female that was transferred to our facility with anemia and thrombocytopenia presenting as chest pain, dyspnea and headache. She had injected OP-40 (oxycontin) approximately 24 hours before the onset of symptoms. We feel this represents the first case of oxycontin induced TTP reported in the literature.

A 28 year old, twelve week pregnant female presented to an outlying facility after extreme shortness of breath caused her to become presyncopal. She described substernal chest pain and severe headache. Labwork revealed a hemoglobin (Hgb) of 5.1 g/dL and platelets of 8000/ μ L. LDH was 928 IU/L, total bilirubin 3.41 mg/dL (mostly indirect) and reticulocyte count 7.34%. Haptoglobin was below detectable levels. She was transferred to our facility promptly for plasmapheresis.

Exam demonstrated an erythematous malar rash and scattered bruising on the bilateral upper extremities. A peripheral smear showed 1-2+ schistocytes and normal appearing platelets. Further work-up included ANA, ds-DNA, anti-cardiolipin, hepatitis panel, HIV, RPR, Rubella IgG Ab and C3/C4 levels all of which were negative except the presence of Hepatitis C. Renal function was normal. The patient showed little response to plasmapheresis but did show some improvement in counts on day twelve of admission. The patient admitted to oxycontin use after being confronted with a positive urine drug screen.

Oxycontin was a commonly used street drug before 2010 when it was reformulated to prevent abuse. In 2013 the CDC reported several cases of TTP linked to reformulated oxymorphone. Both reformulations contain polyethylene oxides that have been shown to induce TTP-like consequences in lab animals. We propose that more research is necessary to determine the role of PEOs in TTP causation.

Thyroid Storm And Its Rare Complication: Thrombocytopenia

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Thyroid storm is a life threatening condition characterized by severe clinical manifestations of thyrotoxicosis. Review of current literature reveals that only a few cases of thyroid storm have occurred and they were mainly within foreign countries. Here we present a 23 year old female with thyroid storm and thrombocytopenia, which is an extremely rare complication.

A 23 year old Caucasian female with a known history of hyperthyroidism presented with generalized weakness and a 'racing heart'. On admission, she had a fever of 104 degrees Fahrenheit, tachycardia with heart rate in the 170s, and an otherwise stable blood pressure. Her blood work demonstrated elevated free T3 of 8.9, free T4 of 4.98, and TSH of <0.008. Symptomatic treatment was instituted with fluid resuscitation, steroids, methimazole and an esmolol drip. Additionally, the patient was also found to have a decreased platelet count of 29000/uL. With no prior medical records at the time of presentation, hepatitis C, disseminated intravascular coagulation (DIC) secondary to infection, polypharmacy and thyroid storm was considered. The patient was continued the medications listed above and her DIC panel was negative. After four days, her platelet count recovered to baseline and the acute phase of her thyroid storm resolved.

Thyroid storm presents with a variety of complications. This case demonstrates a patient who had thrombocytopenia. Because the patient had a transient decrease in her platelet count, hepatitis C or medications that were not substituted could not be the primary etiology for the patient's presentation. the temporal relationship between the onset of thyroid storm & thrombocytopenia suggest a strong correlation. it is important to initiate supportive care in the acute setting of thyroid storm. clinicians should be made aware that thrombocytopenia, though rare, can be associated with a thyroid storm.

Transient Vision Loss in a Chronically Noncompliant, Subtherapeutic INR Patient

Jacob Kilgore, Christine Gilkerson
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As demonstrated by the following case presentation, it is important to consider alternative diagnoses in acutely presenting, noncompliant patients to prevent missing undiscovered pathology.

Patient is a 52 year old female who presented to the ED for visual disturbance and headache that began while in her car at a convenience store drive through. She described the visual disturbance as a transient vision loss, stating a gray color came over both her eyes. Of note, patient has a past medical history significant for rheumatic fever status post mechanical mitral valve implantation in 2010. She has been prescribed anticoagulation therapy since that time but has a documented history of medication noncompliance. Initial physical exam yielded no acute neurological deficits. Cranial nerves were intact, vision was normal acuity, and no papilledema was observed. Cardiovascular exam demonstrated an audible mechanical mitral valve and a left carotid bruit. Laboratory studies indicated a subtherapeutic INR with no other acute findings. Echocardiogram revealed normal EF with appropriate filling pressures and no evidence of endocarditis. CT head showed no acute findings. Patient was started on IV anticoagulation for a presumed diagnosis of TIA. Prior to discharge, duplex carotid ultrasound ordered during the patient's hospital course was reviewed and found to demonstrate to-fro flow in the left vertebral artery suggestive of subclavian artery stenosis with concurrent steal syndrome. Considering the patient's presentation and exam findings, further workup was completed. CTA head and neck revealed 75% stenosis of the left subclavian artery. Patient underwent left subclavian artery stenting and remains asymptomatic post surgical intervention.

Chronic noncompliance can complicate the management of acutely ill patients. In this case, it led to the presumptive diagnosis and treatment of TIA. However, it is critical that providers investigate beyond initial presumptions to uncover a diagnosis that encompasses both clinical presentation and physical exam findings.

Unilateral Hyperlucent Lung in a Teenager

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Swyer-James-MacLeod syndrome (SJS) or is a rare entity, associated with post infectious bronchiolitis obliterans occurring in childhood Here we present the case of 19 year old Caucasian male with progressive dyspnea for 1 year.He was a light smoker and attributed his symptoms to smoking but presented for evaluation when he felt that dyspnea was crippling him. His medical history was unremarkable except for frequent respiratory infections in the past. His examination showed a malnourished male, ill in appearance with bilateral diffuse wheezes on auscultation and decreased breath sounds more on the right side. His chest X-ray showed hyperinflation and no infiltrates. His FEV1 was only 800 cc. which is 19% of predicted consistent with a very severe obstructive defect. A CT-chest showed hyperinflated and hyperlucent lungs with mosaic perfusion and large amount of air trapping, more on the right. Differential diagnosis included cystic fibrosis and hereditary emphysema and those were excluded with normal sweat chloride test and normal alpha-1 antitrypsin. The search for infectious etiology was negative except for + Adenovirus IgG antibodies indicating old infection. We speculated that the patient may have post infectious bronchiolitis obliterans. The mosaic appearance on CT led to a quantitative ventilation perfusion scan which showed that 75% of blood flow goes to the left lung and only 25% to the right correlating with CT findings of extensive disease in right lung with largely unaffected left lung.The patient was diagnosed with SJS and referred for evaluation for lung transplantation.

In summary,the present case underscores the importance of childhood chest infections and their role in developing SJS. Adenovirus is one of the most common cited associated infection with SJS. The main reason for reporting this case is the unique findings of SJS and the fact that very few cases have been reported worldwide of the disease.

An Educational Model for School Personnel Response to School Shootings

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and Bonnie Beaver

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In the past 40 years over 300 school shootings have occurred. Efforts have been made to prevent further events with little success. Current recommendations follow a strict lockdown protocol that potentially leaves victims isolated for prolonged periods of time without immediate access to emergency medical personnel. To date there is no model or training protocol for school personnel that offers basic first aid to victims while lockdown is in place. The Educators Basic Life Saver course was designed to meet this need.

The Educators Basic Life Saver course utilizes a multidisciplinary approach to prepare school personnel to offer basic first aid to victims while mentally coping with the event and simultaneously providing information to law enforcement to reduce further casualties following a school shooting. The curriculum includes basic first aid taught by trauma surgeons, a psychological component taught by a licensed psychologist, and a data review portion taught by members of local and state law enforcement and emergency medical responders. Participants in the course are all school staff members that interact with students and could be present during a school shooting. The course does not teach participants to fight back directly but rather render aid to those injured, shelter students from further injury, and transmit information to law enforcement and first responders to deescalate the situation as quickly as possible.

The Educators Basic Life Saver course has been timely developed to educate staff of all schools and/or institutions of higher learning on these issues of school violence. It is truly unfortunate that times of human destruction exist in our modern society. However, all the more, we must be ready to act and be prepared for such a disaster. It is befitting for West Virginia to take the lead in pre-emptive readiness to avoid future school disasters.

Assessment Of Nurse Satisfaction With Bedside Nurse Presence At Family Centered Rounds

Jennifer K. Gerlach, MD, Audra L. Pritt, MD
Pediatrics

Many studies have assessed patient and physician satisfaction with Family Centered Rounds (FCR), but few have addressed nursing satisfaction. To assess whether inclusion of a patient's nurse during FCR affected nurse satisfaction.

18 surveys were conducted prior to implementation of FCR. They were not analyzed because of too many uninterpretable responses. 15 surveys conducted at 1 month and 17 surveys conducted at 6 months after changes to FCR were analyzed yielding mostly positive results. At 1 month, 80% of nurses agreed the new FCR provided an improved idea of the patient's care plan. At 6 months, 86% agreed. At 1 month, 85% agreed patient and family contributions during rounds were useful. By 6 months, 92% agreed. At 1 month, 64% agreed patients and families participated in decision making. At 6 months, 100% agreed. At 1 month, 62% disagreed patient and family concerns took too much time. By 6 months, 83% disagreed. After 1 month, 67% agreed they were informed when rounds began. By 6 months, 86% agreed. At 1 month, 71% agreed they were present for the entire duration of their patient's presentation. At 6 months, only 60% of nurses were present for the duration of their patient's presentation. After 1 month, 73% agreed they had the opportunity to raise concerns. By 6 months, 100% agreed. A focus group of 3 nurses provided insight into nurse satisfaction with changes to FCR. The nurses felt they had a better understanding of the patient's care plan, but it is difficult to commit to the entire patient presentation given conflicting patient care duties.

Changes to FCR yielded positive results in all areas surveyed except for a decrease in nurse satisfaction at the 6 months due to a smaller percentage of nurses present for the duration of their patient's presentation.

Delaying Chemotherapy in the Treatment of Stage IV Non-Small Cell Lung Cancer Does Not Adversely Affect Survival Outcome.

Mozayen Mohammad, Alsharedi, Mohamed, Mehmi Inderjit,
Gress Todd, Tria Tirona Maria
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Whether a delay in the initiation of systemic chemotherapy for advanced non-small cell lung cancer (NSCLC) can affect overall survival(OS) is not well studied. In this study we aim to evaluate the effect of time interval between initiation chemotherapy and diagnosis on overall survival in stage IV

A retrospective review of the tumor registry records of stage IV NSCLC patient who received chemotherapy between 1995 to 2012 at Cabell Huntington Hospital, WV was conducted. Age at diagnosis, gender, histology, performance status and site(s) of metastases of patients were reviewed. The time interval between the date of diagnosis and starting systemic chemotherapy was calculated in days. The patients were divided based on the time interval into two groups. Group A <46 days and group B 46 days or more. Primary end point was the difference in OS between the two groups.

A total of 172 patients were reviewed. Median time interval from diagnosis to start of treatment was 46 days. Each group had 86 patients. Median age was 61 years for A and B groups with a male to female ratio of 1:1.2 and 1:0.70, respectively. The most common histology was adenocarcinoma in group A and B (43% and 45%, respectively). The rate of metastases in groups A and B were as follows: brain -25% and 28%, liver-20% and 9%, bone -30% and 30%, respectively. Performance status of ECOG (0, 1) was 82% and 76% in group A and B, respectively. The median OS for group A was 7 months versus 12 months for group B (p=0.04).

In our single institution retrospective review, delayed systemic chemotherapy for advanced stage IV NSCLC more than 46 days did not have a detrimental effect at OS and suggested a better outcome. Further larger and prospective studies are warranted to validate these findings.

Development of Phone Application for Congestive Heart Failure Patients in a Rural Setting

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Congestive heart failure is the most common and most costly diagnosis in the Medicare population. Recent research has been focusing on the use of technology in the prevention of patient readmission and results have been equivocal. The research also shows that many heart failure patients lack an understanding of their disease. Access to health care providers are limited for those who live in rural, underserved areas and we propose that rural patients with CHF would benefit from using a smartphone application with the ability to communicate with their healthcare provider.

The smartphone application is designed with four aspects:

- 1) Education: The disease process, overviews of medications and benefits of diet will be a few of the topics.
- 2) Reminders: Patient reminders to record daily weights and take medications.
- 3) Recordings: Patients will enter their daily weights and blood pressures.
- 4) Communication: The app allows patients to communicate with their providers through text.

In order to test the functionality of the application we will ask patients with CHF attending rural clinics in Wayne, Lincoln and Logan counties to test the application for 2 weeks and complete a survey.

We will use the survey to evaluate the application's functionality and utility in a rural patient population. We will also present the development of the application.

Technology can be used to improve patient compliance with medication and self-care as well as a method to educate them about their disease and management. The development of an application for patients with CHF has the potential to decrease hospitalizations and improve quality of life. In addition, it is an affordable and realistic intervention for patients in rural communities with limited access to health care and can be helpful in managing other chronic diseases such as diabetes, epilepsy and hypertension.

E cigarettes: an up to date review and discussion of the controversy

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Electronic cigarettes (e-cigarettes) are a relatively new invention presenting a novel method for nicotine delivery reportedly advantageous when compared to traditional tobacco cigarette usage. Manufacturers and consumers claim reduced chemical exposure, decreased symptom profiles, and efficacy in smoking reduction and cessation greater than conventional nicotine replacement therapies (NRT). However these products present new challenges and concerns to legislators, clinicians, and public health advocates. Questions of authority in state and federal legislation, establishing product quality control measures, assessing long-term studies on e-cigarettes and quantifying usefulness in harm reduction strategies represent a portion of many as-yet unanswered topics currently being discussed. The purpose of this review is to assess the current body of literature on e-cigarettes and establish where the current scientific, legal, and consumer communities find themselves with regards to perceptions and attitudes on this controversial subject.

We searched NCBI's PubMed database using the search terms "e-cigarette" and "electronic cigarette" and obtained 102 and 495 search results, respectively.

There is still relatively little data to objectively lend credibility to positive health assertions for e-cigarettes.

Currently e-cigarettes lack regulation of manufacture, enforcement of sanitary conditions, guidelines in handling pharmaceutical ingredients, and incomplete listing of constituents.

There is a scarcity of trials with long term follow up of e-cigarette use and an absence of nonclinical, animal, clinical, and public health studies to draw sufficient conclusions to make definitive statements about safety. Until these studies are performed, clinicians should advise patients that there is not enough evidence to definitively say that these products are safe or effective to use for smoking cessation.

Hematologic manifestations associated with Influenza infection in children.

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Influenza infection is clinically indistinguishable from influenza-like illness, and carries a relatively high morbidity, particularly in children. Several hematologic manifestations are known to be associated with influenza virus infection. Our clinical observation shows the different changes in hematologic cell lines associated with both type of influenza infections A and B. Identification of this changes would enable prompt initiation of therapy, possibly leading to better outcomes.

Electronic medical records from 2007 to 2013 were retrospectively reviewed of hospitalized patients with culture proven influenza with age range of 6 months to 17 years old. Complete blood count checked on admission was reviewed for an associated leukopenia, neutropenia, lymphopenia and anemia, which were defined by age-specific reference ranges, comparing between both types of Influenza.

139 charts were reviewed, 11 patients were excluded for a history of medical conditions that may affect bone marrow cellular production. 128 patients were included in the study, of which 102 patients tested positive for influenza A and 28 for influenza B. Patients who tested positive for influenza type B seemed to be at greater risk of lymphopenia than patients with type A (P value 0.0466).

Total	Leukopenia	Neutropenia	Lymphopenia	Anemia
Type A	80%(102/128)	15%(15/102)	11%(11/102)	50 % (51/102)
Type B	20 % (26/128)	30%(8/26)	23%(6/26)	73 % (19 / 26)
All Patients	18%(23/128)	13%(17/128)	53 % (68 / 128)	16%(21/128)

1-Influenza infection is associated with hematologic changes in the pediatric population.

2- The most commonly observed effect of influenza infection on hematologic lineage is lymphopenia.

3- Influenza B infections seems to have a higher association with lymphopenia as compared to influenza A (P value of 0.0466).

4- Understanding the hematologic changes associated with influenza infection can be helpful in distinguishing influenza early in the disease process, thereby achieving better outcomes with early Oseltamivir initiation.

Homocysteine, An Independent Risk factor for Essential Hypertension

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It is now widely accepted that elevated total plasma homocysteine (Hcy), a non-protein amino acid, is a risk factor for cardiovascular disease. Mildly increased homocysteine causes dysfunction of the vascular endothelium and thus it may play a role in the pathogenesis of essential hypertension. Elevated levels of homocysteine decrease the vasodilation by nitric oxide, increase oxidative stress, stimulate the proliferation of vascular smooth muscle cells, and alter the elastic properties of the vascular wall. We obtained previously collected data from the NHLBI Coronary artery risk development in young adults (CARDIA) dataset for analysis. The sample was designed to achieve approximately balanced subgroups of race, gender, education and age (18-24 and 25-30). Subjects were included in this analysis if they were not diagnosed in year 0 with: (a) hypertension, (b) kidney failure, (c) thyroid problems, and (d) were not on any cardiovascular medication. Subjects were followed for 15 years. Complete homocysteine and blood pressure data from years 00 and 15 were available for 561 subjects. Multivariate logistic regression was used to analyze the data.

Approximately 92.3% (n=518) were found to have elevated homocysteine levels at year 00. The mean homocysteine level was 12.8 (SD=4.7) $\mu\text{mol/L}$ in year 00. Approximately 27.5% (n=154) were diagnosed with high blood pressure 15 years after enrollment. Subjects were significantly more likely to have hypertension 15 years after their initial visit when they were male, had a higher baseline BMI, and when BMI increased over time. There was no statistically significant relationship between elevated homocysteine levels and whether subjects were diagnosed with hypertension 15 years later.

These results add to the debate over whether homocysteine levels are associated with the incidence of hypertension. Our results suggest those with elevated homocysteine levels are not at increased risk of developing hypertension over 15 years.

Impact of School-Sponsored Research Day at West Virginia's Allopathic Medical Schools

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School-sponsored research days are essential educational tools for exposing students to best practices in producing peer-reviewed work. A comparison of academic rigor of Research Day at Marshall University School of Medicine (MUSOM) and West Virginia University School of Medicine (WVUSOM) is presented. While often less rigorous than national and international conferences, the exercise of publishing and presenting work at in-house conferences can have significant positive impact and foster collaboration among students, residents and faculty.

Peer-reviewed journal articles help guide faculty promotion decisions and support applications for grant funding. Research day comparisons from 2010-2013 is achieved by measuring the rate of subsequent publication in peer-reviewed journals. Syllabi were mined for author names and abstract titles, and used to query multiple search engines [1-3]; a "positive" publication had a majority of authors and title words in common. Impact factors and publication counts provide objective measures of research day rigor. All of the data used here is freely available.

We found lower publishing rates in peer-reviewed journals by MUSOM vs WVUSOM each year from 2010-2013; 2012 showed the greatest disparity: 5% and 30%, respectively. In 2013, the WVUSOM rate was 11%, and 8% at MUSOM. Evaluating the average impact factor of journal publications from each research day yielded a lower degree of difference: four-year average impact factor for articles published in peer reviewed journals was 3.76 (range 0.36–12.8) at WVUSOM and 2.78 (range 0.92–8.65) at MUSOM.

Selectiveness of school-sponsored research days is critical to maintaining academic rigor; this is objectively assessed by tracking impact of works based on publication rates in peer reviewed journals. Increasing quality of work presented at MUSOM's research day, through stricter acceptance requirements and reducing acceptance rates, will have a positive effect on the process and all those taking part.

Importance of insulin boluses and blood glucose checks in patients on insulin pumps

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Continuous subcutaneous insulin infusion (CSII) is a well-known method used to treat children and adolescents with type 1 DM. Optimal HbA1c control requires at least 4 insulin boluses as well 4 blood checks per day. Our objective is to identify which is more important to patients and physicians for optimal care.

Retrospective chart review for patients aged 5 to 30 years who are on insulin pump therapy for at least the last 6 months; the data includes: age, gender, HbA1c concentrations, frequency of insulin boluses as well as of blood glucose monitoring. Subjects are divided into 4 groups and unpaired t test was used to compare the results between the groups. Group A included patients who bolus insulin and checks blood glucose level = 3.5 times per day, Group B patients who bolus insulin = 3.5 times a day but check blood glucose level = 2.5 a day, Group C patients who checks blood glucose level = 3.5 times a day but bolus insulin = 2.5 a day and Group D patients who bolus insulin and checks blood glucose level = 2.5 a day.

A total of 98 patients are included in the study. Mean age and male to female ratio are 15 years and 1:1.12 respectively. There is no significance between groups A and B with regard to HbA1c concentration. Comparing groups A to group C, group A had lower mean HbA1c and P value of 0.0097.

The standard of care for optimal diabetes control using CSII remains at least 4 blood sugar checks and 4 or more insulin boluses per day. Our study suggests that it is more important to bolus more often than it is to check blood sugars in achieving better HbA1c values.

Pathological analysis of hysterectomy specimens following prior endometrium ablation: identification of risk factors for abnormal pathology and need for hysterectomy

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The Purpose of the Study: To determine cause for subsequent hysterectomy and risk factors for abnormal endometrial pathology following endometrial ablation

The Scientific or Scholarly Rationale: Endometrial ablation is a common procedure used to treat menorrhagia or heavy menstrual bleeding. It is frequently chosen for patients felt to be poor candidates for hysterectomy especially morbid obesity. These patients are at higher risk for development of uterine cancer. Longinotti et al documented that risk of subsequent hysterectomy may approach 40% in women age 40 or less. Other risks identified besides age are prior cesarean delivery or tubal ligation. Obesity/BMI was not evaluated.

Retrospective chart review of all women at Cabell Huntington Hospital who underwent an endometrial ablation and then a subsequent hysterectomy. We will evaluate demographic information : gravida, mode of prior deliveries, BMI, age, prior gynecologic surgery and evaluate cause of subsequent hysterectomy and pathology found.

Chart Review in process.

Goal is to help identify women who are poor candidates for endometrial ablation and who should be offered hysterectomy as a better option for menorrhagia treatment. This will improve our ability to appropriately counsel our patients. Conclusion pending chart review.

Resting Heart Rate, Heart Rate Variability and Mild Hypoglycemia during the Diabetes Control and Complications Trial and Follow-up Study (DCCT/EDIC).

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The jury on the role of hypoglycemia on cardiovascular disease (CVD) is still out. It has been speculated that non-severe (mild) hypoglycemia might have a stronger role in CVD than severe hypoglycemia in type 1 diabetes. Higher resting heart rate is a known cardiovascular risk factor in the general population. It has been also established that reduced heart rate variability, a marker of autonomic dysfunction, might indicate an increased risk of malignant arrhythmias and mortality. So far no studies on mild hypoglycemia and RHR/heart rate variability exist. Our goal is to evaluate whether correlations between mild hypoglycemia and HRV/resting heart-rate (RHR) in type 1 diabetes exist.

Publicly available NIDDK repository DCCT/EDIC-data were evaluated. The study included the entire DCCT-cohort with 1441 diabetic patients. Mild hypoglycemia events were reported for the seven days prior to the quarterly DCCT or annual EDIC visits. Multi-level models were used to assess an association between mild hypoglycemia rates and RHR or HRV. HRV was assessed by using R-R-variation and Valsalva ratios. Models were adjusted for clinically relevant factors including A1C, exercise, smoking, blood pressure, and albumin excretion rate.

Significant negative correlations were found between mild hypoglycemia rates (current and updated cumulative mean) and RHR during DCCT and EDIC, adjusted for age and gender ($p < 0.01$). Even after adjustment for glycemic control and exercise, the correlation remained significant for updated mean mild hypoglycemia ($p < 0.05$) but not for current. There was a significant negative association between A1C and heart-rate variability, but there was no association between heart-rate variability and mild hypoglycemia.

Results of mild hypoglycemia on RHR cannot be fully explained by A1C. The effects of both reversible adaptation to hypoglycemia and irreversible autonomic neuropathy on HR and cardiovascular outcome warrant more investigations to understand the role of hypoglycemia in CVD better.

**Retrospective analysis of patients entering the Maternal
Addiction and Recovery Center (MARC) program evaluating
pregnancy and neonatal outcomes**

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The prevalence of pregnant women abusing opioids is alarmingly high nationwide. Prescription opioid use in rural areas including West Virginia and Kentucky is considered epidemic. While the standard of care for medically assisted therapy of opiate addiction in the pregnant patient is methadone, buprenorphine is emerging as an effective, accessible alternative which may also have a therapeutic advantage with decreased neonatal abstinence syndrome (NAS).

The Marshall Addiction and Recovery Center (MARC) program uses buprenorphine for the treatment of opioid abusing mothers. By integrating a substance abuse counseling program, medication assisted maintenance and routine obstetric care the MARC is able to care for the total patient. The severity of opiate addiction among pregnant women is neither well-acknowledged nor understood by our federal government and national healthcare service. The current rate of NAS nationally has been estimated at 3.8 per 1000 live births. Rates at Cabell Huntington Hospital exceed 84 per 1000 live births this year alone. We believe that data concerning buprenorphine metabolism and NAS will significantly improve our knowledge to devise better treatments for opiate-addicted mothers in rural Appalachia.

Data will be collected retrospectively using patient charts and hospital records. Inclusion criteria pregnant women enrolled in MARC program. We will use descriptive statistics such as mean and standard deviation. We will determine statistical significance of the data collected using standard measurements such as but not limited to p value.

pending

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Stress Induced Cardiomyopathy, a Case Series

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Stress Induced Cardiomyopathy (SICM) is increasingly recognized in the Caucasian female population in the United States, SICM prevalence reported to be 0.7% to 2.5% in patients presenting with acute coronary syndrome and only a few case series have been reported in Europe and North America.

A case series study of 63 patients who had a discharge diagnosis of SICM at St Mary's Hospital from 2008 to 2011.

The majority of the patients were women (93.75 %), (97.17%) have hypertension. The most frequent presenting symptom was chest pain with mildly elevated troponin.

Most of SICM patients trend to be hypertensive, SICM patients who have EF < 45% trend to have pre-existing co-morbidity including (HTN, DM, HLP and Smoking).

The challenges of exploring the impact of genogram construction on an Appalachian extended family's health consciousness

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Appalachians exhibit high rates of chronic disease-related behaviors. Heightened health consciousness, being aware of and valuing one's health, might lead to healthier lifestyles. Knowing that matriarchs are influential in closely-knit Appalachian extended families, a family physician identified older West Virginian women in his practice. We sent each of them invitations to participate, along with their extended family, in constructing a genogram. A genogram displays family health history. We hypothesized that family members' health consciousness might increase after participation in the project. However, none of the thirty-four women contacted agreed to participate. We explored the reasons for their non-participation.

We mailed a survey to all the potential participants. We made follow-up phone calls after sending a reminder letter. Twenty-seven women responded. We collated and arranged in order of frequency their reasons for non-participation.

The most frequently cited reason for non-participation was that the respondent perceived her extended family to be too busy or to live too far from one another to participate. Her own sense of not feeling up to what was being asked of her was a close second.

The prevailing notion of the large closely situated Appalachian extended family highly valuing health promotion under matriarchal leadership did not find support in this study. Nevertheless, the hypothesis that family physicians might improve health consciousness the Appalachian extended family by engaging them collectively with their genogram remains worth testing. Doing so may require innovative departures from methodology based on current paradigms about Appalachian culture.

Type I Diabetes in Children and Vitamin D: A Systematic Review

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Vitamin D deficiency is associated with many childhood diseases including type 1 diabetes mellitus (T1DM). T1DM in children is becoming more prevalent, with a 23% increase nationally from 2001 to 2009. Similarly, West Virginia has had an 8.1% increase in children with type 1 Diabetes from 2008/2009 to 2010/2011. This systematic review highlights the association between vitamin D and type 1 diabetes and discusses vitamin D's potential role in the reduction of T1DM in children.

The National Library of Medicine Medline database was searched for vitamin D and type 1 diabetes in children. Search terms included "type 1 diabetes", "vitamin D deficiency", and "childhood vitamin D supplementation." This search resulted in 71 articles which were then screened to eliminate those dealing with animal studies, adults, type 2 diabetes, and genomic analysis. This resulted in a total of 17 articles remaining that were specific to vitamin D and type 1 diabetes in children. Most studies demonstrated vitamin D deficiency at the time of diagnosis of T1DM and/or throughout the course of the disease. Additional studies attempted to determine whether supplementation could potentially prevent T1DM. All these studies showed a reduction in risk with supplementation. One study was particularly impressive: A birth cohort study was done to determine whether dietary vitamin D supplementation was associated with a reduced risk of T1DM. Serum levels were analyzed at birth and again at one year in 10,821 children. Regular supplementation was associated with an 80% reduction of the risk for development of T1DM.

Evidence has shown that vitamin D deficiency may be implicated in the development of T1DM. In light of the fact that Type 1 diabetes is increasing in our pediatric population, it seems we should at least ensure that we are giving the dosage of vitamin D currently recommended by the AAP.

**Withdrawing into Society: Characteristics of
Neonatal Abstinence Syndrome on Final Day of Admission**
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Neonatal abstinence syndrome (NAS) is unfortunately ever growing issue. The problem of prescription drug abuse continues to affect a growing number of communities across our nation. The national rate of 3.39 per 1000 live births is dwarfed by our own institution's rate of 128.9 per 1000 live births. Infants with NAS are not symptom free at discharge, and the AAP recognizes that there is a sub acute phase of withdrawal that can last up to six months.

We performed a retrospective chart review of a cohort of infants pharmacologically treated for NAS in the Neonatal Therapeutic Unit at a single institution from August 2012 to September 2013. All 31 symptoms scored on the Modified Finnegan scoring system were recorded over the final 24 hours of hospital admission. To be counted as positive, an infant had to display the symptom twice in the 24 hour period. We evaluated infants prenatally exposed to methadone (n=34), buprenorphine (n=75) and other opiates (n=79).

9 of the 31 symptoms occurred in more than 40% of the infants. The 9 symptoms were mottling, increased muscle tone, mild tremors when disturbed, nasal stuffiness, sneezing, sleeping <3 hours after feeding, respiratory rate >60/minute, excessive sucking and fever <101 degrees F. Mottling and increased muscle tone occurred in over 90% of patients. The most common symptoms of NAS still present at hospital discharge were mottling, increased muscle tone, mild tremors when disturbed, and nasal stuffiness. Sneezing, sleep less than 3 hours after feeding, respiratory rate greater than 60, excessive sucking and fever occurred in between 45-62% of the patients. Caregivers must be educated on what to expect from these infants after their discharge from the hospital. General pediatricians should be aware of these symptoms when seeing these fragile infants for their hospital follow up appointments.



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