

HEALTH SCIENCES CENTER 30TH ANNUAL RESEARCH DAY AT MARSHALL UNIVERSITY MARCH 30, 2018

Oral and Poster Presentations

Marshall University Medical Center • Huntington, West Virginia

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March 29 - Special Viewing -Case Study Poster Session, 4:00-5:30PM, Med School Atrium

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

Thelma V. Owen Memorial
Richard J. Stevens Memorial

Faculty Disclosure Policy 2018

As a provider accredited by the ACCME, Marshall University Joan C. Edwards School of Medicine must ensure balance, independence, objectivity, and scientific rigor in all its individually provided or jointly provided educational activities. All event faculty participating in a provided activity are expected to disclose to the activity audience any significant financial interest or other relationship with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services discussed in an educational presentation and 2) with any commercial supporter(s) of the activity. Also, all event faculty are required to disclose any planned discussion of an unlabeled use of a commercial product or an investigational use not yet approved for any purpose by the FDA.

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.

The conference 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 12 and 13, to locate presenters, their abstracts, presentation times and location of presentation. The complete agenda begins on page 14. The complete syllabus is available online at <https://jcesom.marshall.edu/research/office-of-research-graduate-education/research-day/>

INTENDED AUDIENCE

The Health Science Center 30th Annual Research Day at Marshall University 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

Uma Sundaram, MD, Conference Chair, Vice-Dean, Research and Graduate Education

Todd Gress, MD, Co-Chair, Assistant Dean, Clinical and Translational Research

David N. Bailey, MBA, Assistant Dean, CME

Richard Egleton, PhD, Co-Director, Biomedical Sciences Graduate Programs

Brian Patton, Director, Digital Media Services

Elsa I. Mangiarua, PhD, Professor, Biomedical Sciences

STAFF COORDINATORS - NO CONFLICTS INDICATED

Anita MathisBMS Coordination & Registration

Matthew W. Crutchfield.....Graphic Services

Brian Patton.....Web Publications, Online Abstract
Submission Form Design and Content
Retrieval, Judging tabulations summary

Synthia K. BaileyRegistration
Administrative Assistant to Dr. Sundaram

RESEARCH DAY



PAST INVITED LECTURERS

2017 Julian E. Bailes, Jr., MD

Neurosurgery Specialist
NorthShore Medical Group, Evanston, IL
1) Concussions

2016 Naji Abumrad, MD

Chair Emeritus, Department of Surgery
John L. Sawyers Professor of Surgery
Vanderbilt University School of Medicine
Nashville, TN
1) *The Life of an Academic Surgeon Persevere, Don't be afraid, Explore*

2015 Richard J. Johnson, MD

Tomas Berl Professor and Chief
Division of Renal Diseases and Hypertension
University of Colorado Anschutz Campus
Aurora, CO
1) *The Role of Sugar (fructose) in the Great Epidemics of Diabetes and Obesity*

2014 - Jose S. Pulido, MD, MS, MBA, MPH

Professor of Ophthalmology and Molecular Medicine
Associate in Neuro-oncology
Mayo Clinic Cancer Center
Rochester, MN
1) *The Topology of Blinding Eye Disease*
2) *Breaking bad and Breaking good*

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*

PAST INVITED LECTURERS

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. Shirliff, 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*

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*

PAST INVITED LECTURERS

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*

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*

PAST INVITED LECTURERS

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*

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, Profess 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*

2017 RESEARCH DAY CONFERENCE PRESENTATION WINNERS

ORAL SESSIONS

Basic Science Student

Sarah Stevens

Role of Interleukin-1 Receptor (IL-1R) in a Mouse Model of Incisional Pain

Basic Science Post-Doctoral

Balasubramanian Palaniappan

Unique mechanism of NaCl absorption in obese Zucker rats – uncoupling of traditional brush border membrane neutral NaCl absorption in intestinal epithelial cells.

Clinical Science Student

Preeya Shah

A Novel Method of Determining Adiposity and Its Relationship with Blood Pressure in the Modification of Diet in Renal Disease Study Internal Medicine

Dylan Maldonado Development and Validation of a Step Test of Aerobic Fitness in Young Children

Clinical Science Resident

Hassaan Jafri

Incidence and Survival of patients with Multiple Myeloma with Prior Diagnoses of Myeloproliferative Disorders

POSTER SESSIONS

Basic Science Student

Lexie C. Keding

Gender-Specific Growth Patterns of Segmented Filamentous Bacteria

Basic Science Post-Doctoral

Amrita Mallick

Na/K-ATPase Mimetic pNaKtide Peptide attenuates aging in old C57Bl6 mice Clinical Vignette Student

Jenna Barbour

Rare But Real: Recognizing Epidermolysis Bullosa Acquisita Clinical Vignette Resident

Hassaan Jafri

A Rare Case of Spontaneous Tumor lysis syndrome in Pancreatic Neuroendocrine Tumor

Clinical Science Student

Emma M. Nellhaus

Relationship between maternal clinical symptoms and neonatal abstinence syndrome outcomes in mothers in the MARC program

Clinical Science Post-Doctoral

Rebecca Klug

MiRNA and Biomarkers of Metabolic Syndrome: Correlating biomarkers for early detection of metabolic syndrome in obese females in West Virginia

RICHARD J. STEVENS, MD MEMORIAL LECTURE

RESEARCH DAY | INVITED LECTURER

MARCH 30, 2018 at 11:30 AM • HARLESS AUDITORIUM



ZIJIAN XIE, Ph.D.

**Director, Marshall Institute for Interdisciplinary
Research (MIIR)
Marshall University**

"The Discovery of Na/K-ATPase as a Potential Drug Target for Multiple Human Diseases"

Learning Objectives:

Discover 1) How is Na/K-ATPase engaged in cellular activity other than pumping ions across cell membrane; 2) the importance of non-pumping functions of Na/K-ATPase in animal physiology and disease progression; 3) what can we do to translate this new discovery into practice that will improve human health.

No Conflicts Indicated

Dr. Zijian Xie was named director of the Marshall Institute for Interdisciplinary Research in November 2013.

His laboratory is internationally recognized for its groundbreaking work to understand the behavior of cellular pathways and their relationship to cancer, renal disease and cardiac failure.

Xie holds international patents and patent applications on seven medical inventions resulting from his research. He has served as principal investigator, project leader or co-investigator on National Institutes of Health-funded projects totaling more than \$10 million, and has established active international collaborations with total funding of more than \$1 million. He has been involved with the creation of two spin-off companies from his research.

He is the author or co-author of more than 100 articles published in scientific journals, has authored a number of book chapters and has been invited to give numerous presentations as part of national and international conferences, symposia, seminars and visiting professorships. He serves as a regular member of NIH study sections and has chaired and co-organized several international symposia.

Dr. Xie came to Marshall from the faculty of the University of Toledo's College of Medicine, where he was a professor of physiology, pharmacology and medicine, and served as the co-director of the M.D./Ph.D. program.

He earned a bachelor's degree from the Nanjing College of Pharmacy in Nanjing, China, in 1982, a master's degree in toxicology at the Chinese Academy of Medical Sciences in Beijing in 1984 and a doctorate in pharmacology at the Medical College of Ohio (now University of Toledo) in 1990.

List of Presenters' Abstracts

No relevant Conflicts of Interest as supported by Disclosure

Case Study Poster - March 29, 4:00PM-5:30PM

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3	Nabil Alzaeim	128	20	Kamal Patel	145
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6	Obadah Aqtash	131	23	Trevor Roston	148
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List of Presenters' Abstracts

No relevant Conflicts of Interest as supported by Disclosure

Basic Science Poster - March 30, 9:45AM-10:30AM

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7	Christian Harris	56	18	Xiaoliang Wang	67
8	Rebecca Klug	57	19	Yanling Yan	68
9	Carlen Merritt	58	20	Hong Yue	69
10	Shreya T Mukherji	59	21	Sasha N. Zill	70
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Clinical Science Poster - March 30, 2:30PM-3:15PM

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25	Ahmed Amro	76	52	Chadd Mays	103
26	Yaslam Balfaqih	77	53	Eric Mendenhall	104
27	Melinda Becker	78	54	Tamara Murphy	105
28	Allyson Bias	79	55	Tamara Murphy	106
29	Katherine Billups	80	56	Scott Murphy	107
30	Katherine Billups	81	57	Keitaro Nakamoto	108
31	Katherine Billups	82	58	Dipali Nemade	109
32	Courtney Crain	83	59	Casey Patick	110
33	Luke Damron	84	60	Mark Peterson	111
34	Freeman Davey	85	61	Paige Phillips	112
35	Harley Davis	86	62	Paige Phillips	113
36	Derek Fry	87	63	Audra Pritt	114
37	Andrea Hart	88	64	Melissa Saab	115
38	Makenzie Hatfield Kresch	89	65	Thomas Schmicker	116
39	Henry Heisy	90	66	Tyler Skidmore	117
40	Alicia Heyward	91	67	Angelina Sprewell	118
41	Kaitlynn Hughes	92	68	Angelina Sprewell	119
42	Noah Ichite	93	69	Jordan Tate	120
43	Anthony Johnson	94	70	LeeAnne Torres	121
44	Soheb Khan	95	71	Jack Wang	122
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46	Hari Vishal Lakhani	97	73	Lawrence Wyner	124
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RESEARCH DAY AGENDA

MARCH 30, 2018

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	Participant AM & PM registration and evaluation required
8:15AM	Welcome	Jerome A. Gilbert, PhD, President, Marshall University
8:20AM	Opening Remarks	Uma Sundaram, MD, Vice Dean and Research Day Chair

ORAL SESSION I • ABSTRACTS • PAGE 23

Time	Name/Department/Format	Abstract Title
8:30AM	Jasmyn Atalla/Internal Medicine/Oral	A 5 year follow up of doctors treating relatives
8:42AM	Nicholas Bachtel/Pharmaceutical Sciences and Research/Oral	Exploring a structure-based pharmacophore for the transient potential melastatin 8 (TRPM8 e-pharmacophore modeling
8:54AM	Tanner Bakhshi/Biochemistry and Microbiology/Oral	Effects of Opioid Abuse Potentially Mediated by Epigenetic Histone Modifications
9:06AM	Yaslam Balfaqih/Pediatrics/Oral	Vitamin D level and Obesity complications in obese WV children
9:18AM	Katherine Billups/Dept. of Clinical and Translational Sciences/Oral	The anti-peristaltic urinary diversion leads to improved operative times during radical cystectomy and urinary diversion.
9:30AM	Sarah Binion/Biomedical Science/Oral	Epigenetics in Endometriosis

9:45AM BREAK BASIC SCIENCE/ POSTER SESSION - ATRIUM • ABSTRACTS PAGE 49

ORAL SESSION 2 • ABSTRACTS • PAGE 31

10:30AM	Arrin Brooks/Biomedical Sciences/Oral	In vivo brain engineering for neurological disorders
10:42AM	Dominique Elmore/Pediatrics/Oral	Is Fever a Red Flag for Bacterial Pneumonia in Children with Viral Bronchiolitis?
10:54AM	Jamie Friedman/Biomedical Sciences/Oral	Anti-metastatic activity of capsaicin in human lung adenocarcinoma
11:06AM	Casinelli Gabriella/Biomedical Sciences/Oral	Tobacco flavorants enhance the addiction to nicotine
11:18AM	Milliejoan Mongalo/Marshall Internal Medicine/Oral	A Randomized Trial of Tapering Proton Pump Inhibitors in GERD
11:30AM	Zijian, PhD Xie/Marshall Institute for Interdisciplinary Research	The Discovery of Na/K-ATPase as a Potential Drug Target for Multiple Human Diseases

12:40PM • BOX LUNCH

RESEARCH DAY AGENDA

ORAL SESSION 3 • ABSTRACTS • PAGE 37

1:15PM	Emma Nellhaus/Dept. Clinical and Translational Science/Oral	History of postpartum depression as a significant contributor to the severity of neonatal withdrawal
1:27PM	Ying Nie/Biomedical science/Oral	Control of oxidative stress is beneficial in control of salt-sensitive hypertension
1:39PM	Raj Singh/Radiation Oncology/Oral	Dose-Escalated Salvage Stereotactic Body Radiation Therapy (SBRT) for Locally-Recurrent Previously-Irradiated Head and Neck Squamous Cell Carcinoma Trends Toward Improved Local Control and Overall Survival
1:51PM	Kristin Sinning/OB/GYN/Oral	Post Insertional Pain Following Intrauterine Device Insertion in Nulliparous Adolescents
2:03PM	Kristin Sinning/OB/GYN/Oral	The Use of FitBit Technology to Improve Physical Activity Among Adolescents in Rural West Virginia

2:30PM BREAK /CLINICAL SCIENCE POSTER SESSION - ATRIUM • ABSTRACTS PAGE 71

ORAL SESSION 4 • ABSTRACTS • PAGE 43

3:15PM	Salisbury Travis/Biomedical Sciences/Oral	The putative endogenous aryl hydrocarbon receptor ligand, ITE, inhibits breast cancer proliferation by reducing the expression of JAGGED1.
3:27PM	Jiayan Wang/Marshall Institute for Interdisciplinary Research/Oral	Na ⁺ , K-ATPase Signaling as a Potential Therapeutic Target of Pulmonary Arterial Hypertension
3:39PM	Dakota Ward/Biomedical Sciences/Oral	Characterization of Renal Cytotoxicity and Oxidative Stress Induced by the Radiocontrast Agent Diatrizoate (DA) in Human Proximal Tubular Cell Line
3:51PM	Kevin White/Obstetrics and Gynecology/Oral	Reducing Opioids with Enhanced Recovery After Cesarean Delivery

4:30PM WINNERS PRESENTATION AND ADJOURNMENT • HARLESS AUDITORIUM

RESEARCH DAY AGENDA

9:45AM-10:30AM • BASIC SCIENCE POSTER PRESENTATIONS • ATRIUM - PAGE 49

- | No. | Name/Department/ Abstract |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Deborah Amos/Biomedical Sciences
<i>Redox Balance Regulates FGF21 in the Novel "Stress-less" Mouse Model</i> |
| 2 | Nickolas Bacon/Biomedical Sciences
<i>Targeting heat shock protein 90 to alter evolution of aggressive cancer phenotypes</i> |
| 3 | Fang Bai/Biomedical Sciences
<i>PNx-Mediated Anemia in C57BL/6 mice is not due to iron deficiency</i> |
| 4 | Lexie C. Blalock/Biomedical Sciences
<i>Interaction of the Gut Microbiome, Diets, and Genetics in the Development of Metabolic Syndrome in Mice</i> |
| 5 | Liquan Cai/MHIR
<i>Na/K-ATPase $\alpha 1$ /caveolin 1 interaction sets stemness and pluripotency in human stem cells</i> |
| 6 | Francis Essien/ ?
<i>Characterization of RyfA in Shigella Flexneri</i> |
| 7 | Christian Harris/Biomedical Sciences
<i>Developing Biomechanical Tools for Rehabilitation of Lower Limb Function: Active Sensing of Leg Unloading</i> |
| 8 | Rebecca Klug/Surgery
<i>Inhibiting Na/K-ATPase Oxidant Amplification Loop Regulates Aging in C57B16 Old Mice.</i> |
| 9 | Carlen Merritt/Biomedical Sciences
<i>Differentiation Kinetics of Hematopoietic Stem Cells Treated with Alexidine Dihydrochloride and Hypoxia</i> |
| 10 | Shreya T Mukherji/Biomedical Science
<i>Renal proximal tubule-specific knockout of Na/K-ATPase alpha 1 in the mouse</i> |
| 11 | Athar Nawab/Internal Medicine
<i>pNaKtide Attenuates Kidney Dysfunction and Systemic Inflammation by Blocking Na/K-ATPase/Reactive Oxygen Species Amplification in ApoE -/- Mice.</i> |
| 12 | Rebecca Pratt/Biomedical Sciences
<i>Na/K-ATPase signaling and secreted factors from adipocytes mediate obesity development and may contribute to comorbid conditions</i> |
| 13 | Bryanna Roar/Pharmaceutical Science and Research
<i>G-Protein-Coupled Receptor 68 Negatively Regulates IL-22 Production in Human Th17 Cells</i> |
| 14 | Sarder Sadid/Department of Pharmaceutical Science and Research
<i>Tetraazamacrocyclic Quinoline derivatives as potential drug leads for lung cancer therapy</i> |
| 15 | Abbagael Seidler/Biomedical Sciences
<i>High Endogenous Catalase Modifies Behavior in High-fat Fed Mice</i> |

RESEARCH DAY AGENDA

- 16 Jordan Sheppard/Department of Pharmaceutical Science and Research
Disulfiram-based Disulfides as Narrow Spectrum anti-MRSA Antibiotics
- 17 Sarah Stevens/Pharmaceutical Science and Research
Cell-by-Cell: Understanding Opioid-Mediated Neonatal Abstinence Syndrome (NAS)
- 18 Xiaoliang Wang/MIIR & MUSOM
Genetic Evidence of a1 Na/K-ATPase as an Important Signal Integrator
- 19 Yanling Yan/Clinical & Translational Science, Biomedical Sciences
Impaired Natriuretic Response to High Salt Intake Contributes to Salt-sensitive Hypertension in Obese TALLYHO/JngJ Mice: Role of Na/K-ATPase Signaling
- 20 Hong Yue/Biomedical Sciences
Thrombospondin 1/CD36 signaling promotes vascular smooth muscle cell proliferation and contributes to neointimal hyperplasia
- 21 Sasha N. Zill/Biomedical Sciences
Decussating Fibers in the Thoraco-Lumbar Fascia: Testing Use as a Surgical Landmark

2:30PM-3:15PM • CLINICAL SCIENCE POSTER PRESENTATIONS • ATRIUM • PAGE 71

- 22 Christian Adams/Department of Psychiatry
The ABC's of Preschoolers in Psychiatry: A retrospective chart review of children under 6 at an Appalachian university psychiatry clinic
- 23 Oluwadamilare Ajayi/Department of Psychiatry and Behavioral Medicine
Neonatal Abstinence Syndrome & Neurobehavioral outcomes in school age children – Case series from an Appalachian Psychiatric Clinic
- 24 Nabil Alzaeim/Internal Medicine/ Cardiology
Renal Artery Stenting, Review of Our Local Experience
- 25 Ahmed Amro/Cardiovascular
Prasugrel needs more attention!!!!!!!!!!!!
- 26 Yaslam Balfaqih/Pediatrics
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- 6 Obadah Aqtash /Internal Medicine
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- 26 Adam Schindzielorz /Psychiatry
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ORAL SESSION I • 8:30 AM – 9:45 AM

**30TH ANNUAL
RESEARCH DAY
ORAL SESSION**

A 5 year follow up of doctors treating relatives

Jasmyn E. Atalla*, Ross D. DeChant**, Lynne J. Goebel*, Maurice A. Mufson*
*Internal Medicine, Marshall University Joan C. Edwards School of Medicine, **
Emergency Medicine, University of Arizona

Background

A survey of ours in 2012 showed that more than half of physicians believed they should treat relatives and, about one third of the time, prescribed medications without an examination.

Hypothesis

We hypothesized that the number of physicians treating relatives and themselves decreased since the 2012 survey.

Methods

We surveyed resident, fellow and faculty physicians at Internal Medicine, Pediatrics, Family Medicine and OB/GYN grand rounds from August to September 2017. We compared the data from our 2012 survey with those from the 2017 survey.

Results

The 83 respondents in 2017 were similar to the 81 respondents in 2012 in age, gender, year of training and department. In 2017, significantly fewer respondents prescribed medications to relatives without an examination, 19% compared to 35% in 2012 ($p=0.02$). Forty percent of current residents and faculty believe they should treat their relatives, similar to 54% in 2012 ($p=NS$). Fifty-nine percent treated relatives for minor illnesses, a non-significant decrease from 75% in 2012. Forty-eight percent treated themselves for minor illnesses, similar to 57% in 2012. Importantly, although 73% of current respondents had a primary care physician (PCP), a significantly higher proportion of men had PCPs ($p=0.04$) in 2017 in contrast to a significantly higher proportion of women having PCPs ($p=0.01$) in 2012.

Conclusion

Although the overall proportion of resident and faculty physicians who treat relatives decreased during the past five years and significantly fewer resident and faculty physicians prescribed medications to relatives without an examination, too many physicians continue to treat relatives and themselves. Physicians who treat their family inadvertently risk injuring loved ones and enduring the guilt of a misadventure. More education at all levels is required to convince physicians not to treat relatives and themselves. Further research is needed to determine why men physicians now have PCPs more often than women physicians.

Exploring a structure-based pharmacophore for the transient potential melastatin 8 (TRPM8) ion channel using flexible docking and e-pharmacophore modeling.

Journigan, V.B., Heffner, C.E., Bachtel, N.

Pharmaceutical Sciences and Research, Marshall University School of Pharmacy

Background

The transient potential melastatin 8 (TRPM8) ion channel is a target of interest for neuropathic and inflammatory pain, prostate cancer and nicotine addiction. This pervasive, cold-sensing thermoTRP is found in A δ - and C-fiber primary afferent neurons, and various non-neuronal tissues. Despite a large number of reported TRPM8 ligands, no structure-based pharmacophore exists to rationally design menthol-based probes or therapeutics.

Hypothesis

We hypothesize that published TRPM8 antagonists with structural similarities could reveal both molecular determinants for ligand recognition and putative pharmacophores, via flexible docking in a published TRPM8 homology model of the closed state, e-pharmacophore generation, and validation with structure-activity relationship (SAR) data.

Methods

TRPM8 selective compounds 1-2, RQ-00203078, PF-05105679, AMG2850 and AMTB, with affinities ranging from 0.2-181 nM, and in vivo activity at TRPM8, were docked into the putative active site of a single monomer using Schrodinger's induced-fit docking protocol. Tyr745, in the S2 helix, was selected as the active site centroid based on mutagenesis studies implicating its role in menthol binding. Compounds 1-2, RQ-00203078, PF-05105679, AMG2850, and AMTB docked into a hydrophobic pocket of 25 residues within the 711-749 and 813-830 regions of the S1-2 and S4-5 helices, and form similar interactions with Lys715, Lys719, Phe738, Asn741, Tyr826 and others. The pharmacophoric features of each ligand were detected using e-pharmacophore modeling, and validated with the published SAR.

Results

All pharmacophores were superimposed to reveal (1) four overlapping regions, each independently containing aromatic, hydrophobic, and acidic features; (2) three non-overlapping regions, containing hydrophobic and aromatic features in close proximity; and (3) three non-overlapping H-bond acceptor groups.

Conclusion

These results suggest an initial pharmacophore based on the overlapping regions, and additional pharmacophoric features that could be exploited by rational drug design efforts to yield a more comprehensive understanding of TRPM8 ligand recognition.

Effects of Opioid Abuse Potentially Mediated by Epigenetic Histone Modifications

Tanner Bakhshi¹, Ramin Garmany², Diane Dawley¹, James Kessler², Will O'Toole¹, Daniel Crow², Brad Muncy², Jordan Taylor², Taylor Beatty³, Richard Egleton², Philippe T. Georget^{1,2}

1. Department of Biochemistry and Microbiology, Joan C Edwards School of Medicine, Marshall University, Huntington WV., 2. Department of Biological Sciences, Marshall University, Huntington, WV., 3. Forensic Science Center, Marshall University, Huntington, WV

Background

The alarming rate of Neonatal Abstinence Syndrome (NAS) at Cabell Huntington Hospital, which is well above the national average, demonstrates the scale of the opioid epidemic in southern West Virginia. NAS refers to the withdrawal symptoms that occur in infants exposed to drugs (often opioids) in the womb. To help alleviate the symptoms of opioid withdrawal, buprenorphine is administered over a period of weeks, followed by progressive weaning off of the drug. The administration of buprenorphine coincides with many aspects of neurodevelopment in the fetus, and opioid exposure has been shown to affect the development of the newborn's brain. More broadly, additional studies have demonstrated that illicit drugs, such as opioids, may be present in the local water supply due to inadequate filtration of wastewater.

Hypothesis

We hypothesize that opioids at a.) doses matching those found in the plasma to which neonates are exposed and b.) lower doses that may be equivalent to those found in the local water system, may lead to changes in gene expression via histone post-translational modifications (PTMs).

Methods

We are currently investigating global trends in histone PTMs as a function of buprenorphine exposure (50 ng/mL) over time (0, 2, 12, 24, and 48 hours) in two model systems: rat brain microvascular endothelial cells (RBMVEC) and oligodendrocyte precursor cells (OPC).

Results

Thus far, we have observed global changes in levels of H3PanAc, H4PanAc, and H3K9me3 in RBMVEC.

Conclusion

These and further results may provide evidence for buprenorphine's epigenetic effects, both in neonates and those who drink from the local water supply.

Vitamin D level and Obesity complications in obese WV children

Yaslam Balfaqih MD, Deborah Preston BS-CCRC, Yoram Elitsur MD
Pediatrics Department, Marshall University Joan C Edwards School of Medicine

Background

Obesity has been recognized as a risk factor for Vitamin D (Vit D) deficiency. In a large pediatric study, low Vit D levels were found in up to 87% of obese children (Pediatrics 2013). WV has been reported with the highest obesity rate in children (www.cdc.org). In one study obese children attending the endocrine clinic was assessed and found in 18/786 (23%) children. This cohort included children who had multiple diseases that affect Vit D absorption or metabolism and thus were a skewed population (Southern Med Associat. 2012). The true prevalence of Vit D deficiency in WV obese children has not been adequately investigated.

Hypothesis

Determine the association of Vitamin D levels and obesity complications in obese WV children.

Methods

This retrospective study reviewed Vit D status in obese children who attended the GI clinic at Marshall Pediatrics from 2013-present. Any children with diseases that affected Vit D status or malabsorption issues were excluded. The following clinical and laboratory data were collected: demographics, serum Vit D [25(OH)D], fasting serum insulin levels, lipid profile, and aminotransferase levels. Calculation of insulin resistance (IR) was performed using the HOMA-2 test.

Results

The cohort consisted of 100 patients of whom 53 (53%) had deficient, 29 (29%) had insufficient, and 18 (18%) had sufficient Vit D levels. A significant correlation between serum Vit D and IR is noted (p -value=0.0351). There were no significant associations with the other complications.

Conclusion

Deficient levels of Vit D were noted in over 50% of the obese children, and over 80% were below normal levels. Vit D was strongly correlated with IR (p -value=0.0351), but not with the other complications. Our data suggests that keeping normal Vit D levels may help prevent obesity related IR and other related complications in children.

The anti-peristaltic urinary diversion leads to improved operative times during radical cystectomy and urinary diversion.

Katherine Billups, Caleb Lee, Nadim Bou Zgheib, Todd Gress, James C. Jensen
Department of Clinical and Translational Sciences, Marshall University Joan C. Edwards School of Medicine

Background

Entirely Intra-corporeal Urinary Diversion (EICUD) is a principal objective of Robotic Cystectomy and may be the central outcome that will determine differences between robotic and conventional procedures.

Hypothesis

Simplification of the technique can improve the EICUD rates with acceptable complications and result in improved outcomes

Methods

We reviewed our IRB approved administrative database for patients having Urinary Diversion (UD) +/- radical cystectomy. We examined the surgical times associated with the adoption of the entirely intra-corporeal anti-peristaltic stentless urinary diversion. Student's t-test was performed to determine statistical significance.

Results

1,484 patients have undergone robotic urinary surgery since 2003, and of these 60 had robotic urinary diversion +/- cystectomy. The records of 59 were fully evaluable. There were 9 females and 50 males, with an average age of 67.3 years. Average BMI was 27.3, and 20 had neoadjuvant chemotherapy.

35 patients underwent diversion in an iso-peristaltic manner, with conversion to the open method in 28. Ureteral stents were used in 34 of these. The mean time +/- standard deviation for these hybrid procedures was 06:54 +/- 01:37 (Rho: -0.05; p = 0.71).

21 patients underwent the stent-less anti-peristaltic method of loop, and of these, none (0%) required conversion to the open technique, i.e. the completion rate was 100%. The mean time +/- standard deviation for these entirely intra-corporeal procedures was 06:56 +/- 01:27 (Rho: -0.47; p = 0.01)

Conclusion

The stent-less anti-peristaltic loop is a novel method that seems to result in significant improvements in overall operative times and may, therefore, reduce surgical morbidities. Further study of this issue is underway.

Epigenetics in Endometriosis

(2)Sarah Binion, (2)Krissteena Ray Wright, (1)Catherine Cavender, (2)Anna Wood,
(3)Brenda Mitchell and (2)Nalini Santanam

(1)Concord University, Athens WV, (2)Department of Biomedical Sciences,
(3)Department of Obstetrics & Gynecology, Joan C. Edwards School of Medicine,
Marshall University, Huntington, WV.

Background

Endometriosis, a disorder that afflicts 10-15% of women with pain and infertility, is characterized by the growth of endometrial tissue outside the uterus. Polycomb group of proteins (PRC2) such as enhancer of zeste homolog 2 (EZH2), which plays a major role in cancer, also might contribute to endometriosis. We observed hypermethylated promoters of inflammatory genes in endometriotic lesions.

Hypothesis

We hypothesize that the peritoneal fluid (PF) from women with endometriosis compared to those without will alter the PRC2-complex activity in endometrial cells thus leading to promoter methylation. These changes can be blocked by PRC2-complex inhibitors.

Methods

Ishikawa (human endometrial) cell line were treated with PF from IRB-approved and consented women with and without endometriosis (n=6-8 each). A subset of cells was also treated with various concentrations (500 nM-10 uM) of a synthetic PRC2 complex inhibitor. Real-time PCR was used to analyze EZH2 expression from control and endometriosis PF treated Ishikawa cells. Western blot was used to determine the protein levels of EZH2 and H3K27me3. MTT assay was used to determine cell viability.

Results

Endo PF compared to control PF treated Ishikawa cells showed 2-3 fold induction in EZH2 mRNA expression. Western blot showed minimal changes in the protein expression of EZH2 or H3K27me3 in the PF treated cells. MTT assay showed that lower concentrations (500 nM) inhibited 50% whereas 10 uM inhibited >90% of the endo PF treated cells. PRC2 inhibitor showed a concentration dependent decrease in EZH2 mRNA expression in cells treated with endo PF compared to control PF.

Conclusion

Our results indicate that PF from women with endometriosis have components that can modify the epigenetic profile of the endometrial cells. PRC2 complex inhibitors blocked these PF mediated effects. Future studies will identify the epigenetic targets modified due to PF treatment and their role in the etiology of endometriosis.





ORAL SESSION II • 10:30 AM – 11:30 AM

30TH ANNUAL RESEARCH DAY ORAL SESSION

In vivo brain engineering for neurological disorders

Arrin C. Brooks and Elmer M. Price

Departments of Biology and Biomedical Sciences, Marshall University, Joan C. Edwards School of Medicine, Huntington, WV.

Background

Neurodegenerative disorders, stroke, and traumatic brain injury are associated with the loss of specific neurons. The relatively new approach of cell replacement therapy aims to replace these lost neurons. Existing methods involve the transplantation of cells into the brain. Unfortunately, these transplants are accompanied by a host of sequelae and technical challenges. The approach we describe here repairs brain tissue by harnessing endogenous stem cells that reside in the adult brain and physically guiding them into damaged areas.

Hypothesis

The brain's rostral migratory stream (RMS) is a path taken by adult neural stem cells as they migrate to the olfactory bulb. The hypothesis driving this research is that surgically implanted engineered hydrogels can recapitulate the biological architecture of the RMS, creating a new path that redirects cells from the RMS into regions of the brain impacted by disease or injury.

Methods

We've designed cylindrical hydrogels consisting of fibrin and neurotrophic factors. These cylinders were implanted into rat brains in a location that intersected the RMS, thus providing a new path for cells. Animals were sacrificed 12 weeks post-implantation and immunohistochemistry was used to evaluate the new neural migratory path created by the implanted cylinder.

Results

We observed that the actual fibrin constituents of the cylinder had completely degraded, leaving in the brain a dense tract of new neurons. These new neural paths appeared to be stable and led to regions of the brain, such as the cortex, that are notoriously impossible to replenish with new neurons.

Conclusion

Our lab has developed a novel method to recruit significant numbers of new neurons (derived from preexisting adult neural stem cells) into regions of the brain that are impacted by neurodegenerative disorders or injury. This approach solves many problems associated with stem cell therapy because we are simply redirecting and retasking preexisting neural stem cells.

Is Fever a Red Flag for Bacterial Pneumonia in Children with Viral Bronchiolitis?

Dominique Elmore, Yaslam Balfaqih, Thomas Magrane, Anthony Abadir, Saloni Bhatt, Krista Putty, Marie Frazier, Susan Flesher
Department of Pediatrics, Joan C. Edwards School of Medicine, Huntington, WV

Background

The American Academy of Pediatrics bronchiolitis guidelines emphasize not ordering inappropriate antibiotics and tests for viral illnesses. The focus on these guidelines may lead to failure to treat secondary bacterial pneumonia in children with bronchiolitis resulting in morbidities including escalation of care in PICU. We have noticed that children with bronchiolitis with fevers seem to worsen and require transfer to PICU. We investigate whether fever is a red flag indicating evaluation for potential bacterial pneumonia.

Hypothesis

Most children with viral bronchiolitis do not have fever; febrile children may require further evaluation for bacterial pneumonia.

Methods

We conducted a retrospective study of children 2 years and younger admitted to our pediatric floor and PICU from July 1, 2015 to June 30, 2017 with diagnoses of Respiratory Syncytial Virus (RSV), viral upper respiratory infection, respiratory distress, respiratory failure, and pneumonia. Data was analyzed using Pearson Chi Square or Fisher's exact test.

Results

349 children were included. 179 of these children had RSV with no other identified virus. The majority of these children (58% or 103 children) with only RSV were found to be afebrile. Those who were febrile were twice as likely to be diagnosed with bacterial pneumonia as their afebrile counterparts. (40/76 or 53% vs. 28/103 or 27% ($p=.001$)). In the 170 children who had bronchiolitis caused by a virus other than RSV, 91/170 (54%) were afebrile. Those who were febrile were five times more likely to be diagnosed with pneumonia (48/76 or 61% vs 11/92 or 12%). ($p=.000$). 33 children were admitted to the floor and transferred to PICU. 21 of these had fever (64%). Of those who were febrile, 18 had pneumonia (86%). Of the 12 who were afebrile 6 (50%) had pneumonia. ($p=.03$).

Conclusion

Febrile children with bronchiolitis are two to five times as likely to have pneumonia as their afebrile counterparts.

Anti-metastatic activity of capsaicin in human lung adenocarcinoma

Jamie R Friedman, Nicholas A Nolan, Austin T Akers, Stephen D. Richbart, Kate W Colclough, John D Hurley, Cathryn Williams, William D Rollyson, Kathleen C Brown, Krista L Denning, Linda G. Brown, Richard D Egleton and Piyali Dasgupta
Department of Biomedical Sciences, Joan C. Edwards School of Medicine, Marshall University, Huntington, WV, Department of Pathology

Background

Non-small cell lung cancer (NSCLC) is characterized by aggressive clinical course, rapid doubling time and a propensity for extrapulmonary metastasis. A substantial proportion of NSCLC presents with metastatic disease at the time of their diagnosis. Metastasis is a complex multistep process. One of the earliest events of the metastatic process is the invasion of malignant cells through the surrounding stroma into the blood and lymph.

Hypothesis

The long-term goal of our laboratory is to identify nutritional compounds (as single agents or in combination with standard chemotherapy), which will suppress metastasis of NSCLCs. Capsaicin is the pungent ingredient of chili peppers. Several convergent studies have shown that capsaicin inhibits the invasion and metastasis of several types of human cancers including melanoma, prostate cancer, and cholangiosarcoma. The present study examines the anti-invasive properties of capsaicin and two capsaicin-like compounds, capsiate and capsiconiate, found in a select variety of chili peppers on NSCLC.

Methods

We measured the anti-invasive activity of these compounds by the Boyden chamber assay and spherical invasion assays. The Line-1 syngenic mouse model was used to measure the anti-metastatic effect of capsaicin *in vivo*.

Results

We found that capsaicin and capsiate displayed equivalent anti-invasive activity in NSCLC cells. In contrast, capsiconiate did not suppress the invasion of NSCLC cells. Furthermore, we tested the anti-metastatic activity of capsaicin in a syngeneic mouse model of metastasis. We observed that the dietary administration of capsaicin potentially decreased the area of lung metastatic foci relative to control untreated mice.

Conclusion

Capsaicin may have applications for suppressing metastasis of lung cancers

Tobacco flavorants enhance the addiction to nicotine
Casinelli, GP, Akers AT, Baumgard ZJ, and Henderson BJ
Biomedical Sciences, Joan C Edwards School of Medicine

Background

Understanding how flavored tobacco additives alter the addiction to nicotine is critical to our understanding of how to best improve long term cessation. As the popularity of electronic nicotine delivery systems (ENDS) increases, this becomes more important due to the fact that most users of ENDS use flavored products.

Hypothesis

Neuroscientists established that nicotine addiction can be examined by studying the upregulation (increase in the number of receptors) of proteins that are targeted by nicotine: nicotinic acetylcholine receptors (nAChRs). We hypothesize that we can identify tobacco flavorants that pose a risk to enhancing nicotine addiction by identifying those that enhance nicotine-induced upregulation of nAChRs. We also believe that we can identify these flavorants by combining this observation with direct observations of nicotine reward-related behavior in mice.

Methods

We use high-resolution confocal microscopy to examine upregulation of nAChRs on ventral tegmental area dopamine neurons following control, nicotine, or nicotine + flavorant treatments.

To examine reward related behavior, we used a conditioned place preference assay with mice.

Results

Both male and female mice observed robust reward-related behavior with 0.5 mg/kg nicotine (a common nicotine dose for this assay). When we combined nicotine with a component of green apple flavor, farnesol, we observed an enhancement in nicotine reward-related behavior in male mice only. We note that this is only with a single dose of nicotine and farnesol.

Despite observing a gender difference in reward-related behavior, we did not note a difference between sexes in nAChR upregulation. Thus far, we have observed farnesol to enhance nicotine-induced nAChR upregulation in both male and female mice.

Conclusion

Previous studies have shown that the most popular tobacco flavorant, menthol, alters brain neurochemistry to enhance nicotine addiction (Henderson et al., 2016 and 2017). These data suggest that other flavorants also play a role in altering nicotine addiction.

A Randomized Trial of Tapering Proton Pump Inhibitors in GERD

Milliejoan Mongalo, Eva Patton-Tackett, Nihar Shah, Lynne Goebel
Department of Internal Medicine, Joan C Edwards School of Medicine, Marshall
University, Huntington, WV

Background

Proton pump inhibitors (PPIs) are one of the most frequently prescribed drugs for the treatment of gastroesophageal reflux disease (GERD). Many physicians are recommending discontinuation of PPIs due to concern of adverse effects such as increased risk of fracture, pneumonia, Clostridium difficile infection, and kidney disease. However, physicians find it difficult to get their patients to stop taking PPIs and evidence is lacking for the best method of discontinuation.

Hypothesis

We hypothesize that a taper of PPI every other day for two weeks will be more successful in withdrawing PPI medication than abrupt discontinuation.

Methods

We randomized patients to two methods of discontinuation – either a two week taper or abrupt discontinuation and calculated the proportion of patients that successfully discontinued PPI medication. This trial will eventually enroll 48 participants however we are reporting data on the first 38 patients. The participants filled out an initial survey followed by the Dyspepsia Symptom Severity Index (DSSI) at baseline, every week for 6 weeks, and then once a month for a year.

Results

We present preliminary results on 38 patients with an average age of 51.9 years, 47% being males. Of these, 28% were successful using the tapering method vs. 23% using abrupt discontinuation ($p < 0.06$). There was no difference in average weekly symptoms with either method looking at the first 6 weeks after discontinuation (data from 74% of participants, $p < 0.08$).

Conclusion

Preliminary results show no difference between taper and abrupt withdrawal in symptom severity and success in discontinuation of PPI's. Of importance is that approximately ¼ of patients in either group were unable to discontinue PPIs. Our patients will be followed for 1 year to determine the final outcome of this trial.



ORAL SESSION III • 1:15 PM – 2:30 PM

30TH ANNUAL RESEARCH DAY ORAL SESSION



History of postpartum depression as a significant contributor to the severity of neonatal withdrawal

Emma Nellhaus, Louis Nieuwenhuizen, Richard Egleton, Zachary Hansen, David Chaffin, Todd Davies

Clinical and Translational Science, Obstetrics and Gynecology

Background

Neonatal abstinence syndrome is a withdrawal symptomology observed in neonates with in utero exposure to neuroactive substances. Currently, there are no clinical tools available to accurately predict the severity of neonatal withdrawal. Studies of non-exposed neonates suggest that maternal depression and anxiety are predictive of poor neonatal outcomes, both short and long-term, but research is lacking in the addicted population. We reviewed the psychiatric history of pregnant women enrolled in two buprenorphine programs (n=109) in Huntington, WV, to determine if psychiatric conditions co-occurring with Substance Use Disorder contributed to neonatal outcomes. There was a high prevalence of psychiatric comorbidities, with 67.9% of the population having at least one diagnosis. The severity of NAS in these neonates was assessed through the number of consecutive days of high Finnegan scores, length of Methadone treatment, and length of hospital stay.

Hypothesis

We hypothesize that neonates born to mothers with a history of Postpartum Depression will experience more severe withdrawal.

Methods

A retrospective chart review of pregnant women and their neonates enrolled in buprenorphine programs at Cabell Huntington Hospital and Valley Health Systems from January 2016 to October 2017 was conducted.

Results

Our findings suggest that the neonates born to mothers with a history of Postpartum Depression (PPD) had significantly more severe withdrawal symptoms than those born to mothers with or without other co-occurring psychiatric conditions. These neonates required higher levels of pharmacological intervention, had more days of high Finnegan scores, were treated with Methadone longer, and had longer length of stays ($p < 0.05$).

Conclusion

These results illustrate the impact of a history of PPD on neonatal outcomes in regards to NAS, which has yet to be described in the literature. In future research, we plan to further elucidate the relationship between peripartum depression and NAS, implementing an interdisciplinary approach to address the medical and social implications of the disease.

Control of oxidative stress is beneficial in control of salt-sensitive hypertension

Ying Nie, Muhammad Chaudhry, Fang Bai, Rebecca Martin, Yanling Yan, Jiang Liu,
Joseph I. Shapiro

Department of Biomedical Science

Background

high dietary salt intake is an independent risk factor of hypertension and related cardiovascular and renal diseases in both animal models and human beings. An increase in oxidative stress is both a cause and consequence of hypertension. Previous studies in our lab showed activation of Na/K-ATPase signaling is beneficial in the regulation of renal proximal tubules sodium handling.

Hypothesis

We investigate how oxidative modification regulates the signaling function of Na/K-ATPase and renal sodium handling.

Methods

We examined the effect of heme-oxygenase-1(HO-1) on a high salt diet (4% salt diet for 2 weeks) in Dahl/Salt-sensitive rats (S, hypertensive model) and SS-13BN (control of S, normotensive model). Expression and activity of HO-1 were controlled by administration of CoPP (cobalt protoporphyrin ,5mg/kg,i.p., twice a week), an inducer of HO-1, and SnMP (Tin mesoporphyrin IX dichloride ,20mg/kg, i.p., twice a week), an inhibitor of HO activity.

Results

S rats with SnMP treatment attenuate the salt diet induced hypertension while SS-13BN rats with CoPP treatment further attenuate blood pressure of the normotensive rats. Also S rats with SnMP treatment are showing less heart/body weight ratio. Salt also decreased SnMP's inhibiting of HO activity while didn't change CoPP's inducing ability. S rats with SnMP treatment are showing less heart/body weight ratio. Hematocrit, 24 hours' urine volume and expression of Na/K-ATPase α -1 subunit stayed the same among all groups.

Conclusion

HO-1 exerted a protective factor of blood pressure control and this protective effect could be through Na/K-ATPase/Src/ROS pathway.

Dose-Escalated Salvage Stereotactic Body Radiation Therapy (SBRT) for Locally-Recurrent Previously-Irradiated Head and Neck Squamous Cell Carcinoma Trends Toward Improved Local Control and Overall Survival

Raj Singh, Hayden Ansinelli, Dana Sharma, Jan Jenkins, John Austin Vargo, Sanjeev Sharma

Department of Radiation Oncology, Marshall University Joan C. Edwards School of Medicine, Huntington, WV; The Radiosurgery Society, Sunnyvale, CA; Department of Radiation Oncology, West Virginia University School of Medicine, Morgantown, WV; St. Mary's Medical Center, Department of Radiation Oncology, Huntington, WV

Background

While Stereotactic Body Radiation Therapy (SBRT) has emerged as a viable re-irradiation strategy for locally-recurrent head-and-neck cancer (rHNC), published experiences have been limited to large academic institutions.

Hypothesis

We aimed to present a multi-institutional analysis of SBRT for rHNC to examine whether dose escalation resulted in improved disease control.

Methods

We queried the RSSearch Registry for rHNC patients treated with SBRT from January 2008 to November 2016. Patients with non-squamous cell histology were excluded. Local control (LC) and overall survival (OS) were estimated using the Kaplan-Meier method with comparisons between groups completed using log-rank t-tests and multivariable Cox regression. Logistic regression analyses were used to examine factors predictive of toxicity.

Results

Forty-five rHNC patients treated with SBRT delivered in 5 fractions at 12 radiotherapy centers were identified. Median patient age was 69 years (range: 37-91). The median prescription dose was 30 Gy (range: 20–42.5 Gy). Median follow-up was 8.78 months (range: 1-59.43 months). On univariate analysis, prescription doses ≥ 40 Gy were associated with higher 1-year rates of OS (67.69% vs. 23.64%, $p=0.028$) and LC (75% vs. 36.84%; $p=0.0296$). On multivariate analysis, prescription doses ≥ 40 Gy were also associated with significantly improved OS (hazard ratio (HR) = 0.45 (95% CI: 0.21–0.98); $p=0.045$) as well as LC (HR = 0.086 (95% CI: 0.01–0.88); $p=0.038$). Acute and late toxicity rates were 22.22% and 15.55%, respectively. Prescription doses ≥ 40 Gy were associated with a higher likelihood of experiencing toxicities (33.33% vs. 13.33%; $p=0.015$).

Conclusion

Salvage SBRT for rHNC resulted in favorable outcomes with low toxicity. Prescription doses ≥ 40 Gy were associated with improved LC and OS.

Post Insertional Pain Following Intrauterine Device Insertion in Nulliparous Adolescents

Kristin Sinning, David Jude and Jennie Yoost.

Marshall University Department of Obstetrics and Gynecology, Joan C. Edwards School of Medicine, Huntington, WV.

Background

The American College of Obstetricians and Gynecologists (ACOG) recommends intrauterine devices (IUD) as first line contraception in adolescents and nulliparous patients. There are barriers to IUD placement in adolescents, one of which is the fear of pain with the procedure. Cramping is one of the most common reasons for IUD discontinuation among adolescents, however, there is a paucity of data regarding adolescents experience of post-insertional pain.

Hypothesis

The aim was to quantify the "normal" adolescent experience after IUD insertion, in order to be able to provide appropriate counseling for future adolescents desiring this device.

Methods

This study involved comparison of post-insertional pain scores among two groups of subjects: nulliparous adolescent patients age 13-18 and parous adult patients age 18 and older. All subjects were those undergoing IUD insertion. Following insertion, subjects were given a visual analog scale (VAS) and instructed to record daily pain scores for two weeks. All subjects were instructed to record the number and dosage of ibuprophen taken daily.

Results

The greatest mean differences between groups occurred during the first four day. The average pain score over the first three days after insertion was 3.85 in the adolescent group and 2.56 in the adult group ($p=.003$). The proportion of subjects with a pain score greater than 5 during the first three days following insertion was 32.6% (15 of 46) in the adolescent group and 12.8% (6 of 47) in the adult group, $p=0.022$.

Conclusion

This study demonstrates that nulliparous adolescent patients undergoing IUD placement experience more post-insertional discomfort compared to parous adults. The difference may be the most pronounced during the first three to four days following insertion. Adolescents should be counseled not only about the insertion procedure, but also expectations following IUD insertion. This study provide data to allow providers to better counsel their patients.

The Use of FitBit Technology to Improve Physical Activity Among Adolescents in Rural West Virginia

Jennie Yoost, Kristin Sinning, Jennifer Gerlach, Holly Cyphert

Marshall University Department of Obstetrics and Gynecology, Department of Pediatrics, and Department of Health Science, Joan C. Edwards School of Medicine, Huntington, WV.

Background

Only 25% of adolescents meet the recommended amount of daily amount of physical activity. Rural areas are associated with a higher prevalence of obesity when compared to urban areas. Wearable fitness trackers have shown benefit in adults. There is little literature on the effectiveness of wearable activity trackers in adolescents, particularly in those in rural areas.

Hypothesis

It was hypothesized that FitBit trackers would improve activity, weight and laboratory values in obese adolescents living in a rural area.

Methods

Baseline demographics, diet log, daily physical activity, Rosenberg self-esteem questionnaire, and initial laboratory studies were collected for 24 adolescents. All subjects received a FitBit with standardized diet and exercise counseling. Laboratory data including lipid panel, glucose and insulin levels were done at intake. Follow-up visits at 3 months assessed FitBit use, weight and laboratory studies. Follow-up phone surveys were done at 6 months.

Results

There was no overall difference in weight or BMI at follow up. There was a significant change in pulse rate among those at follow up (92.6 vs. 79.4, $p=0.003$). There were no significant changes in glucose, lipid levels, or insulin levels. Use of FitBit declined significantly over the study period. At the 6 month phone survey, 13 subjects reported having a FitBit "motivated me a lot" and they would be "very likely" to recommend it to a friend. Overall 15 reported liking the FitBit "a lot."

Conclusion

FitBit was overall described as very easy to use, and the social network was described as helpful. There was a significant change in pulse rate, but there were no other significant laboratory changes or changes in weight. Regardless of the lack of quantitative data, at the 6 month follow-up, the majority of subjects reports being motivated by the FitBit and use may show benefit over a longer period of time.



ORAL SESSION III • 3:15 PM – 4:03 PM

30TH ANNUAL RESEARCH DAY ORAL SESSION



The putative endogenous aryl hydrocarbon receptor ligand, ITE, inhibits breast cancer proliferation by reducing the expression of JAGGED1.

Travis Salisbury, Ateeq Chaudhry and Sean Piwarski
Biomedical Sciences, Joan C Edwards School of Medicine

Background

The aryl hydrocarbon receptor (AHR) is a ligand-activated transcription factor that binds pollutants, therapeutic drugs and endogenous ligands. JAGGED1 is a cell membrane spanning ligand that induces oncogenic signaling in breast cancer cells upon binding its cognate cell membrane receptor, NOTCH. Triple negative breast cancer (TNBC) are highly aggressive breast cancers that lack targeting therapy.

Hypothesis

Using RNA-sequencing analysis, we identified herein a novel regulation of JAGGED1 by the prototype AHR agonist TCDD in MCF7 breast cancer cells. Given these results, we hypothesized that the endogenous AHR ligand ITE would inhibit the proliferation of TNBC cells by reducing the expression of JAGGED1.

Methods

Cell proliferation, cell invasion, western blot, qRT-PCR, and gene knockdown experiments were conducted in human breast cancer cell lines.

Results

ITE inhibited the proliferation and invasive activity of TNBC cells in cell culture. In addition to TNBC cells, ITE also suppressed the proliferation of estrogen receptor (ER) positive and HER2 overexpressing breast cancer cells. Western blot and qRT-PCR analysis identified that ITE reduced the levels of JAGGED1 protein and mRNA, respectively, in MDA-MB-231, MDA-157, and T47D breast cancer cells. Reducing the expression of JAGGED1 with JAGGED1 short interfering RNA (siRNA) inhibited the proliferation and invasive activity of MDA-MB-231 TNBC cells. Knocking down the expression of the AHR reversed ITE-mediated reductions in JAGGED1 expression, indicating that ITE inhibits the expression of JAGGED1 via AHR.

Conclusion

These results are the first to show that ITE inhibits the proliferation and invasive activity of TNBC cells and reduces the expression of JAGGED1. Our finding that reducing the expression of JAGGED1 with siRNA inhibited the proliferation of TNBC cells supported our hypothesis that ITE inhibits TNBC cell proliferation by reducing JAGGED1. We are currently verifying that ITE inhibits the expression of JAGGED1 gene targets that are important for breast cancer progression.

Na, K-ATPase Signaling as a Potential Therapeutic Target of Pulmonary Arterial Hypertension

Jiayan Wang, Feng Gao, Xiaoliang Wang, Pauline Marck, Joseph I. Shapiro, Sandrine V. Pierre, Zijian Xie
Marshall Institute for Interdisciplinary Research

Background

PAH is a complex multifactorial process that characterized with pulmonary vascular remodeling and RVH. Studies provide evidence of increased oxidative status in patients with PAH and animal models. Although the precise mechanisms are unknown, ROS-mediated oxidative damage appears to play an important role both in the lung and right ventricle. Na, K-ATPase (NKA) has been shown to regulate ROS generation and signaling through mechanisms distinct from its well-established pumping function. Significantly, we have demonstrated that blocking NKA/Src activation by pNaKtide effectively abolished the formation of ROS amplification loop, resulted in an inhibition of pathological ROS signaling in several animal models.

Hypothesis

We hypothesized that NKA/Src complex may be involved in the pathological amplification of ROS in PAH, leading to vascular remodeling in the lung and RVH. Targeting the complex with pNaKtide, a specific antagonist could attenuate PAH.

Methods

To test these hypotheses, we studied the effectiveness of pNaKtide in rat model of PAH induced by hypoxia and Sugen 5416. To further validate that $\alpha 1$ NKA-mediated signal transduction can be targeted for developing new therapeutic approaches in PAH, we studied PAH in transgenic mice where $\alpha 1$ NKA-mediated signaling is altered.

Results

pNaKtide reduced right ventricle systolic pressure (RVSP), right ventricle (RV) hypertrophy and pulmonary vascular remodeling in the rat model of PAH induced by hypoxia and Sugen 5416. Mice with mutated caveolin binding motif of $\alpha 1$ NKA (mCBM) developed mild PAH spontaneously.

Conclusion

These findings support a role of $\alpha 1$ NKA mediated signal transduction in the development and progression of PAH. Therefore, $\alpha 1$ NKA could serve as a novel target for developing therapeutics of PAH.

Characterization of Renal Cytotoxicity and Oxidative Stress Induced by the Radiocontrast Agent Diatrizoate (DA) in Human Proximal Tubular Cell Line

Dakota Ward, Kathleen Brown, and Monica Valentovic

Department of Biomedical Sciences, Toxicology Research Cluster, Joan C. Edwards School of Medicine, Marshall University

Background

Contrast Induced-Acute Kidney Injury (CI-AKI) is the third most common cause of iatrogenic kidney damage. CI-AKI is the result of exposure to iodinated contrast media which are required for many diagnostic procedures including computed tomography, angiography, and cardiac catheterization. Although the exact mechanism of toxicity is not known, current theories suggest oxidative stress, changes in renal hemodynamics, and direct cytotoxicity.

Hypothesis

This project tested the hypothesis that the radiocontrast agent diatrizoic acid (DA) will induce direct cellular cytotoxicity in the form of oxidative stress and mitochondrial dysfunction in the absence of hemodynamic influence.

Methods

Immortalized human proximal tubular cells (HK-2) were incubated with clinically relevant concentrations (0-18 mg/ml) of DA for 24h. Viability was assessed using the conversion of MTT to formazan and trypan blue exclusion. Oxidative stress was quantitated using Western blot analysis for 4-hydroxynonenal (4-HNE), protein carbonylation (OxyBlot), and tumor necrosis factor-alpha (TNF- α). Mitochondrial function was examined using the Agilent Seahorse XFp Cell Mito Stress Test and Cell Glycolysis Stress Test Assays.

Results

Toxicity was evident in HK-2 cells exposed to 2-18 mg/ml relative to vehicle control ($p < 0.05$) at 24h as measured by MTT assay and trypan blue exclusion. Levels of oxidative stress increased in HK-2 cells exposed to 2-18 mg/ml relative to vehicle control ($p < 0.05$) at 24h as measured by 4HNE and Oxyblot. A decrease in TNF- α in cellular lysate and an increase in TNF- α in culture media was also seen at higher concentrations. Mitochondrial dysfunction was seen in low and high concentration DA (5 and 15 mg/ml) relative to vehicle control ($p < 0.05$) at 24h.

Conclusion

DA is toxic to HK-2 cells in a concentration dependent manner at 24h. DA exposure results in a significant increase in 4HNE protein conjugation and protein carbonylation. Exposure to DA also induces significant mitochondrial dysfunction at 24h.

Reducing Opioids with Enhanced Recovery After Cesarean Delivery

Kevin White MD, Sharin Maljidi, Nadim Bou Zgheib MD, Brenda Mitchell MD
Obstetrics and Gynecology, Marshall University College of Medicine

Background

Prescription drug abuse presents a major problem to society and can impact postoperative pain management. A substantial number of patients struggling with addiction started while undergoing treatment of acute pain. A retrospective analysis of our patients revealed that patients used 99.9mg of oral morphine equivalents by the end of postoperative day 2 with only 27% achieving adequate pain control.

Hypothesis

We aimed to reduce opioid use and pain scores after cesarean delivery with enhanced recovery measures.

Methods

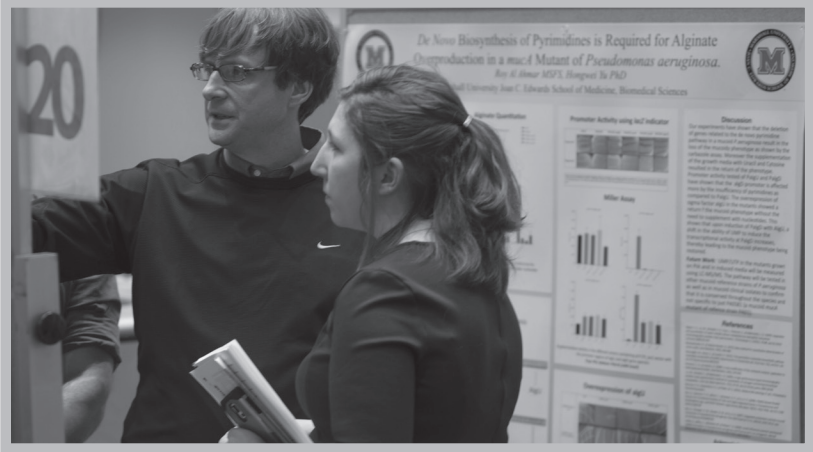
We implemented a protocol using liposomal bupivacaine injected at the time of cesarean delivery. Patients were then given 500mg acetaminophen every 4 hours, 800mg ibuprofen every 8 hours and 5mg oxycodone every 6 hours as needed. In addition, patients were ambulated 4 hours after surgery and had their catheters removed from their bladder as soon as they could safely ambulate.

Results

After implementation, patient utilized 45% less opioids ($p < 0.0001$) and reported 24% less pain ($p < 0.001$). 51% ($p < 0.05$) achieved adequate pain control. 31% in the treatment group versus 2% in the control group did not take any opioids ($p < 0.05$). For those patients whose children were in the newborn nursery only, the day 2 discharge rate was 75% versus 42% ($p < 0.01$). The day 2 discharge rate for all patients, newborn nursery and NICU, was higher in the treatment group at 51% versus 37% ($p < 0.05$). Hospital charges were equivocal between the groups.

Conclusion

Our enhanced recovery protocol is an effective alternative to traditional pain control and is associated with a significant reduction in opioid use and pain scores without any significant increase in hospital charges.





BASIC SCIENCE POSTER SESSION I • 9:45 AM – 10:30 AM

30TH ANNUAL RESEARCH DAY POSTER SESSION



Redox Balance Regulates FGF21 in the Novel “Stress-less” Mouse Model

Deborah Amos, Aaron Roberts, Jonique George, Nalini Santanam

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

Background

Redox stress is an important mediator of cardiometabolic dysfunction.

Oxygen/nitrogen-derived free radicals alter glucose and lipid homeostasis in metabolic tissues. Pharmacological doses of Fibroblast Growth Factor 21 (FGF21) improve insulin sensitivity, lipid profile, and body weight, making it a promising therapeutic target in metabolic diseases. Though, its upstream modulators are being investigated, recent studies suggest FGF21 is a stress-response gene impacted by redox stress.

Hypothesis

Modulating redox stress by dietary intervention or altering endogenous antioxidant levels would improve FGF21 signaling.

Methods

C57Bl6(C57), Catalase transgenic(Cat-tg) mice expressing 3-4 fold excess catalase, and novel Bob-Cat mice: Cat-tg and leptin resistant Ob-Ob mice hybrid (approved by MU-IACUC), were fed three diets: normal chow(NC), high omega3(45% fish oil:OM3), or high saturated fat(45% lard:HFD) for 8 weeks. Weekly body weights and food consumption were measured. ECHO-MRI was used to determine fat/lean mass. HOMA-IR was calculated using fasting glucose and insulin levels. Gene expression of FGF21 and its regulators, Nrf2(transcriptional activator of redox-regulated genes) and GPR120 (omega3 fatty acid receptor) were determined using quantitativePCR. Statistical analysis was conducted on GraphPad Prism.

Results

Only Cat-tg mice fed HFD became insulin resistant (HOMA-IR), though body and fat mass increased in all three genotypes fed HFD. Interestingly, significant increase in adipose tissue expression of FGF21 and its regulators GPR120 and Nrf2 was seen in Bob-Cat mice on OM3 and HFD.

Conclusion

Our results suggest that redox balance is necessary for proper FGF21 signaling. We speculate that Cat-tg mice have excessive antioxidant/oxidant levels, while redox is balanced in the Bob-Cat mice due to its obese background. Increased FGF21 and maintenance of insulin sensitivity in Bob-Cat mice may be due to increased Nrf2 signaling. OM3 likely triggers the GPR120-mediated crosstalk with FGF21 thus further promoting metabolic homeostasis.

Targeting heat shock protein 90 to alter evolution of aggressive cancer phenotypes

Nickolas A. Bacon, Vincent Sollars

Marshall University Joan C. Edwards School of Medicine

Background

The evolution of aggressive cancer phenotypes remains a significant challenge in cancer medicine, as they oftentimes become the source of chemotherapeutic resistance, relapse, and metastasis in a patient. Therefore, significant clinical benefit may arise by refocusing cancer treatment on limiting the emergence of these phenotypes. Heat shock protein 90 (HSP90) is a chaperone protein whose function is evolutionarily well conserved and plays a unique role in modulating phenotypic traits. In cancers, HSP90 gene expression is frequently up regulated and has been linked to a poor overall prognosis. Additionally, HSP90's role in supporting protein function and stability in almost every hallmark of cancer makes it a lucrative therapeutic target to effectively shut down multiple oncogenic signaling networks simultaneously.

Hypothesis

Since HSP90 has the ability to support multiple cancer hallmarks simultaneously, it may play an important role in facilitating cancer cells to sample and solidify certain cancer phenotypes. We believe that HSP90 inhibition may limit this sample and solidification process, potentially altering the cancer's ability to evolve aggressive characteristics.

Methods

We subject A549 lung cancer cells to HSP90 inhibition, provide a rest and recovery period, and induce EMT via transforming growth factor-beta (TGF- β) treatment to promote formation of aggressive cancer phenotypes. We use flow cytometry to compare changes in distribution of classic EMT markers, cancer stem cell markers, and multi-drug resistant transporters between our treated and untreated samples.

Results

Early results indicate that single treatment of A549 cells with the clinically relevant HSP90 inhibitor NVP-AUY-922 reduces the MDR1 positive cell population as well as the overall expression of MDR1 compared to untreated A549 cells.

Conclusion

Single treatment of A549 cells with HSP90 inhibitor NVP-AUY-922 reduces MDR1 positive cell population and MDR1 expression intensity. This is important in that it may limit the formation of cells with enough MDR1 expression to permit chemotherapeutic resistance.

PNx-Mediated Anemia in C57BL/6 mice is not due to iron deficiency

Fang Bai, Muhammad A. Chaudhry, Ying Nie, Yanling Yan, Rebecca Pratt, Cameron Brickman, Joseph I. Shapiro, and Jiang Liu
Dept. of Biomedical Sciences

Background

We have shown that the Na/K-ATPase signaling regulates 5/6 renal partial nephrectomy with pole ligation (PNx) mediated uremic cardiomyopathy including anemia. Anemia in patients with chronic kidney disease is associated with poor outcome, increased cardiovascular disease and mortality. Here we report that PNx-mediated anemia is not due to iron deficiency in C57BL/6 mice.

Hypothesis

PNx-mediated anemia is not due to iron homeostasis.

Methods

C57BL/6 mice were randomly divided into experimental groups and processed for Sham surgery (Sham, n=10) or PNx surgery (PNx, n=21). Hematocrit was measured by centrifugation of blood samples in hematocrit tubes. Plasma iron level, total iron binding capacity (TIBC), unsaturated iron binding capacity (UIBC), and iron saturation rate (iron/TIBC) were measured and calculated as described everywhere.

Results

Comparing with sham, PNx surgery significantly stimulates cardiac hypertrophy and anemia determined by heart/body weight ratio and HCT percentage, respectively. However, there is no significant difference concerning plasma iron level, TIBC, UIBC and iron saturation rate. The data suggested that PNx-mediated anemia might not involve the disturbance of iron homeostasis. Interestingly, PNx significantly reduces expression of HAMP gene in left ventricle (LV) tissues which coding hepcidin that is necessary for the regulation of iron storage in macrophages, and for intestinal iron absorption.

Conclusion

PNx-mediated anemia is not likely due to iron deficiency. The mechanism needs to be further clarified in which hepcidin is a putative target.

Interaction of the Gut Microbiome, Diets, and Genetics in the Development of Metabolic Syndrome in Mice

Lexie C. Blalock, Jacaline K. Parkman, Jun Fan, Donald A. Primerano, Hongwei D. Yu, Jung Han Kim, James Denvir.

Department of Biomedical Sciences, Joan C. Edwards School of Medicine, Marshall University, Huntington, WV 25755.

Background

Affecting approximately 1 in 3 Americans, metabolic syndrome is a cluster of multifactorial diseases, characterized by type 2 diabetes (T2D), dyslipidemia, and increased adiposity. While the genetic and environmental factors driving obesity-associated diseases are heterogeneous, recent evidence suggests that the intestinal microbial community may contribute to the pathophysiology of these diseases.

Hypothesis

Our preliminary studies demonstrated that the penetrance of genetic susceptibility to obesity and T2D is modulated by nutritionally modified diets in TALLYHO/Jng (TH) mice, a polygenic model for human obesity and T2D. In this study, we tested whether this effect is gut microbiota dependent.

Methods

4-week old C57BL/6J (B6) and TH mice were weaned onto standard chow, semi-purified high-sucrose/high-fat (HSHF), or semi-purified high-sucrose/low-fat (HSLF) diets. After 16-28 weeks of ad libitum diets, the mice were sacrificed for the collection of blood and cecal contents. Bacterial DNA was extracted from the cecal contents, and the V3 region of the 16S rRNA gene was subsequently PCR-amplified and sequenced using an Illumina HiSeq1500 sequencer. Microbial diversity and compositional abundance analyses (ANCOM) were performed with QIIME2.

Results

Microbial communities were phylogenetically distinct ($P = 0.001$) between strain and diet groups except for the HSHF and HSLF diets, which had similar community structures. ANCOM showed the microbiomes of HSHF and HSLF-fed B6 and TH mice exhibited an increased abundance of the uncharacterized Deferrribacteraceae and a marked decrease in the beneficial family, Prevotellaceae, compared to chow-fed. TH mice on HSHF and HSLF diets exhibited distinct shifts in pathogenic phylotypes, including Staphylococcaceae, Enterococcaceae, Streptococcaceae, Mycoplasmataceae, and Enterobacteriaceae, which positively correlated with increased body weight, glucose, or total triglyceride levels. Furthermore, the Firmicutes:Bacteroides ratio, a pro-obesity metric, was significantly augmented by the HSHF regimen.

Conclusion

The gut microbiota is heavily influenced by diet; however, the host's genetic susceptibility to obesity further determines the presence of pathogenic phylotypes.

Na/K-ATPase $\alpha 1$ /caveolin 1 interaction sets stemness and pluripotency in human stem cells

Liquan Cai, Xiaoliang Wang, Minqi Huang, Yunhui Xu, Zijian Xie
MIIR

Background

Independently from its role as an ion pump, Na/K-ATPase $\alpha 1$ (NKA) serves a signal integrating function through its interaction with caveolin 1. The caveolin binding domain (CBM) in NKA is critical for this signal integrating function, and we have recently discovered that mutant CBM (mCBM) in mice results in embryonic lethality between 9.5 - 12.5 days post coitus. This phenotype clearly underlines the physiological importance of the NKA-mediated signal integration in embryonic development, and a human induced pluripotent stem cell (hiPSC) model was developed in this study to further explore the underlying mechanism.

Hypothesis

mutant CBM (mCBM) in human induced pluripotent stem cell (hiPSC) will alter feature of stem cells and their pluripotency.

Methods

CRISPR-Cas9 genome editing technology was used to create a mCBM hiPSC line. Differentiation of skeletal muscle cells, cardiomyocytes, and adipocytes were performed to test the multipotency of stem cells. Real-time RT-PCR and immunofluorescence staining were conducted to measure mRNA expression. TOPflash assay was conducted to assess Wnt signaling.

Results

- 1) mCBM hiPSC lose clonal morphology and mRNA expression of stem cell marker genes such as NANOG, OCT4 and SOX2.
- 2) CBM mutant cells expressed mesenchymal stem cell (MSC) marker genes Sox17, PDGFR α , and PDGFR β .
- 3) mCBM mutant cells no longer have the ability to differentiate into skeletal or cardiac myocytes, but remain the ability to differentiation into adipocytes.
- 4) mCBM mutant cells develop the abnormal Wnt signaling, including mRNA expression of WNT1, WNT5b, WNT8a and DKK1, loss of membrane localization of β -catenin, and blunted response to Wnt3a stimulation in TOPflash luciferase assay.

Conclusion

These findings suggest that a loss of cellular stemness and pluripotency occurs upon disruption of functional NKA signal integrative function. These defects are associated to an alteration of the Wnt/ β -catenin pathway and correlates with the histological defect in somite development observed in the mCBM mouse embryo.

Characterization of RyfA in *Shigella Flexneri*

Francis Essien, Erin Murphy.

Department of Biological Science, Ohio University Heritage College of Osteopathic Medicine, Athens, OH.

Background

Members of the genus *Shigella* are Gram-negative bacteria of the family Enterobacteriaceae and are the causative agents of shigellosis, a severe diarrheal disease. *Shigella* cause human disease by invading, replicating within, and spreading between cells of the colonic and rectal epithelium. Shigellosis remains a worldwide health concern with a conservative estimate of 160 million cases per year resulting in 1.5 million deaths. *Shigella* species have been proven to utilize small RNA (sRNA) molecules to control vital virulence-associated processes. The most recently characterized sRNA is RyfA. Unlike *S. dysenteriae*, *S. flexneri* encodes just one copy of RyfA. While very similar, the singlet RyfA of *S. flexneri* is not identical to either RyfA1/2 of *S. dysenteriae*, and the function of this molecule remains completely unknown.

Hypothesis

The working hypothesis is that the single RyfA molecule produced by *S. flexneri* influences both eukaryotic cell invasion and cell-to-cell movement.

Methods

A plasmid was constructed from which RyfA is produced at high levels. The impact of increased RyfA production in *S. flexneri* was evaluated using in vitro tissue culture based approaches such as plaque and invasion assays to directly investigate the effect on the ability of the pathogen to invade, replicate within and spread between human epithelial cells.

Results

Preliminary results indicate that increased production of RyfA results in the formation of smaller plaques as compared to those formed by wild-type *S. flexneri*. It suggests that with increased levels of RyfA *S. flexneri* is able to invade eukaryotic cells but is unable to replicate and/or spread to neighboring cells.

Conclusion

Experiments are ongoing to further characterize the role of RyfA in controlling *S. flexneri* virulence. Once these essential pathways are understood, directed efforts can be made to disrupt them, and by doing so reducing or eliminating the ability of the bacterium to instigate disease.

**Developing Biomechanical Tools for Rehabilitation of Lower Limb Function:
Active Sensing of Leg Unloading**

C. Harris, S. Chaudhry, S. Yakovenko, S. Zill

Dept. Biomed. Sci., J.C. Edwards Sch. Med., Huntington, WV; Human Performance
Exercise Physiology, Sch. Med, West Virginia University, Morgantown, WV

Background

The goal of our new collaborative and translational research project is to create biomechanical tools for the analysis and control of movement in lower limb prosthetics. At JCESOM, we are studying sensors and motor control in hexapod invertebrates to delineate mechanisms that could be applied to osseointegrated prosthetic legs to increase proprioception, simplify control and aid in adapting walking movements.

Hypothesis

Sensory signals of force and joint velocities can be integrated to detect postural perturbations and leg slipping.

Methods

Activities of sense organs that monitor forces (campaniform sensilla) and motor responses are recorded extracellularly from leg nerves and muscles. Forces are generated by computer and applied to the legs or muscle insertions using a probe with attached strain gauges. Leg joint angles are monitored by high speed video.

Results

Sensory responses in adjacent groups of receptors were elicited to increases and decreases in forces applied to the legs. Tests using 'stair case' waveforms and ramp and hold functions at different offset levels showed that discharges were minimal at large load offsets but were maximal as loading approached zero. Thus, the sensors are maximally sensitive to force decreases in ranges that approach complete unloading of the leg, as occurs before the onset of swing and, potentially, when a leg slips. Experiments using similar waveforms or torques derived by inverse dynamics from data obtained in freely moving animals demonstrated that force decreases activated muscle synergies that lift the leg from the substrate.

Conclusion

Receptors are specifically tuned to detect rapid decreases in forces as they approach zero and can activate swing phase muscles. The sense organs could act as cues in detecting leg slipping prior to changes in body position and facilitate the onset compensatory leg lifting. Sensors with similar properties could detect critical signals of unloading in prosthetic legs without the computational cost needed to continuously monitor body weight. Support WVCTSI Grant U54GM104942.

Inhibiting Na/K-ATPase Oxidant Amplification Loop Regulates Aging in C57B16 Old Mice.

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Background

Aging, the inevitable and progressive decline of physiological integrity, manifests as: loss of cell division, oxidative stress, DNA damage, and senescence gene overexpression. This contributes to impaired physiological function, disease development, and life span reduction. The Na/K-ATPase amplifies oxidant signaling; we speculate a peptide inhibiting this pathway, pNaKtide, may be effective to regulate cellular senescence, thus delaying and/or reversing aging by attenuating oxidative stress.

Hypothesis

Inhibition of the Na/K-ATPase amplification may be effective to regulate cellular senescence, thus delaying and/or reversing aging by attenuating oxidative stress.

Methods

Male, C57BL6 mice, young and old were fed normal chow diet or Western Diet. They were divided into 6 groups. After 8 weeks of control or WD diet respectively, groups 2, 4 and 6 were injected with pNaKtide for 8 weeks.

Results

Histological analysis of liver shows increased steatosis and fibrosis with age and more so with WD and decreased with pNaKtide treatment. Kidney shows increased fat infiltration and sclerosis with age and WD and decreased with pNaKtide treatment. TUNEL assay of liver and kidney indicated more DNA damage with age and WD, this significantly decreased with pNaKtide treatment. Carbonylation of the Na/K-ATPase α 1-subunit, activation of p-Src and TBARS were significantly elevated in old and WD liver and kidney compared to those given pNaKtide treatment. RT-PCR of senescence genes: p21, Apo lipoprotein J, Collagenase 1, fibronectin, and MMP-9 were significantly increased in hepatic and renal tissue with age and WD compared to those given pNaKtide treatment.

Conclusion

Our study demonstrates that Na/K-ATPase regulates aging and pNaKtide significantly alleviates genetic and phenotypic attributes of aging. pNaKtide holds potential as a novel drug for treating cellular damage that contributes to manifestations of aging and WD.

Differentiation Kinetics of Hematopoietic Stem Cells Treated with Alexidine Dihydrochloride and Hypoxia

Carlen Merritt, Abdalla Lawag, Abdalla Lawag and Vincent E. Sollars
Biomedical Sciences

Background

Stem cells grown in hypoxic conditions, which contains an oxygen level of up to 1%, utilize glycolysis as the primary source of energy to differentiate, as opposed to stem cells cultured in normoxic conditions that use both glycolysis and oxidative phosphorylation. Differentiation requires a significant amount of energy, and previous research has shown that the 4 ATP generated solely through glycolysis in a hypoxic environment is usually not enough to permit complete differentiation of stem cells. Alexidine dihydrochloride is an antibiotic and selective inhibitor of Protein Tyrosine Phosphatase Located in the Mitochondrial 1 (ptpmt1). This inhibition reprograms cellular metabolism to rely on glycolysis alone in driving cellular processes, effectively mimicking metabolic switches associated with hypoxic growth conditions.

Hypothesis

EML cells are a stem cell factor dependent murine hematopoietic stem cell line often used to study differentiation of blood cells. We hypothesize that treating EML cells with alexidine dihydrochloride and allowing them to differentiate may recapitulate differentiation kinetics of EML cells grown in hypoxic conditions.

Methods

We will have EML cells cultured in chronic hypoxia, acute hypoxia, and normoxia, as well as EML cells treated with alexidine dihydrochloride kept in normoxia. EML cells will be allowed to differentiate in the presence of alexidine dihydrochloride and compared to their untreated and hypoxic counterparts. After differentiation, each culture will be labeled with lineage specific antibodies and analyzed via flow cytometry which will allow us to follow the differentiation kinetics of EML cells in their respective environments.

Results

From this data we may be able to compare the differentiation kinetics of the alexidine dihydrochloride treated EML cells to the EML cells cultivated in chronic hypoxia, acute hypoxia and normoxia.

Conclusion

If we are successful, alexidine dihydrochloride may provide the ability to produce an increased source of stem cells for therapeutic transplantation in healthcare.

Renal proximal tubule-specific knockout of Na/K-ATPase alpha1 in the mouse
Shreya T. Mukherji, Isabel Larre, Jeff P. McDermott, Gustavo Blanco, Sandrine V. Pierre, and Zijian Xie
Marshall Institute for Interdisciplinary Research,

Background

Cardiotonic steroids (CTS) are classically known as specific inhibitors of Na/K-ATPase (NKA) enzymatic function. At lower concentrations, in the range of those reported for endogenous CTS in the blood, they initiate NKA/Src-mediated signaling in renal cell cultures. Circulating CTS levels are markedly increased during salt loading, volume expansion and renal insufficiency, suggesting a physiological role for CTS/NKA signaling in the regulation of blood pressure and renal sodium handling. In vitro studies showing that the CTS ouabain acts through basolateral NKA/Src signaling to regulate the apical abundance of the sodium-proton exchanger in renal proximal tubule (RPT) cells further support this hypothesis.

Hypothesis

To test the physiological importance of the NKA-mediated signaling on renal function, we developed a mouse model with a renal proximal tubule-specific knockout (KO) of Na/K-ATPase alpha1 isoform (RPT α 1^{-/-}).

Methods

RPT α 1^{-/-} mice were generated using an ATP1A1 floxed mouse and a Cre mouse where the recombinase was expressed under the sodium-glucose co-transporter 2 promoter. Basic and renal phenotyping was conducted using EchoMRI, comprehensive lab animal monitoring system, and urine volume and chemistry analyses.

Results

RPT α 1^{-/-} mice were born with the expected Mendelian frequency and survived to adulthood. At 4 months, RPT α 1^{-/-} mice had similar body weights compared to RPT α 1^{+/+} littermates, with no change in lean, fat, and water body composition. Water and food intake and activity levels measured with CLAMS revealed no difference. However, there was a significant decrease of 35% in daily urine volume (2.14 ± 0.56 mL in RPT α 1^{+/+} vs 0.71 ± 0.3124 mL in RPT α 1^{-/-}, $P < 0.05$, $n=4$) without change in urine ion concentrations.

Conclusion

These results support a physiological role for NKA signaling in addition to the classical ion-pumping function at the basolateral membrane, and warrant further investigation into the role of NKA/Src-mediated signaling in the reabsorption of sodium and water and regulation of uresis.

pNaKtide Attenuates Kidney Dysfunction and Systemic Inflammation by Blocking Na/K-ATPase/Reactive Oxygen Species Amplification in ApoE ^{-/-} Mice.

Athar Nawab, Brian Snoad, Joseph I. Shapiro, Komal Sodhi

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Background

We have previously reported that the 1 subunit of the sodium potassium adenosine triphosphatase (Na/K-ATPase) acts as an amplifier for reactive oxygen species (ROS) in addition to its ion pumping function. We have also shown that blockade of this amplification with a novel peptide, pNaKtide, ameliorates oxidative stress and obesity in mice subjected to a high-fat diet.

Hypothesis

Blockade of the sodium potassium adenosine triphosphatase (Na/K-ATPase) amplification with a novel peptide, pNaKtide, ameliorates oxidative stress and obesity in mice subjected to a high-fat diet.

Methods

pNaKtide was administered in ApoE knockout mouse fed western diet. 25 mg/Kg pNaKtide was administered intraperitoneally once every 7 days for 2 months. Lipid profile, ROS levels and plasma creatinine were measured. Also, kidney fibrosis was quantified.

Results

pNaKtide administered to these mice significantly decreased plasma triglycerides, FFA, and LDL levels ($p < 0.05$). Further, our results show that ApoE ^{-/-} mice fed a western diet had decreased plasma HDL levels and this decrease was reversed by pNaKtide. Plasma ROS levels were also significantly attenuated by pNaKtide treatment. Our results show that pNaKtide improved plasma creatinine and kidney fibrosis in ApoE ^{-/-} mice fed a western diet ($p < 0.05$).

Conclusion

This study suggests that the Na/K-ATPase/ROS signaling cascade is a possible mechanism for the development of kidney dysfunction and systemic inflammation associated with the metabolic syndrome phenotype and pNaKtide presents a potential novel treatment for these pathologies.

Na/K-ATPase signaling and secreted factors from adipocytes mediate obesity development and may contribute to comorbid conditions

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Joan C. Edwards School of Medicine

Background

Obesity is a worldwide epidemic. We have demonstrated that pNaKtide, a Na/K-ATPase signaling antagonist, was able to decrease oxidative stress and adipogenesis by blockage of Na/K-ATPase signaling mediated amplification of oxidative stress. Administration of drugs via a lentiviral vector allows for drug delivery targeting to specific areas of the body, including fat, liver, or cardiac tissue.

Hypothesis

Lentivirally transfected NaKtide targeting to adipocytes is a potent preventer of oxidative stress, weight gain, and adipogenesis. Further, we hypothesize that the adipocyte has a systemic role in metabolic homeostasis, as evidenced by systemic effects from our targeted administration.

Methods

Age matched C57BL6 mice were placed on normal diet or a western diet (WD) for 12 weeks to induce obesity and adipogenesis. NaKtide was targeted adipocytes by a specific lentiviral vector, in which GFP was also included in the vector to monitor the expression of NaKtide. The experimental groups were, 1) normal chow, 2) normal chow + GFP+NaKtide, 3) WD, 4) WD + GFP, and 5) WD + GFP + NaKtide.

Results

Lenti-adipo-NaKtide significantly reduced WD-induced weight gain, and visceral and subcutaneous fat content. Lenti-adipo-NaKtide reduced WD-induced changes in glucose tolerance and inflammatory markers TNF α , IL-6 and MCP-1 ($p < 0.05$). An increase in cardiac hypertrophy in WD animals was attenuated with lenti-adipo-NaKtide ($p < 0.05$). Visceral fat of WD mice expressed higher levels of adipogenic markers PPAR γ and FAS. WD-induced Na/K-ATPase signaling was decreased. Liver in these animals showed a lower amount of fat accumulated as per H&E staining. .

Conclusion

Collectively this study demonstrates that the Na/K-ATPase signaling oxidant amplification loop in adipocytes may have a role in systemic obesity and inflammation. Specifically targeting NaKtide to the adipocytes with lenti-adipo-NaKtide ameliorates this effect. This new information highlights lenti-adipo-NaKtide as a potential therapeutic target for obesity and metabolic syndrome

G-Protein-Coupled Receptor 68 Negatively Regulates IL-22 Production in Human Th17 Cells

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Background

Th17 cells contribute to host defense on mucosal surfaces but also provoke autoimmune diseases when directed against self antigens. Identifying therapeutic targets that regulate Th17 cell differentiation and/or cytokine production has considerable value. Here, we study the AhR-dependent transcriptome in human Th17 cells.

Hypothesis

The AhR positively regulates human Th17 cell differentiation.

Methods

CD4 T cells from peripheral blood of healthy volunteers were cultured under Th17 differentiation conditions in the presence of an AhR agonist (FICZ) or antagonist (CH223191) for 1-8 days. On day 3, total RNA was isolated, converted to cDNA libraries using the Illumina TruSeq stranded mRNA kit, and sequenced using Illumina HiSeq 1500. On other days, total RNA was converted to cDNA and used as a template for real-time PCR. Cytokines were measured in cell culture supernants by ELISA. In some experiments, T cells were cultured with the GPR68 positive allosteric modulator ogerin.

Results

AhR activation with FICZ delayed human Th17 differentiation, measured by decreased gene expression of RORC and IL21, and decreased secretion of IL-17. AhR function was required for IL-22 secretion under Th17 conditions. Notably, expression of GPR68 positively correlated with IL-22 production. Activation of GPR68 with the lorazepam-derivative ogerin resulted in suppression of IL-22 and IL-10 by Th17 cells, with no significant effect on IL-17.

Conclusion

Our data suggests that AhR may inhibit human Th17 cell differentiation through suppression of IL21 expression. The suppressive effect of GPR68 on IL-22 and IL-10 secretion reveals a novel feedback inhibitory pathway on cytokine production by Th17 cells.

Tetraazamacrocyclic Quinoline derivatives as potential drug leads for lung cancer therapy

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Background

Lung cancer is the leading cause of cancer-related deaths with a 5-year survival rate of ~15%. In Appalachia, deaths from lung cancer exceed the national average due to high rates of smoking and exposure to environmental toxicants. The goal of this study is to evaluate the anticancer activity of newly synthesized Tetraazamacrocyclic Quinoline derivatives (TAQDs) on lung cancer cell lines, H1704 (squamous cell carcinoma) and A549 (adenocarcinoma).

Hypothesis

Tetraazamacrocyclic derivatives are promising intermediates for the synthesis of anti-cancer, anti-parasitic and anti-microbial drugs. Due to their cytotoxic properties, it is hypothesized that these novel TAQDs will have anticancer properties.

Methods

A series of six new TAQDs (TAQD01 - TAQD06) were synthesized using five steps conventional literature synthetic method with the overall yield of ~50%. The drug leads were purified using column chromatography and the structures were confirmed by LCMS and NMR before testing the compounds in vitro by colony formation and LDH cytotoxicity assay. To control the in vitro experiments, Dactolisib (BEZ), a PI3 Kinase inhibitor was used at 100 nM as a positive control and DMSO as a negative control.

Results

LDH cytotoxicity colorimetric assay showed that two of these leads (TAQD01 and TAQD03) are cytotoxic at 10 μ M dose. These compounds also inhibited colony formation in a dose-dependent manner in both H1703 and A549 cell lines.

Conclusion

In summary, our preliminary data suggest that TADs maybe potent antineoplastic agents; this warrants further investigation of their cytotoxic properties in additional cancer cell lines and unveiling the possible mechanism of action.

High Endogenous Catalase Modifies Behavior in High-fat Fed Mice

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Background

Obesity, as defined by a body mass index above 25, is a major health crisis in the Appalachian region. Being obese not only increases risk to chronic diseases such as heart disease, diabetes and cancer, but also promotes behavior modifications. Behavior changes such as excess food consumption, stress, depression is very commonly observed among obese individuals.

Hypothesis

Lowering oxidative stress by modulating appetite regulation will lower obesity associated behavioral stress.

Methods

In order to assess behavior modifications during diet-induced obesity, we measured behavior changes in C57Bl/6 mice (control) and Bob-cat mice that express high antioxidant enzyme catalase in an obese (Ob/Ob) background. These mice (n=4-5) were either fed normal rodent diet or high-fat-high caloric (45% lard) diet for eight weeks. Weekly body weights were monitored. Fat mass changes were determined using ECHO-MRI. Motor and anxiety-like behavior was tested using Open Field (locomotor behavior) and Rota-Rod (motor coordination and strength) testing systems at baseline and 8 weeks.

Results

Our results showed that catalase overexpression lowered levels of anxiety (Open-Field test) but had less endurance levels (Rota-Rod test). The C57Bl/6 mice on the normal chow stayed longer on the Rota-Rod as the weeks progressed compared to the mice on high-fat where the effect was more dependent on the trial (learning) rather on endurance. The Open Field test showed that the C57Bl/6 mice on high-fat diet were more anxious (spent more time in the edges rather than center) compared to the mice on normal chow. The overexpression of catalase lowered the anxiety behavior in the high fat fed Bob-Cat mice.

Conclusion

Our results indicate that oxidative stress plays a key role in the behavior modification associated with obesity. Modulation of redox stress may be beneficial in lowering these behavior changes.

Disulfiram-based Disulfides as Narrow Spectrum anti-MRSA Antibiotics

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Background

Disulfiram (DSF) is an oral prescription drug (Antabuse™) that is used in the treatment of chronic alcoholism. By chemical nature, DSF is readily cleaved by thiol-bearing substances releasing diethyldithiocarbamate (DDTC). Bacteria possess an array of thiophilic cofactors (e.g., coenzyme A), metabolites (e.g., glutathione), and enzymes (e.g., thioredoxin) that can be potentially modified by thiol-disulfide exchange with DSF to evoke antimicrobial effects. Due to the vulnerability of DSF to thiol-mediated cleavage, we believe that replacing DDTC with S-alkylthio groups in DSF would increase antibacterial activity and metabolic stability. In this study, the antibacterial activity and preliminary in vitro pharmacokinetic/pharmacodynamic (PK/PD) parameters of DSF-derived disulfides are described.

Hypothesis

Due to its vulnerability to cleavage, we hypothesize that replacement of the DDTC substituent with S-alkylthio groups in DSF will enhance antibacterial activity and microsomal stability.

Methods

Classical methods in organic chemistry was used to synthesize the DSF-based disulfide analogs for microbiological evaluation. Compounds were tested for antibacterial activity against a 28-member panel of Gram-positive and Gram-negative human pathogens. Disulfides with a minimum inhibitory concentration (MIC) of 2 mcg/mL or less were evaluated for synergism with vancomycin by isobologram (checkerboard) analysis and microsomal stability in comparison to DSF.

Results

Disulfiram-based disulfide analogs were up to four times more potent growth inhibitors of Gram-positive bacterial pathogens (e.g., MRSA, VISA, VRSA, VRE) compared to DSF. Further studies revealed that the lead eight-carbon chain analog exhibited synergy with vancomycin against VRSA and a microsomal half-life of 61 min. compared to <1 min. for DSF.

Conclusion

In final analysis, DSF-based disulfides are narrow Gram-positive spectrum antibiotics that exhibit greater in vitro antibacterial activity and metabolic stability compared to DSF. Future work will focus on their development as antibiotic adjuvants in combination therapy of MRSA infections with reduced vancomycin susceptibility.

Cell-by-Cell: Understanding Opioid-Mediated Neonatal Abstinence Syndrome (NAS)

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Background

Opioid dependence is at epidemic levels in the USA and opioid exposure in pregnancy has led to the increase in neonatal abstinence syndrome (NAS). Although the short-term withdrawal symptoms of NAS have been well characterized, the neuropathology behind opioid-mediated NAS is unknown. Therefore, further research is needed to improve our understanding of the effects of opioid withdrawal on the neuronal injury of neonates. Opioids can activate and alter glial function within the adult brain initiating an inflammatory response. However, the impact of opioid mediated glial activation on the developing brain is unknown.

Hypothesis

We hypothesize that the brain tissue of NAS mice will have less neuronal cells compared to non-NAS mice due to increased microglia activation.

Methods

Using a unique rodent species called spiny mouse we have developed a spontaneous opioid withdrawal model. With an extended gestational period, spiny mice are an ideal animal model to study NAS. Following assessment of withdrawal in all pups, the brains of 7 day, 14 day and 1-month-old spiny mice were assessed for changes in neuronal and glial cell numbers using unbiased quantification neurostereology techniques. Following brain sectioning, every 5th section in each series of 20 sections per brain was processed for Tuj-1 and Iba-1 immunostaining to assess for total neuronal and microglia cells respectively.

Results

Preliminary data from brain tissue obtained from 7 day, 14 day and 1-month-old spiny mice born with opioid-induced NAS have been found to be different compared to non-NAS pups.

Conclusion

These data are suggestive of increased brain injury in pups born with NAS compared to non-NAS pups. Further studies are planned to study the long-term impact of brain injury using this novel rodent preclinical model of NAS.

Genetic Evidence of $\alpha 1$ Na/K-ATPase as an Important Signal Integrator

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Background

We have reported that mammalian $\alpha 1$ Na/K-ATPase contains a conserved caveolin-binding motif (CBM). We have further documented a role of this motif in the regulation of caveolin-1 trafficking. Therefore, the $\alpha 1$ Na/K-ATPase could play an important signal integrating function through its interaction with caveolin-1. Although several lines of evidence have indicated that $\alpha 1$ Na/K-ATPase functions as an important signal receptor for CTS and other ligands to regulate physiological processes in animal, there is no direct genetic evidence to support such a role.

Hypothesis

We hypothesize $\alpha 1$ Na/K-ATPase has a signal integrating capacity that is important for embryonic development in mammals. Loss of this signal integrating function will compromise the Wnt pathway that is essential for the transcriptional factors important for brain and muscle development.

Methods

a mutant $\alpha 1$ Na/K-ATPase mouse (mCBM) was generated using a knock-in strategy. Homozygous and Wild-type embryos at 9.0 dpc. were collected. Morphology and gene expression were analyzed by histology and RT-qPCR.

Results

CBM mutation resulted in homozygous embryonic lethality between 9.5-12.5 days post coitum (dpc.). Histological analysis revealed that brain and somite development was arrested at 9.0 dpc in mCBM homozygous embryos. Consistently, RNAseq and RT-qPCR analyses revealed that several transcriptional factors important for neurogenesis and muscle genesis were down-regulated in homozygous embryos at 9.0 dpc. These analyses further revealed a defect of the Wnt/ β -catenin signaling, which is critical in embryonic development.

Conclusion

These data provide the first genetic evidence that the signaling function of $\alpha 1$ Na/K-ATPase is important for animal physiology, specifically for embryonic development.

Impaired Natriuretic Response to High Salt Intake Contributes to Salt-sensitive Hypertension in Obese TALLYHO/JngJ Mice: Role of Na/K-ATPase Signaling

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Background

There is clearly a strong relationship between obesity hypertension, salt sensitivity and abnormal renal salt handling. The mechanism responsible for linking these three conditions is not fully understood. We have reported that Na/K-ATPase signaling mediates natriuresis and blood pressure regulation. TALLYHO/JngJ (TH) mouse is believed to mimic the state of obesity in humans with a polygenic background of type 2 diabetes. However, it is unknown if TH mouse is salt-sensitive hypertension and how Na/K-ATPase signaling affects renal salt handling and blood pressure in obese TH mouse.

Hypothesis

Obese TALLYHO/JngJ mouse exhibits increased salt sensitivity of blood pressure, resulting from impaired Na/K-ATPase signaling-induced blunted natriuresis.

Methods

Aged-matched C57BL/6J (B6) mice and TH mice were divided into 2 groups as follows: (1) normal chow (NC); (2) high salt diet (HS, 7 days of 2% NaCl, 7 days of 4% NaCl and 7 days of 8% NaCl). Systolic blood pressure was monitored by tail-cuff method. Blood pressure, 24h-urine sample (animal in individual metabolic cage) were collected one day before high salt intake and after different concentrations of high salt diet. Urinary Na⁺ excretions were measured using flame photometry. Kidneys were harvested to quantify Na/K-ATPase signaling function by Western Blotting.

Results

Compared with wild-type B6 mice, we first demonstrated that obese TH mice were hypertensive in terms of salt sensitivity, characterized by a right-shifted, reduced slope in renal function curve (n=10-12. p<0.01 vs B6). Diuretic and natriuretic response to high salt diet both got blunted in TH mice. Additionally, In the kidney cortex tissue, the Na/K-ATPase signaling (c-Src and ERK1/2 phosphorylation and protein carbonylation) were activated and were not stimulated by HS diet in obese TH mice (in comparison to B6 mice).

Conclusion

Impaired Na/K-ATPase signaling contributes to blunted natriuresis, leading to salt-sensitive hypertension in obese TH mice.

Thrombospondin 1/CD36 signaling promotes vascular smooth muscle cell proliferation and contributes to neointimal hyperplasia

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Background

Dysregulated vascular smooth muscle cell (VSMC) proliferation plays an important role in neointimal hyperplasia. Thrombospondin 1 (TSP1) promotes VSMC growth. CD36, a major TSP1 receptor, plays critical roles in atherogenesis and thrombosis via signaling responses in macrophage and platelet. Whether CD36 regulates VSMC function and contributes to development of obstructive vascular disease is unknown.

Hypothesis

CD36 contributes to development of neointimal hyperplasia via enhancing VSMC proliferation.

Methods

Guide wire induced carotid artery injury model and shear stress-induced intima thickening model were used to compare neointimal hyperplasia in Apoe knockout (Apoe^{-/-}) and Cd36/Apoe double knockout (Cd36^{-/-}/Apoe^{-/-}) mice as well as in VSMC-CD36 specific deletion (VSMCcd36^{-/-}) mice. VSMCs cultivated from thoracic aorta of wild type (WT) and Cd36^{-/-} mice were used for evaluation of VSMC function, cell cycle progression and signaling transduction.

Results

Deletion of CD36, either global or VSMC-specific, reduced the level of neointimal thickness. Correspondingly, carotid artery blood flow was significantly increased in the Cd36^{-/-}/Apoe^{-/-} mice when compared with the Apoe^{-/-} mice. CD36 deficiency significantly decreased serum-stimulated VSMC proliferation and lead to an accumulation of S-phase cells, suggesting that CD36 is necessary for VSMC S-phase transition. Treatment of VSMC with TSR, a TSP1 structural homology region peptide, significantly increased WT but not Cd36^{-/-} VSMCs proliferation. TSR or serum treatment significantly increased cyclin A expression in WT but not Cd36^{-/-} VSMCs. Serum stimulated expression of p21CIP1 and p27kip1 were lower in Cd36^{-/-} VSMCs. Signal transducers and activators of transcription (STAT) 3, which has been reported to enhance VSMC maturation, was constitutively high in Cd36^{-/-} VSMCs.

Conclusion

CD36 promotes VSMC proliferation via upregulating cyclin A expression, which contributes to development of neointimal hyperplasia and obstructive vascular diseases.

Decussating Fibers in the Thoraco-Lumbar Fascia: Testing Use as a Surgical Landmark

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Background

Surgical repair by discectomy for lumbar discal herniation is the most commonly performed spinal surgery. Observations made during disc repair surgery (by RM) indicated that a decussating arrangement of collagen fibers in the thoracolumbar fascia might be used as a surgical landmark for identification of the L5-S1 intervertebral disc.

Hypothesis

Decussating fibers in the thoraco-lumbar fascia can be used as surgical landmark to identify the L5-S1 intervertebral disk.

Methods

To test this hypothesis, study of the anatomy of the thoracolumbar fascia in cadaver specimens was introduced into a medical school course in Gross Anatomy. Directions for student laboratory dissection of the back were modified to maximize preservation of the thoracolumbar fascia and the apparent center of the region of crossing fibers was marked with a pin (by the neurosurgeon).

Results

Decussating fibers were found in 9 of 12 cadavers in the lowest lumbar (L5) and sacral regions. In addition, a portable x-ray unit was used to image the lumbar spine. The distances between 1) the pin and the mid-plane of L5-S1 joint and 2) the midplanes of L4-L5 and L5-S1 were measure on radiographs (N=9). The mean ratio of the two measurements was 24.05 % +/- 41.8 % SD, maximum 125%. Larger errors in pin placements were caudal to L5-S1, consistent with previous anatomical descriptions of the decussating fibers as extending to the sacral region.

Conclusion

These data indicate that crossing fibers can aid in surgical identification of the L5-S1 intervertebral disc but suggest that other landmarks should also be used (ex. posterior superior iliac spine) and the level confirmed by intraoperative imaging. A broad distribution of decussating fibers is also consistent with the postulated functions of thoracolumbar fascia in posture and walking



CLINICAL SCIENCE POSTER SESSION II • 2:30 PM – 3:15 PM

**30TH ANNUAL
RESEARCH DAY
POSTER SESSION**





The ABC's of Preschoolers in Psychiatry: A retrospective chart review of children under 6 at an Appalachian university psychiatry clinic

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Background

The science of child development illustrates the importance of the formative years as the foundation for sound mental health. As primitive experiences and interactions shape the architecture of the developing brain, disruptions can be devastating. Those affecting the ability to learn and relate to others can become lifelong impairments—affecting both the individual and society as a whole. Thus it is imperative to gain a better understanding of the difficulties faced by early-age children, as here they present with behavioral and emotional issues significant enough to seek the attention of psychiatric care.

Hypothesis

Do preschoolers evaluated at a psychiatric clinic have identifiable patterns of presentation?

Methods

IRB approval was obtained to review charts of all children under 6 seen in the outpatient clinic in 20 consecutive months at the Department of Psychiatry and Behavioral Medicine. 76 patients were identified. Retrospective chart review was conducted. Socio-demographic data and information regarding psychiatric presentation was collected and stored in an unidentifiable manner and then analyzed.

Results

Descriptive information was compiled regarding the demographics, most common presentation, previously prescribed medications, birth history, family history, psychometric testing results, neurobehavioral difficulties, possibility of trauma exposure, psychiatric medications used, and diagnoses.

Conclusion

Mental health issues in preschool age children can and do occur, and early childhood trauma often has life-long effects. Hence, it is imperative to understand and treat mental and emotional disorders both individually and within the broader context of families, schools, and communities. Within our own community, there is an urgent need for early childhood mental health professionals trained in evidence-based interventions to support pediatricians as the first point of contact.

Neonatal Abstinence Syndrome & Neurobehavioral outcomes in school age children – Case series from an Appalachian Psychiatric Clinic
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Background

While opioid abuse is recognized as a national health emergency, studies assessing the effect of prenatal opioid exposure on long-term neurodevelopment & behavior in children are limited. Prevalence rates of neonatal abstinence syndrome (NAS), a constellation of signs and symptoms in neonates exposed to opiates in utero, in WV are estimated at 31.56 per 1000 live births. The purpose of this study is to review school-aged children in the psychiatric clinic with confirmed diagnosis of NAS or NAS symptoms at birth and assess areas of current neurodevelopmental & behavioral difficulties. This information can guide parents, teachers and healthcare providers in their interventions and future research on a large scale in this growing population.

Hypothesis

Do observable patterns in long-term neurobehavioral deficits exist in children history of opioid exposure as confirmed by NAS at birth

Methods

School-age children of a psychiatry clinic who had NAS or NAS symptoms at birth were identified. IRB approval and patient consent was obtained for this pilot study. Birth records, initial psychiatric evaluation and subsequent assessments, medical records, any available school records and psychological testing results were reviewed.

Results

All participants evaluated thus far reported problems with attention, hyperactivity, impulsivity, with some having co-morbid learning disabilities and/or difficulties with social communication and interactions. Several had exposure to more than one substance and some had a history of exposure to multiple traumatic events in their past. We did not conduct data analysis due to the low number of cases thus far.

Conclusion

While our study has significant limitations and our results are preliminary, it suggests further investigation of significant sequelae of opioid exposure in utero on the long-term neurodevelopment and behavior of affected children is essential.

Renal Artery Stenting, Review of Our Local Experience

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Background

Renal artery stenosis can lead to different clinical syndromes including renovascular hypertension, ischemic nephropathy and recurrent flash pulmonary edema. Renal artery stenosis is most often due to severe atherosclerotic plaque in the renal arteries (typically in those over age 50) but may be due to fibromuscular dysplasia seen more frequently in women under the age 50. Renal artery stenting has emerged in 1990s as a possible treatment for renal artery stenosis. Early studies showed possible benefit in lowering systolic blood pressure and stabilizing kidney function. Subsequent randomized trials failed to show that benefit. One of the famous studies is (CORAL) study, Cardiovascular Outcomes in Renal Atherosclerotic Lesions, which showed no benefit of renal artery stenting over medical therapy. Renal-artery stenting still being done by Interventional cardiologist, Interventional radiologist and vascular surgery with variable outcome.

Hypothesis

In our study we will 1. review the indications being used for renal artery stenting at our local facilities, 2. evaluate the outcome of this procedure that being done at Cabell Huntington Hospital and St. Mary's Medical Center, outcome in reducing systolic blood pressure, reducing the antihypertensive medications use and stabilizing or improving kidney functions.

Methods

In our study design, we do retrospective chart review study of patients who underwent renal artery stenting in the period between 2010 and 2016 at Cabell Huntington Hospital and St. Mary's Medical Center.

Results

N/A

Conclusion

N/A

Prasugrel needs more attention!!!!!!!!!!!!!!

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Background

Prasugrel is a thienopyridine that was approved in 2009 for use in patients with acute coronary syndromes undergoing PCI. It offers more consistent, faster platelet inhibition and has superior anti-ischemic efficacy at the cost of a higher risk of bleeding complications compared with clopidogrel. However, the increased use of prasugrel at discharge following PCI has resulted in its inappropriate use in patients that have absolute or relative contraindications to this drug.

Hypothesis

We conducted this research in order to assess the frequency of inappropriately used prasugrel and to encourage that physicians should use more caution when prescribing this drug.

Methods

We assessed the patterns of prasugrel use among 937 patients who underwent percutaneous coronary intervention and were discharged alive from July 2014 to July 2015 at a university-based tertiary medical center in West Virginia, USA. We defined the potential inappropriate use of prasugrel as use in patients who had a history of cerebrovascular disease (CVA), weighed <60 kg, or were aged ≥ 75 years old.

Results

Prasugrel was prescribed to 12.9% (n=121) of patients who underwent PCI on hospital discharge. Among patients prescribed prasugrel, 42.1% (n=51/121) presented with acute coronary syndrome, while 57.8% (n=70/121) of patients received prasugrel for indications other than acute coronary syndromes. One or more known contraindications to the drug were present in 19.8% of patients discharged on this medication. Of those who were discharged inappropriately on prasugrel, 5% had history of CVA, 11.5% were aged ≥ 75 year old, and 3.3% weighed less than 60kg.

Conclusion

Prasugrel use in patients with known contraindications is not uncommon, but according to our study it's been used inappropriately more frequently in our hospital when compared to literature data. This study aims to raise the awareness of the inappropriate use of prasugrel. Therefore, physicians should use more caution when prescribing this drug to patients undergoing PCI as inappropriate use may result in significant morbidity.

QI project on Umbilical Cord Clamping Time at Cabell Huntington Hospital (CHH)

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Background

The optimal timing for umbilical cord clamping after delivery has been debated for decades. In January 2017 the American College of Obstetrics and Gynecology recommended a delay in cord clamping for at least 30-60 seconds after birth in vigorous preterm and term newborns.

Hypothesis

Our aim was umbilical cord clamping will be performed at greater than or equal to 30 seconds in 80% or more of all deliveries on the university service in three months from the time of starting the project (Feb. 1, 2017).

Methods

After determining our incidence of delayed cord clamping was 12% a quality improvement project was started.

Our obstetrician discussed delayed cord clamping at OB/GYN grand rounds and presented the recommendation for delayed cord clamping. Also, she discussed these recommendations with the delivery room nurses and personnel at shift changes in the obstetric unit of the hospital.

Our pediatrician discussed the delayed cord clamping recommendations with the staff neonatologists, including the medical director of the NICU. The medical director then informed the neonatal resuscitation team of the cord clamping recommendations.

Our pediatric resident discussed our project with the EHR physician champion of the hospital so the timing of cord clamping could be documented in the chart easily.

Also, a timer in the delivery was started immediately after birth to alarm after 30 seconds.

Results

Table 1 shows the pre-study rates compared to those after the intervention which clearly took us to our aim.

	Births	DCC >= 30 seconds	%
Pre-study	34	4	12
February	16	15	94
March	33	32	97
April	19	18	95
Post-study	68	65	96

Conclusion

Our quality improvement project successfully increased the incidence of delayed cord clamping in the university obstetric service in a short amount of time.

Promoting Higher Quality of Care Through Education of Pediatric Residents on the Medical Home Model

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Background

Over the last several decades, the American Academy of Pediatrics has developed and endorsed the Patient and Family Centered Medical Home (PFCMH) model for pediatric outpatient practices. A curriculum based around the PFCMH model was developed after the Resident Education Initiative Work Group (REIWG) assessed the need of pediatric residency training programs for education on the PFCMH model. The Accreditation Council for the Graduate Medical Education (ACGME) program requirements also focus on the need for expertise in the principles of the medical home. Developed modules on the PFCMH are available to residency programs as a tool for educating pediatric residents.

Hypothesis

Presenting the PFCMH model to residents during block lectures will improve their understanding of the importance of implementing this model in pediatric practices.

Methods

Module based presentations were created and presented during pediatric resident block lectures. The format of the presentations was learning objectives, pre-test, overview, case study, summary, post-test, reflections to consider, references, and resources. The pre-tests and posts-tests were administered according to this format. The tests were then scored and compared using Chi-square Fisher's exact test analysis.

Results

The average pre-test and post-test percent correct were: Module 1 - 84% and 96%; Module 2 - 73% and 82%; Module 3 - 54% and 71%; Module 4 - 39% and 64%, respectively. The difference between pre- and post-test percent correct for modules 1-3 were not statistically significant. There was a statistically significant difference in the pre- and post-test percent correct for module 4 ($P = 0.0136$). Although not all modules had statistically significant differences in pre- and post-test scores, there was visible improvement in the post-test percent correct of all four modules.

Conclusion

Incorporating presentations of the modules into the pediatric resident curriculum is an effective way to improve resident knowledge of the principles and implementation techniques of the PFCMH model.

Parents Partners in Education (PPIE) Improves Care Provided by West Virginia (WV) Pediatricians and Family Medicine Physicians for Children and Youth with Special Health Care Needs (CYSHCN)

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Marshall University

Background

PPIE is a JCESOM parent-led program, supported by the WV Office of Maternal, Child and Family Health, educating pediatric and family practice residents about the multi-faceted aspects of care for CYSHCN since 1998. The curriculum consists of an interview and home-visit to expose physicians to family dynamics and daily challenges of caring for CYSHCN.

A recent study from Tennessee indicated that a similar training program improved the ability of practicing pediatricians to manage the complex healthcare issues of CYSHCN.

Hypothesis

The objective was to measure the physician-reported value of the PPIE program to improve health care provision for CYSHCN and their families.

Methods

Past JCESOM pediatric and family medicine participants were administered a survey to evaluate the long-term outcomes of PPIE on their current practices in WV and tristate area of Ohio and Kentucky.

Results

The response rate was 39% (41/106) with the pediatric resident return rate of 61% and family medicine resident of 27%. The PPIE training was remembered "very well" or "some" by 59% of the total, valued at the same level by 76% and currently influenced physician care and understanding of CYSHCN and their families by 63%. The top three skills physicians gained from PPIE and incorporated into their practice were improvement in communication, development of healthy relationships with family, and competence to address potential problems for parents and siblings. An increase in the ability to identifying stressors and resources and to provide care coordination, home medical services and follow-up care were reported by over 60%. A parent-to-parent support system had been established in 22% of the practices. Comments emphasized the "unforgettable home visit" and an increase in personal "empathy and compassion."

Conclusion

The majority of reporting physicians indicate that PPIE provided a valuable experience resulting in improved health care for tristate CYSHCN.

A novel method for entirely intra-corporeal urinary diversion.

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Background

Entirely Intra-corporeal Urinary Diversion (EICUD) is a principal objective of Robotic Cystectomy and may be the central outcome that will determine differences between robotic and conventional procedures.

Hypothesis

Simplification of the technique can improve the EICUD rates with acceptable complications and result in improved outcomes

Methods

We reviewed our IRB approved administrative database for patients having Urinary Diversion (UD) +/- radical cystectomy. We evaluated results for the completion in an entirely intra corporeal manner (EICUD), the uretero-vesicle anastomotic leak rate (ALR) post operative acid-base changes as determined by serum bicarbonate. The Anastomotic Leak Rate (ALR) was defined as the presence of Creatinine in the Drain at a level higher than the serum level more than 3 days post operatively. The Chi Squared Test, Fisher's Exact Test, and/or Student's t-tests were performed statistical analysis or were used as applicable.

Results

1,484 patients have undergone robotic urinary surgery since 2003, and of these 60 had robotic urinary diversion +/- cystectomy. The records of 59 were fully evaluable. There were 9 females and 50 males, with an average age of 67.3 years. Average BMI was 27.3, and 20 had neoadjuvant chemotherapy.

35 patients underwent diversion in an iso-peristaltic manner, and of these, 28 (80%) were converted to the open method. The anti-peristaltic method of loop formation was used in 21 patients, and of these, none (0%) required conversion to the open technique, i.e. the completion rate was 100%.

When the iso-peristaltic method was used, the ureteral stent could be omitted in only 1/35 patients (3%), but when the anti-peristaltic method was used, it was felt safe to omit the stents in 15/21 (71%) of all anti-peristaltic cases, and 100% of the most recent 15 consecutive cases.

Conclusion

The stent-less anti-peristaltic loop is a novel method that leads to successful robotic intra-corporeal urinary diversion.

Decision Tree Analyses of the Possible Benefits and Cost-Efficacy of Adding Urinary Biomarker Test to Current Prostate Cancer Screening Guidelines

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Background

The prostate serum antigen (PSA) test has been a mainstay of prostate cancer screening in the United States since the 1990s. However, with the USPSTF recommendation in 2012 against its use as a routine screening test, there has been a call for the development of a better standalone test or one to be used in adjunct with PSA to increase diagnostic accuracy. Several companies have introduced new tests utilizing urinary biomarkers associated with high-grade prostate cancer (mRNA HOXC6 & DLX1).

Hypothesis

We assessed whether prostate cancer urinary biomarker screening tests after a positive PSA result ($>3\text{ng/mL}$) improves the number of men being over-treated for limited disease (Gleason 7) and reduces cost.

Methods

We created a decision tree model to predict the likelihood of a patient moving through the diagnostic process, being given an accurate prostate cancer status, and receiving the correct level of treatment for three different patients (all men in the age range of 50-69): cancer free; limited cancer; or metastatic cancer. We developed a Python program based on these models to examine the costs of using the extra test compared to the costs of undiagnosed and improperly treated disease.

Results

We found a 12.7% reduction in average cost to the individual (\$610.85 to \$533.00) when 64% of patients chose to utilize the urinary biomarker and a 17.9% reduction (\$610.85 to \$501.37) when a greater majority used it (90% utilization). We adjusted the model for family history of prostate cancer and African American descent and found the greatest reduction in cost for patients with a family history for both the intermediate and high utilization groups; 13.6% and 19.1% reduction respectively.

Conclusion

Using a decision analysis model examining use of a urinary biomarker screening test for prostate cancer in men with a $\text{PSA}>3\text{ng/mL}$ results in a reduction in the costs of evaluation for prostate cancer.

Early results of MRI-Ultrasound Fusion Technique in identifying latent High Risk Prostate Cancer among patients with prior prostate biopsy.

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Background

Gadolinium enhanced MRI (MRI+G) has been proposed as an effective method of identifying latent high-risk prostate cancer (HR-PCA) in those contemplating active observation and among those with prior negative prostate biopsy.

Hypothesis

We reviewed our experience with MRI+G in the identification of HR-PCA among patients with apparent low risk PCA (LR-PCA) and those with prior negative biopsy and rising PSA.

Methods

We reviewed our IRB approved administrative database identifying patients with NCCN LR-PCA and/or those who had at least one prior negative biopsy with rising PSA. MRI+G was performed using the 3T GE MRI system. Putative HR-PCA lesions were identified radiologically, and fused with real-time ultrasound images during biopsy procedures performed by a single urologist. MRI+G results were then scored as true positive, false positive, true negative, and false negative relative to the pathological results. The Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (PPN) and Accuracy of the MRI+G was then calculated based upon these results.

Results

A total of 16 patients underwent Fusion+12 technique yielding 204 samples and identifying 6 patients with latent HR-PCA (Prevalence 0.38). The Sensitivity, Specificity, PPV, NPV, and Accuracy was 0.50, 0.68, 0.07, and 0.96, and 0.61, respectively.

Conclusion

MRI+G directed biopsy has a high rate of false positives leading to low specificity and overall accuracy which seems little better than PSA alone in this small sample. Surprisingly, 40% of patients previously suspected to harbor either low risk PCA or no cancer at all were identified as having HR-PCA, and half of these were missed by MRI+G. The value of the Fusion Biopsy technique may be to encourage re-biopsy.

THE IMPACT OF AN ADOLESCENT GYNECOLOGY PROVIDER ON INTRAUTERINE DEVICE AND IMPLANT USE AMONG ADOLESCENT PATIENTS

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Background

Long acting reversible contraceptives (LARC), including the intrauterine device (IUD) and subdermal implant are the most effective methods of reversible contraception.¹ However, adolescents may experience barriers in access to LARC methods.

Hypothesis

Our study examines the impact of a PAG provider on the rates of LARC insertion in the adolescent population.

Methods

This is a retrospective study analyzing LARC use from 2010-2016 among an academic practice.

Results

2338 LARC insertions were performed during the study period. Overall the frequency of both implant and IUD insertions increased each year among the General Practitioners (GP) ($p=.001$). The proportion of nulliparous subjects also increased among GP providers from 19.9% to 30.7% (<0.001). However, the proportion of subjects under the age of 18 did not change among the GP (6.5% vs 5.5%, $p=.829$). The PAG provider performed a significantly higher proportion of LARCs among subjects <18 years of age and subjects age 18-24 compared to the GP, (55.5% vs 5.7%, $p=<.001$ and 42.9% vs 37.8%, $p=.038$, respectively).

Conclusion

In a general practice, LARC use increased by year and increased among nulliparous subjects, yet remained unchanged among subjects <18 years of age. A PAG provider can have significant impact on LARC uptake among an adolescent population in a community where this specialist service has not previously been available.

Quality Improvement of Patient Handoffs in Pediatric In-patient Service
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Background

Previous studies have emphasized the importance of effectual communication during patient handoffs. A quality improvement project for patient handoffs was implemented using IPASS (Illness severity, patient summary, action list, situation awareness and contingency planning, synthesis by receiver) as a standardized handoff model (PDSA 1). Following PDSA 1 the resident-created patient list was replaced by an automated CORES patient list based on IPASS (PDSA 2). PDSA 3 implemented re-education of residents on IPASS and the CORES list.

Hypothesis

Re-education of residents on established IPASS and CORES patient list will improve the quality of patient handoffs in pediatric in-patient care.

Methods

Data was collected after each PDSA to assess if improvement in each intervention's quality was continuous. Chi square analysis was used to compare changes in quality between PDSA cycles.

Results

The 6 key handoff elements changed as follows from PDSA1 to PDSA 2 to PDSA 3 respectively: Illness severity 97% to 13% to 13%; Diagnosis 100% to 62% to 84%; Patient summary 100% to 52% to 82%; Action list 100% to 87% to 93%; Situational Awareness 100% to 42 % to 91%; Synthesis by receiver 97% to 25% to 37%. All p-values were < 0.001 with the exception of PDSA 3 illness severity, action list, and synthesis by receiver, which were not significant.

Conclusion

The lack of maintained improvement in the IPASS system following implementation of the automated CORES list was statistically significant in all elements of patient handoffs. Handoffs improved following re-education with the exception of 3 elements: Illness severity, action list, and synthesis by receiver. These results indicate continuous resident education is necessary to ensure handoff quality. Anticipated interventions include printing handoff element cards; annual resident education regarding responsibilities, the use of IPASS, and the CORES patient list; and resident surveys to assess satisfaction with IPASS and CORES.

Diabetes Mellitus Self-Management Interventions in Latino Adults in the United States-The Role of Pharmacists

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Background

Interventions focused on self-efficacy, social support, and social cohesion constructs at individual, interpersonal, and community levels are thought to improve outcomes in DM patients. The purpose of this study was to conduct a systematic review of diabetes mellitus (DM) self-management interventions by non-pharmacy personnel in Latinos with DM and by pharmacists in patients with DM (all races).

Hypothesis

If interventions are backed by theory focused on individual, interpersonal, and community levels and implemented by non-pharmacy and pharmacy personnel in patients with DM, better outcomes in DM management will be achieved.

Methods

A systematic review was conducted using secondary literature resources such as Pubmed and Google Scholar from inception to March 2017. 145 total abstracts were reviewed, of which 80 had theory or non-theory driven self-management interventions. Of these 80 studies, 22 theory based intervention studies were conducted by non-pharmacy personnel (physicians, nurses, diabetes educators) in Latinos with DM and 6 theory based intervention studies were conducted by pharmacists in Latino and non-Latino populations with DM.

Results

Theory backed studies at individual levels included interventions aimed at self-efficacy, motivation, and positive reinforcement constructs, the interpersonal level constructs included social support, empowerment, and social networks, while the community-based constructs were aimed at community engagement and cohesion. Studies conducted by pharmacists in Latinos with DM were aimed at the individual level while studies by non-pharmacy personnel were aimed at interpersonal and community levels. These studies reported improvements in clinical parameters, dietary habits, physical activity, medication management, and social factors.

Conclusion

Overall, studies that were culturally targeted towards Latinos with DM showed improvements in self-management. Interventions backed by theory for DM management in non-Latino racial/ethnic minorities like African Americans and Native Americans should be translated in practice to improve the overall quality of healthcare delivered to minorities.

Retrospective analysis of the use of the X-Ream system for avascular necrosis of the femoral head

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Background

In this retrospective analysis we aimed to determine if the X-Ream system along with a calcium phosphate composite graft, reduced the incidence of collapse due to avascular necrosis of the femoral head when compared to the natural progression of avascular necrosis and core decompression without injection of a calcium phosphate graft.

Hypothesis

Our goal was to prove that the X-ream system for core decompression of avascular necrosis of the femoral head leads to lower incidence of collapse when compared to the natural progression and core decompression without the injection of a calcium phosphate composite graft.

Methods

Our data consisted of 32 total patients with 46 hips operated on in this retrospective study. Radiographs were used to determine collapse during follow up appointments. We compared the X-Ream system to the natural history of avascular necrosis as well as compared to core decompression without the use of the composite graft substance.

Results

The X-ream is effective in reducing the number of collapses that occurred when compared to the natural history of collapse of avascular necrosis. 31 hips (67.39%) survived with the X-Ream system while the natural history is 59% survive ($p=0.01$). However, when compared to core decompression alone there was no significant difference between the two methods. The X-Ream system had 31 hips (67.39%) survive, while core decompression alone had 70% survive ($p=0.699$).

Conclusion

The results conclude that the X-Ream system is better than the natural progression of avascular necrosis of the femoral head. When compared to core decompression alone, the X-Ream system was found not to be significantly better or worse. Since the X-Ream procedure costs substantially more than core decompression alone, its use may not be appropriate as it would save healthcare dollars by not performing the X-Ream procedure.

Knowledge and Attitudes About Ebola Virus Among Community Residents in the US: A Cross-Sectional Study

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Background

The West African Ebola outbreak in 2014 posed a risk of such an outbreak in the U.S. This study was conducted to assess knowledge and attitudes of community residents within the U.S.

Hypothesis

Despite the best efforts of governments and organizations, Ebola still remains misunderstood in the general population around the world due to myths and misconceptions held by communities and propagation through the mass media. Even though communities in western countries are not as superstitious as African countries, we hypothesize there to be poor knowledge of Ebola virus disease within community residents in US due to media sensationalism and misinformation.

Methods

A cross-sectional survey study was conducted in Winchester, Virginia from August 2016 to December 2016, was distributed to patients in the waiting area of a clinic or pharmacy and was comprised of questions on: demographics (4), knowledge (9) and attitudes (3). Patients who scored four or higher on the knowledge questions were regarded as having good knowledge. Descriptive and inferential statistics (t-test and logistic regression) were employed using SPSS v23. A p-value of <0.05 was considered significant.

Results

375 participants completed the questionnaire. Internet served as the main source of Ebola information (72%). 11% of our participants had good knowledge of Ebola virus. Graduate degrees/professional degrees/PhDs were more likely indicate a patient has good knowledge of Ebola compared to those who had a high-school degree (OR=6.62, $p<0.01$). A majority of the participants strongly agreed that Ebola virus is a serious condition ($p<0.001$) and communities should actively participate in controlling the risk of Ebola ($p<0.001$). A large percentage of individuals surveyed feel their community should be engaged in controlling the spread of Ebola virus.

Conclusion

Knowledge about Ebola virus was poor among the majority of study participants. Educating the community can bolster engagement and encourage proper preparedness in preventing the spread of Ebola.

Family Physicians and Weight Loss Nutrition Counseling in the Huntington, WV Area

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Background

Obesity is a well-recognized health problem of critical importance. The 2013 prevalence of obesity in the Huntington-Ashland tristate area was 37.1%. Nutrition counseling for weight loss is effective and physician nutrition counseling is encouraged. Nevertheless, several studies have reported that physicians provide nutrition counseling infrequently.

Hypothesis

In this study, we aimed to examine physician weight loss nutrition counseling among family physicians in the greater Huntington area.

Methods

We administered an anonymous 13-question online survey querying physicians about how often they provided nutrition counseling to their obese patients, their nutrition education background, the resources they used in counseling and the barriers to counseling. Beginning with the Family Medicine list in Huntington's 2017 Health Source Directory, we excluded those without at least one practice site in either Huntington, Barboursville, or Ceredo-Kenova, those not currently practicing at the listed site and those not in ambulatory family medicine practices.

Results

We invited 49 physicians to participate and had a 77.6% response rate. Over half of the respondents were aged 35-55. Men composed 53% of our sample. Twenty-four physicians (63.2%) reported that they counseled at a high frequency. Only 31.6% of physicians reported having at least moderate nutrition education in medical school. Less than half of this sub-group viewed that education as clinically relevant. The most frequently used specific patient education sources were the electronic health record system, the US Department of Agriculture's MyPlate tool, and smart phone-based apps. Time constraints and lack of patient interest in nutrition topics were the leading barriers cited.

Conclusion

Huntington area family physicians tend to be high frequency obesity nutrition counselors who frequently use specific resources, consider their education lacking and face oft-cited barriers. Larger studies are needed to further explore these findings.

A Descriptive Study of Psychiatric Patients with Intellectual and Developmental Disabilities (IDD)

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Background

The Center for Disease Control estimates that 10.8% of the US and 14.7% of the West Virginia population has a diagnosis of Intellectual Disability and Development Disorder (IDD) (1). Although this is a significant portion of the population, literature review revealed few studies examining the psychiatric comorbid diagnoses and associated behavioral disturbances of adult patients with IDD. The only comparable study found was on adults with IDD in the United Kingdom. Results from the UK study found patients with mild-moderate IDD were more likely to have mood or personality disorders compared to severe IDD patients, who were more likely to have autism spectrum disorder, organic disorders, and behavior disorders(2).

Hypothesis

We hypothesized that adult IDD patients will have a high rate of comorbid psychiatric disorders, as compared to the general population.

Methods

This study utilized a retrospective chart review of 100 adult patients with IDD in a psychiatric clinic in Huntington, WV. We analyzed demographic and clinical variables including psychiatric comorbidities, current psychiatric symptoms, current and past psychiatric medications, and associated medication side effects, as well as medical diagnoses and social characteristics. Data for the sample was entered into SPSS and examined.

Results

The results are presented and discussed, especially as they relate and add to the current known literature.

Conclusion

This study confirmed that adult patients with Intellectual and Development Disabilities have higher rates of psychiatric comorbidities than the general population. Further studies are needed.

1. West Virginia Health Topics by Disability Status and Types State Profile. <https://dhds.cdc.gov/profiles/profile?profileId=25&geoTypeId=1&geolds=54>
2. Bhaumik S; Tyrer FC; McGrother C; Ganghadaran SK; Psychiatric Service Use and Psychiatric Disorders in Adults With Intellectual Disability. *Journal of Intellectual Disability Research*. 2008. Vol 52:11. 986-995.

Prevalence of Substance Abuse Disorders in a Psychogeriatric Outpatient Clinic

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Background

The purpose of this study was to determine the prevalence of substance use disorders- specifically alcohol, marijuana, narcotic, benzodiazepine, and hypnotic dependence- in a geriatric psychiatry outpatient clinic.

Hypothesis

We hypothesize that the prevalence of substance use disorders in our Huntington, WV psychogeriatric clinic will be higher than that of the reported average for the national geriatric population. In addition, we hypothesize that patients with substance use disorders as well as those without will be prescribed controlled substances by a physician at a frequency higher than the national average. Lastly, we aim to determine which substance types are most frequently used by our geriatric population. We anticipate that alcohol will not be the most commonly used substance despite being the most frequently abused by the geriatric population nationally in previous years.

Methods

In this study, 200 patients ages 60 and above who were treated in an outpatient psychogeriatric clinic were examined by retrospective chart review for presence of substance use disorders. Demographic and clinical variables were also collected including age, sex, race, education level, living arrangements, prescribed controlled substances, mental status exam scores, comorbid medical conditions and comorbid psychiatric conditions. Data was entered into SPSS and is being examined.

Results

Results will be presented and discussed at Marshall Research Day on 3/30, especially as they related to the existing known literature.

Conclusion

In previous years, alcohol use disorder has been the most prevalent substance use disorder amongst older adults, however, it is unclear whether this has changed as the rate of opiate addiction in the United States continues to rise. The hope of collecting and presenting this data is that physicians will be better prepared to detect and treat substance use disorders in the growing geriatric population, as they can increase the risk for both medical and psychiatric morbidity.

Improving Resident Confidence to Provide Anticipatory Guidance in Resident Clinic.

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Department of Pediatrics, Joan C. Edwards School of Medicine.

Background

Our aim was to improve resident confidence in providing anticipatory guidance in resident clinic.

Hypothesis

Our residents confidence will be significantly improved by providing them with resources and counseling attending physicians.

Methods

Our team met to discuss our aim and key drivers. We conducted several PDSA (plan, do, study, act) cycles. Handbooks and textbooks were provided to residents. Counseling was given to attending physicians to ensure they were reviewing anticipatory guidance. The intern class was surveyed one month after changes were implemented and our team met to address ongoing areas needing improvement. Another survey was given to the intern class four months after changes were implemented. A survey was also given to the previous intern class to assess whether the changes that were implemented resulted in improvements for the 2017 intern class as compared to their peers the year before who did not have the benefit of the improvements

Results

Eight intern residents and nine second year residents were surveyed. Improvement was seen in the goal of anticipatory guidance being reviewed for each visit. For the 2017 intern class: (response based on percent of visits anticipatory guidance reviewed) one resident 0-25%, 3 residents 25-50%, and 3 residents 50-75%. From the 2016 intern class 7 residents 0-25% of the time and 2 residents 25-50% of the time. This difference was statistically significant ($p < 0.0001$). Improvement was also noted in the level of confidence providing anticipatory guidance after completing four months of residency. The 2017 intern class felt more confident in their ability to provide anticipatory guidance when compared to the 2016 intern class ($p = 0.0023$). Data analysis was done using an unpaired t-test.

Conclusion

Our team's aim to improve resident confidence in providing anticipatory guidance was attained by providing residents with resources and counseling attending physicians.

Racial Disparities in Treatment of Pregnant Women with Drug Use, Abuse, and Dependence

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Background

Tobacco, alcohol, and other illicit drugs can cross the placenta increasing the risk of low birthweight, doubling the risk of stillbirth, producing congenital deformities and dependence in newborns.

Hypothesis

African American men are less likely to complete substance abuse treatment. Cultural beliefs effect the level of care they seek. African American and Latino individuals were more likely to receive less informal treatment options. Hence, we hypothesize that compared to Caucasian pregnant addicts, minority pregnant addicts will experience disparity in substance abuse management.

Methods

A cross-sectional study was conducted among pregnant women who self-reported being pregnant and who had ever used illicit substances within the past 12-months. Survey data was obtained from the National Survey on Drug Use and Health (NSDUH 2005-2014). A summary of pregnant drug users' individual characteristics, drug use status and treatment utilization was prepared. Logistic regression was used to examine predictors of receiving drug treatment. Data management and analyses were conducted using SAS9.4.

Results

1,856 pregnant drug users were identified. 19.23% were dependent and 6% abused drugs. 81% of pregnant drug users reported using marijuana/hashish in the past 12-months, for an average of 111 days. Heroin was the drug for which many pregnant drug users (34.48%) sought treatment currently/during the past year. Pregnant drug users who were non-Hispanic African Americans (OR=0.3 [0.1,0.6] $p<0.0016$) and Hispanic (OR=0.5 [0.3,0.9] $p<0.0423$) were less likely to receive treatment compared to non-Hispanic Caucasians. Pregnant drug users who abused drugs (OR=7.5 [3.6,15.8] $p<0.0001$) or were dependent on drugs (OR=11.9 [7.2,19.5], $p<0.0001$) were more likely to receive treatment.

Conclusion

Study showed that Caucasian women were more likely to receive treatment for substance use compared to minority women. Appropriate medications, intense outpatient care, recovery and peer support should be provided to minority drug users as well as users who abuse or are dependent on drugs.

Age Differences in Skeletal Muscle and Capillary Responses to Weightlessness and Recovery in Male Rats

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Background

Skeletal muscle is adverse in its ability to respond to stimuli. Its mass can be increased by overload or decreased by disuse. Decreased skeletal muscle size and function due to space flight and aging are well-known. Skeletal muscle mass is directly related to force production. Increased capillary density allows for greater exchange of gases and metabolic by-products between the blood and contracting muscle, and leads to increase aerobic exercise capacity. Human skeletal muscle mass and strength increase until mid-20s, then, gradually declines with advancing age. Previous research shows the capillary density in aged skeletal muscle is lower than younger counterparts. Given the expertise required for NASA's missions, it is anticipated that crew members may be diverse in age. However, there is no systematic study investigating skeletal muscle and capillary changes due to unweighting and aging.

Hypothesis

Older rats will experience greater losses in skeletal muscle size and capillary density compared to younger rats and have a slower recovery period.

Methods

Soleus muscle of young and old rats were sectioned for cross-sectional analysis and were stained with PEACM1 antibody (DSHB). Capillaries were counted and capillary density was calculated (capillary # per size). Using ImageJ, sarcolemma were traced and the area were calculated. Capillary density was calculated. Body weight, muscle size, capillary number, and capillary density were analyzed using MANOVA.

Results

The older rats had more losses in, muscle size and capillary density in comparison to the younger rats. The older group of rats also had little to no recovery in each of the categories and lost more muscle mass during the recovery period while the young rats showed improvements in their capillary density while increasing their muscle size past the beginning measurement.

Conclusion

Younger astronauts will recover quicker from losses and older astronauts may need special counter measurements to minimize the loss of skeletal muscle properties during space flight.

Appropriate use of CT Scans in ER in Pediatric Patients With Mild Concussions

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Pediatrics

Background

It is estimated approximately 2.7 million CT exams per year are performed in children 15 or younger. This leads to increased exposure to radiation some of which is unnecessary. Little research has been done looking at protocols used in the ED for pediatric patients.

Hypothesis

Goal of this project is analyze decision making behind obtaining CT scans by ED physicians, which will aid in the eventual implementation of set protocol

Methods

This was a retrospective longitudinal study. Hospital administrative data was collected on pediatric patients in the ED who received CT scans from the years 2014-2015. Chart was analyzed for LOC. If there was LOC then further analyzed for associated symptoms. Those symptoms include vomiting, HA, obvious skull fractures. If GCS was reported then it was used in analysis as well.

Results

Data collected during study period showed that 5 out of 98 patients didn't have a CT scan when in ED. Out of the 93 patients who had CT scans, 49 had LOC and 10 had questionable LOC. There were 34 patients that didn't have LOC. Out of the 34, 5 had symptoms that required a CT scan.

Conclusion

Data suggests that CT scans may be over utilized in the ED. Upon reviewing records some documentation was not good enough to determine if a CT was warranted or not. Thus, these are patients that could have potentially avoided a CT scan and consequently radiation exposure.

Opioid drug addiction recovery services in West Virginia; assessing patients' needs and barriers.

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Background

West Virginia is currently in the middle of a drug abuse and overdose crisis. In 2016, one West Virginian died from drug overdose every 10 hours. According to the Centers for Disease Control and Prevention, the West Virginia's drug overdose death rate was about 41.5 cases per 100,000 in 2015, far outpacing the rate for the rest of the country. Huntington West Virginia has been estimated to have a death rate more than three times higher than that of the state of West Virginia. Huntington, a city of approximately 50,000 residents, recorded a drug overdose of 26 people in 3 ½ hours in 2016, overwhelming the city's emergency response.

The patients in West Virginia that seek help with drug addiction and recovery frequently find the available services not accessible or do not meeting their needs. Part of the reason for this is because the services are designed without taking into account the patient's specific needs in terms of knowledge about the programs and ability to accessing them.

Verbal consent will be obtained from each person interviewed. We expect to interview about 30 -40 patients. Data will be analyzed using Conventional Content Analysis for qualitative data. Information obtained from the study will help program designers to modify currently available programs or create new programs to better serve the patients in Huntington and in West Virginia.

Hypothesis

Opioid addiction recovery services in West Virginia may not be adequately serving the community.

Methods

In this study will gather information from the patients themselves that are in need of addiction services by interviewing patients . Verbal consent will be obtained from each person interviewed. We expect to interview about 30 -40 patients. Data will be analyzed using Conventional Content Analysis for qualitative data.

Results

Ongoing study.

Conclusion

Ongoing study.

MonitOR - A Study on the effect of OR Traffic on Surgical Site Infections

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Marshall Orthopaedics, Marshall School of Medicine

Background

It has been reported that hospital acquired infections (HAI's) are the sixth leading cause of death in the United States (1-4) and can lead to as much as an additional cost of \$3382.00 per patient. From the surgical standpoint it's reported that 17% of HAI's are the result of surgical site infections (SSI's) (6). One of the key risk factors for SSIs is the physical environment of the OR, is the maintenance of clean air (7,8). Each time the OR door is opened during a case, the air-flow system is disrupted

Hypothesis

An increase in the number and or the duration of door openings during a surgical case will increase the risk of a surgical site infection.

Methods

To demonstrate the link between SSIs and excessive door openings during surgery, we investigated the SSI database at Cabell Huntington Hospital and then referenced the number of door openings that occurred during those specific procedures. We then cross-referenced the number of door openings that occurred during the same surgery by the same surgeon but without any SSI complication. Door openings were recorded by an OR based electronic sensor system that records OR traffic (MonitOR).

Results

For non-infected cases the average number of door openings was higher vs. the one surgical site infection (66 vs. 45) however the duration the door was open was larger in the one infected case vs. the average of the non infected cases (16.7 sec vs. 8.39 sec).

Conclusion

There appears to be a correlation between how long a door is held open and surgical site infections. This also appears to be more important than the overall number of times a door is opened during a case. Further evaluation of the data is required to make any further claims.

Developing a Panel of Biomarkers and miRNA in Patients with Myocardial Infarction for Early Intervention Strategies of Heart Failure in West Virginian Population

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Department of Cardiology Joan C. Edwards School of Medicine Marshall University

Background

Myocardial infarction (MI) is most commonly caused by coronary artery disease (CAD) which is exacerbated by several risk factors. In the West Virginian population, there is a high prevalence of post-MI heart failure due to irreversible cardiovascular tissue damage which is not detected until the very late stages.

Hypothesis

The aim of this study is to develop a panel of biomarkers and circulating miRNAs that could potentially result in the early detection of heart failure resulting from MI allowing for early intervention.

Methods

The study included samples from 35 patients which were enrolled in the Cardiology Clinic at the Marshall University School of Medicine. The patients were divided in two main groups: control group that includes healthy patients and MI group, patients with history of MI. Enzyme Linked-Immunesorbent Assay (ELISA) was used for biomarker quantification and qRT-PCR determined the circulating levels of miRNAs

Results

The expression levels of five serum biomarkers including: TGF β -1, IL-10, TNF- α , IL-6 and MMP-9, were upregulated significantly in MI group as compared to control group ($p < 0.01$). The circulating levels of miR-34a, miR-208b and miR-126 were positively correlated and showed elevated levels in the MI group, while levels of miR-24 and miR-29a were reduced post-MI as compared to the control group ($p < 0.01$).

Conclusion

Our results support the clinical application of these serum biomarkers and miRNAs for a panel to detect post-MI heart failure. By formulating this panel, allowing early interventions for heart failure, the possibility to prevent the deteriorative progression of further damage to the heart tissue in the patients with the history of myocardial infarction may become a reality.

A Retrospective Analysis of Different Methods of PPI Cessation

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Background

Proton pump inhibitors (PPIs) are commonly prescribed medications for patients with moderate to severe gastroesophageal reflux disease. Recent studies have shown that there are numerous adverse effects possibly related to long-term PPI use including chronic kidney disease, community-acquired pneumonia, dementia, and osteoporosis. In 2016, the American College of Gastroenterology released new guidelines for PPI indications to discourage chronic use. PPIs should be prescribed intermittently for GERD symptoms, erosive esophagitis, and dyspepsia. Long-term PPI use is only recommended for Barrett esophagus, Zollinger Ellison syndrome, and those who are at increased risk for gastrointestinal bleeding, such as elderly patients taking NSAIDs.

Hypothesis

We hypothesized that tapering PPIs or using H2 Blockers would increase success at PPI cessation.

Methods

We reviewed the charts of all patients seen in 2016 with a diagnosis of GERD in our outpatient Internal Medicine faculty practice. We further examined the charts of 81 patients who attempted to stop taking PPIs for the method of discontinuation and success rate at follow-up.

Results

Of the 81 patients attempting to discontinue PPIs, 65 (80%) were successful. Forty-four (54%) were abruptly switched to an H2 blocker with a success rate of 82%. Thirty (37%) were advised to stop taking their PPIs without addition of an H2 blocker (77% success rate). Seven (9%) were prescribed a 2-week taper regimen with or without the addition of an H2 blocker (86% success rate). There were no significant differences in success rates among the three groups of cessation methods (Fischer exact test, $p = 0.91$).

Conclusion

Most patients were able to discontinue PPIs regardless of the method used. More data is needed to determine the most successful PPI cessation method especially since we had a small number of patients in the taper group. A prospective study is being conducted to further evaluate this problem.

The Effects of Gabapentin on the Withdrawal Symptoms of Neonates Prenatally Exposed to Opioids

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Background

Neonatal Abstinence Syndrome (NAS) is described as a withdrawal state in a neonate from neuroactive substances taken by the mother during the pregnancy. Previously we described the unique presentation of neonates born from pregnancies complicated by opioid abuse and concomitant use of the anticonvulsant gabapentin (Loudin, 2017. *J. Pediatr* 181: 286). In response to this, a retrospective case study was performed to analyze the outcomes of neonates exposed to both gabapentin and opioids in utero.

Hypothesis

Neonates exposed to gabapentin in utero were more likely to experience severe withdrawal.

Methods

This study was a retrospective case study.

Results

From 2014-2015, 33 neonates were confirmed to be exposed to gabapentin. Gabapentin exposed neonates had a significantly higher average Finnegan score (8.5 +/- 0.2 c.f. 7.5 +/- 0.2, $p < 0.001$ Students t-test) with neonates exposed to gabapentin spending a larger percentage of their treatment time scoring above an 8 (the threshold for Pharmacological treatment in 2014-2015). Compared to a control population of neonates from that same period, neonates with a combined exposure of gabapentin and opioids experienced significantly longer mean and median lengths of treatment and lengths of stay. There was no sex difference in the length of treatment in the opioid control group. In contrast, male neonates exposed to gabapentin experienced significantly longer lengths of treatment compared to females similarly exposed. This resulted in a higher rate of adjunct medication use, 79% of male gabapentin exposed neonates were treated with clonidine compared to 41% of gabapentin exposed females.

Conclusion

The results from this study confirm our hypothesis and also indicate that there is sex difference in infants exposed to gabapentin. This may have ramifications for the treatment of neonates exposed to gabapentin and warrants further investigation

A Retrospective Study of Mental Health in the Southern Appalachian Collegiate Population

Brittani Lowe, Kristina Bryant-Melvin MD, Suzanne Holroyd MD
Psychiatry, MUSOM

Background

Southern Appalachia is a rural location with limited mental health availability, as well as being immersed in an epidemic of opioid and other drug use disorders. Teenagers and young adults in Southern Appalachia do not have as much access to health care as similar populations in urban locations due to a number of factors (lack of transportation, poverty, lack of mental health professionals, stigma/cultural issues.) These factors may be significant enough to create differences in psychiatric profiles manifesting in college students in this area. Such information would be critical in planning for appropriate treatment and access to care.

Hypothesis

Psychiatric profiles of college students in Southern Appalachia will differ significantly from those in urban areas.

Methods

We are conducting a retrospective chart review of 100 college students who sought psychiatric care from an on campus psychiatric clinic at a southern Appalachian university (Marshall University). Data including gender, age, race, marital status, year in college, past psychiatric history, history of suicide/homicide attempt, current suicidal or homicidal ideation, current psychiatric diagnosis, and substance use disorders is being collected, entered into SPSS, and analyzed.

Results

Preliminary data shows Major Depressive Disorder as the most frequent diagnosis (80%), followed by Generalized Anxiety d/o (65%), and PTSD (30%). The most frequently prescribed medication category was SSRIs (50%), followed by SNRIs (20%), Sleep aids (30%), and Anti-anxiety agents (30%). Also of note, 75% of subjects acknowledged recent suicidal ideation.

Conclusion

This study will provide important data specific to an Appalachian college population seeking psychiatric care. We will be able to compare prevalence psychiatric diagnoses, symptoms, demographics, and medication usage to similar populations in urban and rural non-Appalachian areas.

Comparison of Unicortical and Bicortical Proximal Screws and Short Plate vs Long Plate in a Distal Femur Fracture Model

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Background

Distal femur fractures repaired with plate fixation sometimes refracture. There is no universally accepted treatment based upon plate length or screw arrangement that is agreed upon as being the best option for fixation to prevent this.

Hypothesis

Using a unicortical screw configuration in locking plate fixation will increase axial compression strength in a comminuted distal femur fracture.

Methods

Two different types of Saw-bone femurs were used in this study, sawbone product 1145 and anatomic sawbones product 3414. An artificial A3 comminuted extra-articular fracture site was created in the supracondylar region using a Striker bone saw. Two types of Biomet Polyax locking plates (6 hole and 12 hole) were used for fixation. Trials were ran with a unicortical screw in the most proximal slot and a bicortical screw in the most proximal position to see the difference in compression load to failure.

Results

The data collected showed a significant advantage to using the long plate compared to the short plate in weak saw bones. Also for each plate the construct with a unicortical proximal screw was stronger than the bicortical which was stronger than the noncortical. The experiments done on the anatomic sawbones showed a similar trend.

Conclusion

It was also discovered that the average load to failures of the intact sawbones (673 N) and anatomic sawbones (4493 N) respectively, nearly mimicked that the load to failures of cadaveric femurs for male (4866 N) and osteoporotic bones (613 N). Therefore, we conclude that using a long plate in osteoporotic bone would improve the axial strength of the femurs. This is a statistically significant finding with a p value of 0.04. For non-osteoporotic male femurs our data suggests that there is no advantage using long plate over short plate on the constructs or in the variation of the screw in the most proximal position.

Monitoring and Regulation of Operating Room Traffic via the MoniOR System
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Medicine

Background

The monitoring of operating room (OR) traffic has been an area of considerable study due to the significant economic burden of surgical complications, most notably surgical site infections (SSI's) and operating room distractions (ORD's). A major speculated theory of SSI causation is the disruption of air flow within the operative field by opening and closing of OR doors. The development of the MoniOR, a centralized data base coupled to real time door sensors, has facilitated the collection of the number of door openings.

Hypothesis

Using the MoniOR system, operating room traffic can be monitored to quantitatively account for the magnitude of traffic and the significance of this traffic in a clinical setting.

Methods

A total of 12 ORs were monitored over a 4 to 14-month span for 24 hours a day 7 days a week. Door sensors connected to a centralized data base, known as MoniOR, were attached to the doors of the OR. The number of door openings and timing of the openings were collected by these sensors for each door and organized by OR, date, and time. This data was then transferred and compiled using Microsoft Excel. The data was organized and graphed according to the OR and door.

Results

From April 2016 to June 2017, a significant amount of data was collected concerning OR door openings and duration. The data collected presented a variation across the number of openings and duration in differing ORs.

Conclusion

The number and duration of door openings demonstrate the scale and significance of traffic through the OR. Foot-traffic is shown to be highly variable across the differing physicians, physical locations, and procedures being performed. This large number of door openings, coupled with their duration, illustrate the importance of maintaining some form of OR monitoring system, both from potential contamination, as well as from the inherent distractions involved with entering the room.

The effect of viral, fungal, and bacterial contamination of inhaler spacer devices on pediatric asthma control

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Pediatrics, Marshall University

Background

Asthma is the most prevalent pediatric chronic disease in the United States and is the number one cause of school absences.

Hypothesis

Our pilot study aims to evaluate microbial growth in spacers used on a daily basis by children with persistent asthma and compare these data with the child's asthma control.

Methods

This study enrolled seven patients between the ages of 4 and 17 years with a diagnosis of persistent asthma receiving daily inhaled corticosteroid in the form of a metered dose inhaler used with a spacer or spacer/face mask combination. Patients were instructed to bring unwashed spacers (including face masks if used) to their previously scheduled allergist visit. Spacers were swabbed with sterile cotton and assessed for RSV, followed with immunofluorescence for viral respiratory pathogens. Samples were plated and assessed for bacterial and fungal growth. Parents completed a demographics questionnaire including questions regarding asthma exacerbations and spacer cleaning routines. Asthma control was evaluated using the Asthma Control Test.

Results

One of the spacer devices had growth on dextrose agar, which was positive for *Candida albicans*. All other devices (including spacer alone as well as individual spacer/face mask samples) were negative for fungal and bacterial growth, rapid RSV, and viral respiratory pathogens. Spacer cleaning practices varied and 86% of the asthma control scores indicated good control of asthma in the preceding 4 weeks.

Conclusion

Our study indicates that asthma control may not be affected by spacer/face mask cleaning practices. Although cleaning frequency and method varied, the majority of the devices did not have bacterial or fungal growth nor were they positive for assessed respiratory viruses. The only spacer that did have fungal growth was visibly cloudy with scant debris within the chamber. We plan to attempt to replicate these methods in a larger sample.

Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD): A Controlled Study When Spectrums Collide

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Background

Until 2013 ADHD and ASD were designated as mutually exclusive diagnoses. Research now indicates that 20-50% of children with ADHD may also display features of the three key impairments in ASD: reciprocal social interaction (RS), communication (C) and restrictive repetitive actions and interests (RR).

Hypothesis

The hypothesis is that ASD occurs at a higher prevalence in patients with ADHD compared to the general pediatric population potentially impacting both diagnosis and treatment.

Methods

From August through December of 2017, parents of patients followed at the ADHD Center and parents of patients without ADHD followed at two general pediatric offices completed the 40-question standardized Social Communication Questionnaire (SCQ). A score ≥ 15 calculated by impairments in the areas of RS, C and RR indicated the presence of autistic features compatible with the diagnosis of ASD.

Results

Of the 202 patients enrolled, 185 completed the study with 22 controls without ADHD or ASD and 163 ADHD patients - 123 (79%) with ADHD alone and 34 (21%) with ADHD and ASD. There were no significant differences in age or gender although males predominated in both the ADHD (66% to 34%) and ADHD/ASD (76% to 24%) groups ($p = 0.125$). The differences in percentage of RS, C and RR in the three groups are presented in Table 1.

TABLE 1+	RS percentage	C Percentage	RR
Percentage			
Percent Difference			
Control vs ADHD	2.84 % ($p = 0.974$)	3.31 % ($p = 0.899$)	15.32 % ($p = 0.003$)
Control vs ADHD/ASD	41.57%*	29.45 %*	58.77 %*
ADHD vs. ADHD/ASD	38.73 %*	26.13 %*	43.45 %*
+One-way Analysis with Bonferroni Correction		* (p values < 0.001)	

Conclusion

Pediatric patients with ADHD may have a higher risk of co-existing ASD with similar impairments in all three criteria of RS, C and RR.

Case Series: Use of a Combination of Mood Stabilizers in a Pediatric Population with Disruptive, Impulse-Control, and Conduct Disorders

Tamara Murphy, Edward Dachowski, MD

Psychiatry, JCESOM

Background

The DSM 5 describes patients with diagnoses falling under the category Disruptive, Impulse-Control, and Conduct Disorders as having difficulty with self-control of behavior and emotions. Treatment for these conditions includes psychosocial and pharmacological interventions, which are saved for patients for whom symptoms persist or worsen. To date, few studies have focused on medical treatment of pediatric patients with these disorders. There are no medications licensed specifically for medical treatment of disruptive behavior disorders.

Most data so far focuses on treatment with methylphenidate and risperidone. Mood stabilizers have been investigated in a small number of clinical studies, especially in the treatment of conduct disorder (CD), which showed a moderate reduction of aggressive behaviors. Lithium and depakote are the two most-studied medications to date for CD within this class. There is limited data on typical antipsychotics such as thiorazine.

Hypothesis

This case series follows the pharmacological treatment of children with Disruptive, Impulse-Control, and Conduct Disorders who were inpatients at River Park Hospital in Huntington, WV under the care of a Child/Adolescent Psychiatrist. Patients were selected for chart review who had been prescribed one of three medications as first monotherapeutic agent to help stabilize disruptive outbursts: lithium, depakote, or thiorazine. After titration of the first medication, patients still experiencing disruptive behavior were given an additional agent and titrated to efficacy. For some patients, a third medication was added.

Methods

Charts were reviewed for a six-month period for each patient selected for inclusion, and qualitative and quantitative data was gathered and analyzed.

Results

Final results are pending, but preliminary results indicate a decrease in outbursts in the selected population with the above-mentioned medications.

Conclusion

It is our hope that this case series will add to the data available for the ability of mood stabilizers and typical antipsychotics to reduce disruptive behaviors in children and adolescent patients receiving inpatient treatment for CD.

Case Series: Two Pediatric Patients with Depakote-Induced Blood Dyscrasias

Tamara Murphy, Kristina Melvin, MD
Psychiatry, JCESOM

Background

Depakote (generic: valproic acid) is a commonly prescribed drug in neurologic and psychiatric medical practices. This case series outlines side effects experienced in two pediatric patients prescribed Depakote to treat behavioral symptoms related to Autism Spectrum Disorder (ASD).

Depakote has been known for about 30 years to impair homeostasis. It is still a matter of controversy what clinical relevance these effects have, which are known to include mild neutropenia and acquired von Willebrand Syndrome (avWS) type I, as well as other blood dyscrasias. The effects appear to be dose-dependent.

Hypothesis

Our case series involves two male pediatric ASD patients who developed hematologic side effects after Depakote administration. Patient one developed mild neutropenia and patient two experienced acquired von Willebrand Syndrome.

Methods

We performed a review of the charts of the two patients previously mentioned. Results of complete blood count testing and peripheral smears were compiled, and linear regression analysis was run with SPSS software to determine correlation between Depakote dosage and levels of different blood cell lines.

Results

Linear regression analysis showed significant correlation between Depakote dosage and levels of absolute neutrophils and absolute leukocytes in patient 1. For patient 2, von Willebrand testing was consistent with drug-induced avWS, and the patient's symptoms and labs normalized upon discontinuing Depakote.

For the first patient, there was some debate whether the neutropenia could be described by an autoimmune process. We assert, however, that the patient's concomitant mild absolute neutropenia and absolute lymphocytosis are consistent with the effects of Depakote on blood production, both within in vitro and in vivo studies.

Conclusion

It is our hope that our description of these cases will add to the discussion of the effects of Depakote on blood production in pediatric patients and how this impacts psychiatric and medical decision-making.

Outcomes of Universal Screening for Suicidality in Medical Outpatient Clinics

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Psychiatry, MUSOM

Background

As part of standard practice in the outpatient setting, the nurse asks whether a patient has had thoughts of harming self or others.

Hypothesis

The aim of our study was to determine whether this question was addressed by physicians after a patient had said "Yes" when asked by nursing, and to what extent there was follow-up planning when patients indicated they had suicidal ideation. Our initial hypothesis was that this question would not be followed up in a substantial number of cases.

Methods

In our study, we performed a chart review of 246 patient encounters from a wide variety of outpatient clinics in Huntington, WV, including internal medicine, pediatrics, family medicine, surgical specialties, and psychiatry. These encounters were selected for patients having answered "Yes" when asked about thoughts or self- or other-harm at intake. Statistical analysis was performed upon the resulting data.

Results

Based on this review, we determined that physicians documented further exploration of suicidal ideation in around half of the cases, with significant variation between different specialties. When patients confirmed suicidal ideation to the physician, further planning (e.g. ER, inpatient admission, education, etc.) was documented only around 70% of the time. Regression analysis revealed that the only significant predictive factor for physicians following up on suicidal ideation was the presence of a depressive disorder in the patient's chart.

Conclusion

We determined that these gaps could be addressed by improving communication between nursing staff and physicians and providing better education to providers in all specialties on assessing and managing suicide risk.

Is there a correlation between vasopressor use and temperatures in the distal extremities of critically ill patients?

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Background

The effects of vasopressors on skin necrosis have been reported for over 40 years but the etiology is inadequately understood. Vasoconstriction from vasopressor use leading to poor distal perfusion, thromboembolism from coagulopathy in critically ill patients may be contributing to these changes, but almost consistently, the extremities that are affected seem to be "cool to touch". The purpose of this study is to examine the temperatures of the distal extremities and to evaluate if there is a correlation with these temperatures to the amount of vasopressors being used.

Hypothesis

We hypothesize that increased use of vasopressor use will correlate inversely with temperatures of the fingers and toes.

Methods

We will examine the surface temperatures of the distal extremities of patients on vasopressors in the ICU using an infrared thermometer (Nubee NUB8380). Gathering data such as age, sex, comorbidities, core temperature and presence of warming measures, we will then use statistical analysis with multivariate regressions to adjust for confounders to determine if there is a correlation between amount of vasopressor used and distal extremity temperatures.

Results

This is an ongoing study that we expect to have results in by the time of presentation. We expect to find an inverse correlation between amount of vasopressors used in critically ill patients and the surface temperatures of the distal extremities. We hypothesize that this will still be significant after adjusting for core temperature, comorbidities, rewarming measures and other variables.

Conclusion

We expect that our data will show that increased vasopressor use is correlated with lower surface temperatures in the distal extremities. The lower temperatures may be contributing to the skin changes leading up to tissue necrosis. Further studies will be necessary to evaluate whether or not mechanically warming these distal extremities can improve outcomes and prevent necrosis from developing or progressing.

**Psychosocial and Physiologic Characteristics of Patients with Non-epileptic
Events: A Retrospective Study of Rural Patients**

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Department of Neurology, Marshall University School of Medicine

Background

Psychogenic Non-Epileptic Seizures (PNES) is a common phenomenon that contributes to about 40% of video electroencephalogram (EEG) characterization in specialty epilepsy centers with an estimated cost over 650 million dollars annually. The diagnosis of PNES can be delayed by failure to consider events as non-ictal in nature. This leads to the inappropriate use of antiepileptic drugs and socioeconomic impact of the misdiagnosis. Failure to diagnose PNES leads to Emergency Department visits and subsequent hospitalizations leading to increased health care expenditures.

Hypothesis

This study will determine if there is any correlation of sociodemographic factors and psychological comorbidities with PNES in adults diagnosed by video EEG monitoring at our tertiary referral center.

Methods

This is a retrospective study where we analyzed PNES subject data from video EEG monitoring performed at the Epilepsy Center in Cabell Huntington Hospital. We reviewed more than 360 episodes in 54 subjects of age >18 years.

Results

The mean age \pm SD was 48 ± 2.97 years and 83% were females. We found that most of our PNES patients were older (> 45 years of age) 36 (66.7%), females 43 (83.3%), obese 36 (66.7%) or overweight 10 (18.5%), either single 18 (33.3%), separated 4 (7.4%), divorced 12 (22.2%), and widow 8 (14.8%), education less than 12th grade 49 (90.7%), unemployed {either received government assistance 45 (83.3%) or disability benefits 31 (57.4%)} with associated physical 46 (85.2%) and psychiatric illness 52 (96.3%).

Conclusion

The outcome of our study indicates the need for collaboration between psychiatrist, psychotherapist and a neurologist for the diagnosis and management of PNES. It adds to the current knowledge of sociodemographic and sociocultural variability of PNES and might aid earlier recognition of PNES. This team-based approach will enable reduction of health care expenditures, inappropriate management with antiepileptic medication and patient morbidity.

Factors Contributing to Vaccination Rates in Appalachia

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Pediatric Department, Marshall University Joan C Edwards School of Medicine

Background

There have been several regional surveys conducted regarding the factors that influence vaccination rates. The Appalachian population possesses a unique set of factors different from these regions (economics, geographical, cultural, etc). These differences may influence vaccination rates in Appalachia which those studies may not address.

Hypothesis

The vaccination rate in Appalachia is influenced differently among those who fully or partially vaccinate their children

Methods

This is a prospective anonymous survey of parents/guardians of children who attended local pediatric practices. The inclusion criteria were parents/legal guardians of children between 2 months and 6 years, and completion of questions regarding vaccination status. All parents were asked to return completed surveys which constituted consent to participate.

Results

The cohort consisted of 273 parents/guardians. The vaccination rates were: 258 full(95%) and 15 partial vaccinations (5%) respectively. The statistically significant influential factors in decision to vaccinate: desired delay (2% vs. 53%), number (1% vs. 40%), safety (1 vs. 33%), natural immunity (0.5% vs. 13%), other concerns (1% vs. 20%), autism (16% vs. 40%), additives (11% vs. 47%), long term side-effects (27% vs. 60%), other safety concerns (7% vs. 27%), no concerns (51% vs 13%) when comparing fully and partially vaccinated groups respectively. The most information about vaccination was obtained from: PCP/health department (64% vs. 27%) and other sources (1% vs 33%) when comparing fully and partially vaccinated groups respectively. All statistics were run using Fishers exact tests and all p-values were <0.05.

Conclusion

95% of our cohort has fully vaccinated their children. The major influences to partially vaccinate were the parents desire to delay vaccinations to suit their own schedule, number of vaccinations, and the safety of the vaccines. The major source of information about vaccines was obtained from the PCP/Health Department for all participants.

Do parents and children report the same Psychiatric symptoms? Comparison of DSM-5 Level 1 Self and Parent-reported Cross Cutting Symptom Measures.

Mark Peterson, Max Randall, Joe Hart, Kalpana Miriyala
Psychiatry, MUSOM

Background

DSM-5 Level 1 cross-cutting surveys, designed to monitor treatment response over time, were introduced in 2013 "emerging measures" of the DSM-5. For children and adolescents, surveys were designed to assess symptoms based on the guardian's perception and the patient's self-report. Previous research has shown disagreement between parent-child surveys. This study assessed interrater agreement between parent and child using this measure.

Hypothesis

There will be no significant disagreement between parent and child survey responses.

Methods

Patients, aged 11-17, and guardians were given DSM-5 Level 1 cross-cutting surveys before appointments at a child and adolescent psychiatry clinic. Diagnoses were obtained through chart review. Each of 25 questions was tested for interrater agreement.

Results

70 pairs completed the survey. Interrater agreement showed wide variation with kappa values ranging from -.04 to .83. Two thirds of the questions had kappa values less than .4 indicating low agreement levels. Six questions showed good agreement with kappa levels at .4- .75. Only three questions showed excellent agreement with kappa values above .75. Symptom categories with the lowest agreement were inattention, anger, irritability, and psychosis. No subjects carried a diagnosis of any psychotic disorder. Two questions addressed suicidality. The question asking if suicide has been attempted had very high agreement. The question asking if there have been thoughts of suicide (child survey) or talk of suicide (parent survey) had very low agreement. It was answered positively more often by the guardian (n=5) than by the child (n=2). The highest degree of agreement was in questions addressing substance abuse.

Conclusion

This study found frequent disagreement between parent and child, emphasizing the importance of gathering information about each domain from both sources when evaluating adolescents. The Level-1screen allows clinicians to efficiently gather this range of information.

Improving Resident Transitions from Intern to Senior Resident

Paige Phillips, Audra Pritt, Sean Loudin

Pediatric Department, Marshall University Joan C Edwards Medical School

Background

In June 2017, a pediatric hospitalist, neonatologist, and current pediatric senior resident met to discuss the expectations for rising senior residents. An AIM statement and key drivers were developed. Expectations were passed on by the senior resident and a Q&A session was held during a meeting with rising second year residents.

Hypothesis

Providing guidance to rising second year residents will help them improve confidence and understand in their role as senior residents.

Methods

In November 2017, the current second year residents were surveyed, assessing their level of preparedness before and after the discussion. As a comparison, the current PGY-III's were also surveyed to assess their preparedness prior to becoming a senior resident since they did not have the benefit of the intervention.

Results

Three PGY-III's were surveyed. When asked how well-prepared they felt prior to becoming a senior resident, one PGY-III responded "Not prepared at all" (33.33%), and two responded "Somewhat prepared" (66.67%). They were also asked whether a meeting with a senior resident would have been helpful, and all responded "Yes" (100%). Four current PGY-II's that attended the discussion were surveyed. When asked how well-prepared they felt to become a senior resident prior to the meeting, two residents responded "Not prepared at all" (50%), one responded "Somewhat prepared" (25%), and one resident felt "Well-prepared" (25%). After the meeting, three of these residents felt "Well-prepared" (75%) to become a senior resident, and one resident felt "Somewhat prepared" (25%). All four of the PGY-II's felt the discussion was helpful (100%). Although there was an increase in perceived preparedness of PGY-II's it was not statistically significant (p-value = 0.2231).

Conclusion

Providing peer guidance and setting expectations early for rising senior residents improves their confidence and preparedness as they enter their second and third years of residency.

Improving Resident Education by Increasing Exposure to Various Clinic Attendings

Paige Phillips, Becca Hayes, Tatia Dewese, Meagan Shepherd, Joseph Evans
Pediatric Department, MARshall University Joan C Edwards Medical School

Background

Each physician has their own way of practicing medicine, which directly reflects their training or lack thereof in certain areas. Medicine and the demands of a primary care physician are constantly changing. This has never been more evident than with the burgeoning field of mental and behavioral health in pediatrics. This has created gaps in resident education, as medical training has changed across generations.

Hypothesis

Creating a yearly rotating continuity clinic schedule, thereby increasing time spent with various clinic attendings from diverse backgrounds, will broaden resident education in outpatient pediatric clinical practice.

Methods

In April 2017, a self-study focus group was held among pediatric residents. In this forum, it was discussed that certain continuity clinic days were associated better training in mental/ behavioral health issues. In order to provide residents with equal educational opportunities, it was proposed that the continuity clinic schedule change yearly. This plan was implemented in July 2017. To assess satisfaction among residents, a survey was sent to them in November 2017.

Results

Seventeen residents were surveyed. All were upper-level (PGY-II, III, or IV) residents that had experienced clinic changes. The survey inquired if residents felt that the schedule change had improved their outpatient experience. Eight residents responded "Definitely" (47.06%), and nine "Somewhat" (52.94%). Zero residents replied that it was "Not at all" helpful (0%). When asked if the schedule changes should be continued for 2018-2019, eleven residents replied "Yes" (64.71%), zero replied "No" (0%), and six replied "Not sure" (35.29%).

Conclusion

By changing our continuity clinic schedule, residents have been given the opportunity to work with various clinic attendings, thereby improving and expanding their medical experience in outpatient pediatrics.

Better Outcomes for Children through Safe Transitions

Audra Pritt, Anthony Johnson, Susan Flesher, Jordan Kahle, Tierra Crockett
Pediatrics, Joan C. Edwards School of Medicine, Huntington, WV

Background

One in 5 patients discharged from the hospital experience an adverse event, more than half of them being preventable. This leads to unplanned readmissions costing millions of dollars. Little research has been done looking at hospital discharge planning in the pediatric population.

Hypothesis

The goal of this project is to implement an already validated pediatric discharge toolkit with the aim of enhancing the effectiveness of transition from hospital to home.

Methods

This was a prospective cohort study utilizing a pediatric discharge planning toolkit. Key elements in the toolkit: (1) comprehensive patient risk assessment on admission, (2) teach-back curriculum, (3) fax or phone call to PCP, (4) 72-hour follow-up calls, and (5) follow up appointments, scheduled prior to discharge, within 2 weeks from discharge from hospital.

Using the toolkit, data was gathered on pediatric patients as they were admitted and then we prepared them for discharge. Data was collected from patients during the time period of December 2016 until March 2017. The main outcome measures were: follow up appointments scheduled upon discharge, 30day readmissions to the hospital and patient satisfaction scores. This was compared with hospital administrative pediatric data collected December 2015 through March 2016.

Results

Data collected during study period (n=91) compared to hospital administrative data collected the year prior (n=132) showed a 2.2% reduction in readmissions (4.8% and 7%), $p=0.004$. Patient satisfaction scores remained unchanged with no statistical significance. All patients in study group had follow up appointments made prior to discharge.

Conclusion

Our data suggests the use of this pediatric discharge toolkit improves the efficacy of transition from hospital to home. This improved efficacy, leads to reduced readmission rates and significant health care dollars being saved. Further research is being done to determine PCP satisfaction with this process and follow up appointment attendance and whether that correlated with likelihood of readmission.

The Nutritional Status of Geriatric Patients Presenting to an Outpatient Clinic in Appalachia

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Background

Malnutrition is a well-recognized challenge facing geriatric populations [1,2]. The elderly are oftentimes subject to both physical and social barriers to achieving proper nutritional intake. Nutritional deficiencies are associated with low mood, decreased cognition, and impaired function [3]. This study sought to determine the nutritional status of geriatric patients presenting to an outpatient clinic in Appalachia, an area known for high rates of poverty, obesity, and malnutrition [4].

Hypothesis

We hypothesized that the elderly in our population will have high rates of malnutrition due to social, physical, and monetary barriers.

Methods

We enrolled a convenience sample of 55 people over age 65 who attended an outpatient geriatric clinic in Appalachia, all of whom took the mini nutritional assessment (MNA). Twenty-eight (51%) patients completed a seven-day food diary and a lifestyle survey.

Results

Four percent were considered malnourished, 31% were at risk of malnutrition and 65% were normal nutritional status by MNA. However, 57% were obese. Only 21% of participants took supplements. Of the 28 people who completed food diaries and surveys, 11% were male and the average age was 74. Approximately one third had others do food shopping for them. Transportation (7%), money for food (4%), and dental problems (4%) were not significant barriers. We found intake deficiencies in vitamin D (87%), pantothenic acid (77%), potassium (67%), vitamin E (63%), calcium (60%), and vitamin C (37%).

Conclusion

Although one third of our sample was at nutritional risk by MNA, obesity may be a greater problem within Appalachia. Still, over half of our participants had nutrient intake deficiencies with some potential for clinical disease suggesting a possible role for supplements in this population. Surprisingly, transportation, money for food, and dental problems were not found to be barriers in this sample.

Distal Lateral Tibial Osteonecrosis Following Ankle Trauma

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Background

Distal lateral tibial osteonecrosis (DLTO) is an infrequent and seldom described complication following ankle trauma. The natural progression of the condition begins with sclerosis at the lateral tibial plafond progressing to bony collapse and valgus deformity of the mortise resulting in significant disability. It is associated with high energy trauma, talus dislocation, open fractures and Weber C-type fractures. The tibia has been shown to be less vascular laterally and, while the etiology of osteonecrosis remains unclear, traumatic injury may separate the distal tibia from the soft tissue envelope resulting in decreased blood supply.

DLTO has a poor prognosis with a majority of patients eventually requiring arthrodesis or total ankle arthroplasty. Early diagnosis with recognition of associated fracture patterns and advanced imaging may allow joint salvage through extended non-weightbearing and pharmacologic and operative intervention.

Hypothesis

To radiographically and clinically characterize features of distal lateral tibial osteonecrosis in our practice.

Methods

A 5-year retrospective case series was performed where we identified patients with DLTO following an ankle fracture. We excluded comminuted fractures of the tibial plafond, patients with neuropathy, a history of steroid use, inflammatory arthritis or connective tissue disorders.

Results

10 patients were identified retrospectively in the 5-year study period, 6 females and 4 males with an average age of 51 (range 36-72). 5 patients sustained a closed Weber C fracture-dislocation. 2 patients sustained a closed Weber B. In 3 patients, the initial injury was an open Weber C fracture with a medial-sided wound. 4 patients eventually underwent ankle arthrodesis, 1 patient underwent total ankle arthroplasty and 5 were treated non-operatively.

Conclusion

Our data shows DLTO to occur in both open and closed injuries, reinforces the association with Weber C fracture pattern, and likely progression to arthrodesis or arthroplasty.

Nutrition Among Medical Students

Tyler Skidmore, Jenna Barbour, Aubrey Fleming, Lynne J. Goebel
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Background

Previous studies show medical students reported time as a barrier to healthy diet. Other studies show they are not eating healthy in spite of having knowledge of nutrition. This study examines the diet of second year medical students in one school in Appalachia.

Hypothesis

We hypothesized that students from Appalachia may not have healthy diets because of the local dietary habits.

Methods

Twenty-four (28%) second year students at the Joan C. Edwards School of Medicine participated in this study. Students used the USDA's Supertracker website to track their diets over a five-day period including at least one weekend day. Additionally, participants completed a ten-question survey to assess socioeconomic factors.

Results

Of the 24 participating students, 62% were male, 83% were Caucasian, and 58% lived in Appalachia 11 years or more. The most common deficiencies were Vitamin A (16, 67%), Vitamin C (15, 63%), Vitamin D (24, 100%), calcium (19, 79%) and fiber (23, 96%). One third of women were deficient in folic acid and two thirds of women were deficient in iron. Only 3 students took multivitamins and 3 took Vitamin D. Two thirds of students consumed excessive sodium and three quarters of men and two thirds of women consumed excessive saturated fat. Nutritional deficiencies were compared to time spent in Appalachia, fast food consumption, financial restrictions, and living circumstances with no significant relationships found.

Conclusion

Nutritional deficiencies were common among a small sample of medical students in Appalachia. Potentially clinically significant intake deficiencies were noted including low folate and iron intake among women. No correlation was found between social and economic factors and intake deficiency. More research is needed in a larger study population to confirm these findings.

"Don't Forget the Resident" at Neonatal Resuscitations

Angelina Sprewell, Karen Lewis, Sean Loudin, Cynthia Massey, Susan Flesher
Department of Pediatrics, Marshall University

Background

A 2011 study from Journal of Graduate Medical Education found that provider comfort with neonatal resuscitation directly correlated with the number of opportunities given to practice resuscitation. However, at our facility residents miss this opportunity due to the resident being unaware of the neonatal resuscitation.

Hypothesis

The purpose of this quality improvement project was to increase the number of residents attending neonatal resuscitations. Aim 1: Determine what percentage of neonatal resuscitations were attended by residents. Aim 2: Determine if attendance changed after simple interventions were instituted. Aim 3: Continue providing opportunities for more experience with resuscitations to increase attendance to 85%.

Methods

This continuing quality improvement project examined 35 months of data. Fourteen months of baseline data was analyzed for percent of resident attendance at neonatal resuscitations. Once established, six PDSA cycles: Signage, Self-reporting, Schedule change/phone, Paging System, Unit Clerk, Nurse Reward were completed, with a seventh pending.

Results

The initial percentage of attended resuscitations during working hours was 29%. After PDSA 1 it increased to 45% (p-value <0.001) using Chi-square analysis. A Chi-square subgroup analysis was done to verify the change in attendance from pre-intervention (27%) to PDSA 1 (46%) for the data from March through November, confirming the change as statistically significant (p-value <0.001). Although each PDSA cycle did not show statistically significant increase, the overall percentages did increase. When comparing pre-intervention to current resident attendance, there is a statistically significant increase (29% vs. 76% p-value <0.001).

Conclusion

The data suggests the interventions initiated to improve resident attendance at neonatal resuscitations was successful. Our ultimate goal is to achieve 85% attendance which includes the next PDSA for a new paging system which will allow direct communication with residents leaving their response as the only hindrance to attending neonatal resuscitations.

Using Resident and Faculty Focus Groups to Obtain Stakeholder Input During the ACGME Self-Study Process

Angelina Sprewell, Dominique Elmore, Katie Huggins, Meagan Shepherd, Tracy LeGrow, Marie Frazier, Susan Flesher
Department of Pediatrics, Marshall University

Background

The Accreditation Council for Graduate Medical Education (ACGME) clearly describes eight steps to provide guidance to programs who are organizing their first self-study. The process relies heavily on obtaining stakeholder input and then circling back to stakeholders to validate findings. Focus groups have been noted to provide input and data not elicited using other methods.

Hypothesis

Our objective was to obtain a clear picture of stakeholder values, priorities and opinions as they relate to program aims, opportunities and threats.

Methods

A series of focus groups was conducted with residents and core faculty members. The first session for each group consisted of a series of questions designed to elicit responses regarding program aims, opportunities, and threats. Prior to the second session each group was provided copies of ten years of annual program evaluations as well as aggregated data in a summarized form. Responses during the focus groups were recorded in writing and inductive content analysis methods were used to identify major themes. Additional focus groups were conducted six months into the self-study process.

Results

Eight program aims as well as activities to advance the aims were identified. Opportunities and threats were pinpointed and discussed. Areas for improvement were selected and then presented back to the stakeholders who confirmed their appropriateness. Outcome measures are being followed for all aims. For example for the first aim, resident attendance at neonatal resuscitations has increased from 29% to 76%. Chi Square analysis showed statistical significance ($p < 0.001$).

Conclusion

Focus groups are an effective way to initiate the self-study process, examine the programs aims, opportunities and threats, and formulate a detailed improvement plan.

Parent-Reported Learning Disabilities (PRLD) in Children with Attention Deficit Hyperactivity Disorder (ADHD): Prevalence and Response to Stimulant Medication and School Accommodations Compared to Children without PRLD

Jordan Tate, James Lewis, Yaslam Balfaqih

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Background

Learning Disabilities (LDs) in reading and math often co-exist in school-aged children with ADHD. The diagnosis of LDs is problematic because it requires extensive and expensive academic testing done by a licensed psychologist. In 2013 the Colorado Learning Difficulties Questionnaire (CLDQ) was reported as an accurate parent-reported screening tool for the presence of reading (R) and math (M) LDs.

Hypothesis

Although the prevalence and demographics of LDs in children with ADHD is unclear, the combination of both diagnoses may be associated with reduced effectiveness of both medical treatment and academic accommodations.

Methods

CLDQs completed by parents on all new patients evaluated at the ADHD Center during 2013 -2015 were tabulated to determine the prevalence and demographic information on children with both ADHD and LDs. Improvement response to multimodal treatment was obtained from chart reviews on follow-up visits through June 2017.

Results

Of the 116 patients evaluated, 94 (81%) screened positive for a co-existing LD: both R and M in 48 (41%), M only in 28 (24%), and R only in 18 (16%). There were no significant differences between the ADHD only group and the three LD groups in gender, form of insurance, ADHD subtype, or co-existing tics or Oppositional Defiant Disorder except for younger age at diagnosis for the R and M group compared to the M only group. Additionally, there were no significant differences between the groups when comparing initial severity or mean improvement scores at 3 month intervals up to 18 months follow up.

Conclusion

Although LDs diagnosed by parent report occur in over 80% of children with ADHD, there are no significant differences between the groups in demographic information or improvement responses to medical or educational treatment.

Treatment of Osteochondritis Dissecans of the Capitellum Using BioCartilage

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Background

Osteochondritis dissecans (OCD) is a condition that can affect the elbow due to recurrent compressive loads in adolescent throwers and those who frequently utilize the upper extremity for weight-bearing activity. Microtrauma over time can lead to separation of the articular cartilage from subchondral bone, leading to long-term pain and functional limitations that can be devastating to the career of a young athlete. A variety of treatment strategies addressing OCD lesions of the capitellum have been described, including open reduction internal fixation, removal of the detached fragment with microfracture, and osteochondral transplantation.

Hypothesis

The primary aim of this study was to report a novel technique using BioCartilage to address OCD lesions of the capitellum in athletes, with the prediction that this would lead to favorable clinical outcomes.

Methods

A retrospective review was performed of athletic patients with osteochondritis dissecans of the capitellum treated by a single surgeon at two institutions between the years 2013 and 2016. Four patients were included who underwent open surgical intervention with removal of loose bodies and implantation of BioCartilage for capitellum OCD lesions. Range of motion, pain scores, radiographic healing, and complications were considered.

Results

The pain scores of all four patients improved postoperatively, and each patient returned to their original sport at six months with full, painless range of motion. There were no intraoperative or postoperative complications, infections, or reoperations. Radiographs obtained at 6-8 months postoperatively showed healing of the lesions with no further evidence of an osseous defect or loose bodies.

Conclusion

The novel technique of implantation of BioCartilage for osteochondritis dissecans of the capitellum in adolescent athletes shows preliminary success by restoring motion, function, and return to play with minimal complications.

School Refusal/Phobia: An Understudied Field

Jack Wang D.O., Mark Hughes M.D.
Psychiatry

Background

Anxious school refusal/phobia affects 2-10% of school-aged children each year. It can generate debilitating functional and psychiatric impairment. It usually suggests significant psychiatric comorbidities, and adverse experience at home and school. Psychiatric management is usually pragmatic. For evidence-based guideline, further research is required for this understudied field.

Hypothesis

The purpose of this study is to illustrate two inpatient adolescent cases with debilitating school phobia, and to summarize literature review on child/adolescent school refusal/phobia.

Methods

Two cases from child/adolescent inpatient unit are analyzed. Symptomatology and treatment strategies are compared with similar case reports and literature review findings. Literatures are searched using common web and scholar database queries, with both general and specific descriptors. Findings are synthesized in table and concept map format.

Results

Two adolescents experienced similar hospital course with satisfactory initial response to integrated pharmaco-psycho-social intervention. Both adolescents felt reassured with their recommended flexible learning formats (home bound instruction or homeschooling). Literature review yield is moderate, with small scholarly studies and no landmark/classic article. Most treatment strategies are cognitive behavioral therapy based. Most studies failed to discuss home bound/homeschooling as a treatment strategy and one considered it as contraindicated.

Conclusion

Anxious school refusal/phobia can generate severe functional and psychiatric impairment. It can have a bi-directional cause-effect relationship with comorbid psychiatric disorder, mostly depression and anxiety. It often suggests insidious psychosocial trouble at home or school. Its treatment strategies are mostly pragmatic. Home bound/homeschooling as effective intervention needs validation. Overall this field is understudied.

Does standardizing albuterol weaning reduce hospital length of stay, readmission rates and rapid response codes?

Michelle Worthy MD, Daniel Crow, Audra Pritt MD
Pediatrics

Background

Prior to implementing a standardized albuterol weaning protocol, children admitted with asthma were weaned from albuterol based on the physician's discretion. Larger institutions have implemented and studied a model using a standardized protocol that can be used by respiratory therapists (RT) and nurses showing success.

Hypothesis

Standardizing albuterol weaning through a validated scoring system used by respiratory therapists, nurses, and physicians will lead to a reduction in hospital length of stay, number of rapid response codes, and 30-day readmission rate in pediatric population with an admitting diagnosis of asthma.

Methods

Retrospective cohort study comparing the length of stay, number of rapid response codes, and 30-day readmission rate December 2012-2014 (n=109) and December 2014-2016 (n=115) ages 2 to 18 years admitted with primary diagnosis of asthma pre and post implementation of standardized albuterol weaning protocol.

Results

The findings demonstrated no variation in the length of stay, number of rapid response codes, or 30-day readmission rate relative to study population size; however, standardized protocol elicited a positive satisfaction response from both respiratory therapists and resident physicians.

Conclusion

While not demonstrating a significant change in the studied variables, it is important to note that taking it out of the physicians' hands and giving the RT and nurses more autonomy did not worsen our measures or cause harm. Our standardized protocol did demonstrate an increase in satisfaction amongst respiratory therapists and resident physicians.

The First Prostate Cancer Screening Study

Lawrence M. Wyner

Department of Surgery, Joan C. Edwards School of Medicine, Huntington, WV

Background

Screening for prostate cancer has always been controversial. In the 1950s, surgeons were reluctant to operate on prostate cancer, as cure was unlikely by the time the disease became clinically evident, and furthermore, radical prostate surgery was high-risk and fraught with significant complications.

Hypothesis

In the 1950s, Dr. Perry Hudson, a urologist at Columbia University's Francis Delafield Cancer Hospital, became an expert in the perineal, or posterior, exposure of the prostate gland for biopsy and prostatectomy. Furthermore, he persisted in performing and promoting this approach even as the mainstream urological community moved towards refining the retropubic (anterior) approach. Dr. Hudson felt that prostate cancer could be successfully diagnosed and treated prior to its clinical presentation, and designed a clinical study to test this.

Methods

In 1951, Dr. Hudson began to enlist over a thousand asymptomatic alcoholic men living in the "flophouses" of New York City's Bowery District to have open perineal prostate biopsies, and if cancer was diagnosed on frozen section, they underwent simultaneous radical perineal prostatectomy along with castration and administration of exogenous estrogen. Most of these men were followed for over 10 years.

Results

Dr. Hudson diagnosed prostate cancer in about 100, or 10%, of this asymptomatic population. Overall survival was 70% in this group, as opposed to 80% in the 900 men without cancer. The study was featured for the public in a 1958 Life Magazine spread, and no one questioned its methods until 1966, when an editor at the journal Cancer challenged Dr. Hudson, who then terminated the project. Although not reported, surgical complications such as rectal injuries and impotence were not insignificant.

Conclusion

The controversial Bowery Series was the first attempt to evaluate a hypothesis which is still being hotly debated today, that is, that the early diagnosis and aggressive treatment of prostate cancer saves lives.



CASE STUDY POSTER • SPECIAL VIEWING: Thursday, March 29, 4:00PM-5:30PM

30TH ANNUAL RESEARCH DAY POSTER SESSION



Recurrent Hypothermia & Refractory Mania: A Tale of Valproic Acid, Antipsychotics & Treatment Alternatives.

Oluwadamilare O. Ajayi and Suzanne Holroyd

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Background

Hypothermia, a core body temperature of less than 35°C/95°F is a known, albeit quite rare side effect of psychotropic medications. Typical agents such as chlorpromazine, haloperidol etc are more associated with hypothermia; but atypical agents such as risperidone, clozapine have also been shown to induce hypothermia. Atypical agents have better side effect profiles compared to typical agents and as such are first line treatment modalities. We present a case of a 76-year-old Caucasian female with history of bipolar I disorder, who developed recurrent hypothermia (32.2°C/90°F to 35°C/95°F) on atypical antipsychotics and mood stabiliser/anticonvulsant valproic acid (VPA) which had been used to manage her illness for years without such effect. In addition, we discuss the use of the use of tamoxifen, a protein kinase C inhibitor (PKC) in the management of her bipolar I disorder.

Case Presentation

Ms. A, a 76-year-old Caucasian female with a life long history of bipolar disorder type 1, with primarily manic episodes characterised by aggressive hypersexual behaviours, grandiose and paranoid delusions. After years on various atypical antipsychotics a

Discussion

Mechanisms behind olanzapine, quetiapine and valproic acid induced hypothermia including 5-HT₂ antagonism, interaction with neurotensin and GABA are reviewed. Lastly, mechanism behind tamoxifen and its effectiveness in this patient are discussed.

**Pulmonary Alveolar Microlithiasis with Satisfactory Diagnosis by Bone
Scintigraphy of the Lung**

Emad Alkhankan, Fuad Zeid
Pulmonary Medicine, Internal medicine

Background

Pulmonary alveolar microlithiasis (PAM) is a unique condition caused by intra-alveolar deposition of spherical calcium phosphate microlith due to a mutation of sodium-phosphate co-transporter.

Case Presentation

A 67-year-old female presented with slowly progressive shortness of breath on exertion for five years. She was a non-smoking teacher by profession with no previously known pulmonary disease until 2012 when she had incidental bilateral infiltrates on X-ray

Discussion

PAM is an intra-alveolar accumulation of microliths consisting of calcium phosphate. PAM is thought to be due to a mutation of the SLC34A2 gene causing deactivating in the sodium-dependent phosphate co-transporter located in type II cells, leading to accu

**Adult Meckel's Diverticulum: the Forgotten cause of Adult Gastrointestinal bleeding
Complex Intervention of a Totally Occluded Ostial Stent of Right Coronary
Artery: A Case Report and Brief Review of the Literature**

Nabil Alzaeim, Naveed Iqbal, Hytham Aljoudi, Mark Studeny

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Background

Treatment of the aorto-ostial coronary artery lesions is one of the most challenging procedures for interventional cardiologists. Stenting of these lesions needs precise positioning, and some protrusion of the stent to the aorta is recommended to achieve complete coverage of plaque and scaffolding of the aortic wall. However, excessive protrusion of the stent into the aorta may lead to technical challenges in subsequent interventions, such as difficult catheter engagement or re-wiring of the stent lumen .

Case Presentation

We describe a case in which the ostial stent of the right coronary artery was totally occluded, with excessive protrusion of the stent into the aortic sinus, and the conventional engagement of the true lumen of the stent was very difficult.

Discussion

The solution was to pass a wire through the struts of the protruding stent and crush it using progressively larger balloons and, finally, a drug-eluting stent was expanded to high pressure.

Novel withdrawal symptoms of a neonate prenatally exposed to a fentanyl analog

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Background

Neonatal abstinence syndrome is a withdrawal syndrome observed in neonates exposed to drugs in utero. NAS, typically observed after opioid exposure, is characterized by specific symptoms affecting the central and autonomic nervous systems, as well as the gastrointestinal system.

Case Presentation

One patient was born at 39 weeks gestation to a 25-year-old mother with history of heroin and buprenorphine use, daily tobacco use, positive for Hepatitis C virus infection, and noncompliance in prenatal care. The neonate exhibited unusual withdrawal symp

Discussion

The patient was stabilized and weaned from methadone, clonidine, and Keppra. Distinctive withdrawal symptoms in this case gave rise to a collaborated investigation between clinicians and community members. Following discharge, the fire chief in Huntington

Loeys-Dietz Syndrome (LDS): Chest pain, Coronary Aneurysms, and Diagnostic Approach

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WV.

Background

Connective tissue disorders are associated with vascular malformations. LDS in particular is associated with development of aggressive vascular aneurysmal disease. We present a case of LDS with extensive vascular disease including coronary aneurysm; the incidence of the latter has been sparingly reported in literature.

Case Presentation

We present a case of a 66 year old male with a rare connective tissue disorder called Loeys Dietz Syndrome Type 2 (LDS2). He presented to our practice with a previous history of multiple aneurysms inclusive of the upper and lower extremities, cerebral art

Discussion

LDS is an autosomal dominant connective tissue disorder characterized by aortic aneurysm and generalized tortuosity. The presence of coronary aneurysm is extremely rare. Coronary button aneurysms have been reported after valve-sparing aortic root replacem

Extensive Cutaneous Reaction and Tongue Raynaudes

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Background

Drug reaction with eosinophilia and systemic symptoms (DRESS) is a rare but potentially fatal disease. We present a case of a patient who developed Tenofovir-induced DRESS that manifested as liver failure, skin eruption, and Raynaud's of the tongue.

Case Presentation

A 65 year-old male patient presented with the complaint of generalized skin rash of five weeks duration. On physical exam, the patient had icteric sclera and a diffuse exfoliative maculopapular rash involving his entire body. On laboratory evaluation, com

Discussion

DRESS is a drug-induced hypersensitivity reaction with onset of symptoms occurring 2-6 weeks after initiation of the offending agent. The liver is most frequently affected but all organs are susceptible. Various medications have been implicated in trigger

Postoperative Group B Streptococcus Septicemia Following Endometrial Ablation

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Background

Thermal endometrial ablation is commonly employed to treat abnormal uterine bleeding refractory to medical management. While postprocedural infection following endometrial ablation has been defined as a possible complication of the procedure, infection rates are estimated to be 1% or less, making it a rare adverse outcome.

Case Presentation

JS is a 33-year-old female that developed Group B Streptococcus (GBS) septicemia after an uncomplicated thermal endometrial ablation. The ablation was for menorrhagia and dysmenorrhea. The procedure was uncomplicated and there was no mention of suspected

Discussion

Of the eight reported post-ablation infections AJOG included in their Expert Review of Endometrial Ablation: postoperative complications, none of them involved Group B Strep. The most common definitive therapy for these patients was hysterectomy. This cas

A Case of Leptomeningeal Carcinomatosis from Aggressive Metastatic Prostate Cancer

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Background

Leptomeningeal carcinomatosis is a rare complication of malignancy. It occurs more commonly with hematologic malignancies and less frequently with solid tumors (usually breast, lung, or melanoma). Although uncommon, leptomeningeal carcinomatosis can arise from prostate cancer. Due to the scarcity of this condition and the lack of sensitivity and specificity of cerebrospinal fluid (CSF) cytology, it was traditionally difficult to diagnose. Advancements of magnetic resonance imaging studies have helped with making the diagnosis; however, pre-mortem diagnosis remains controversial.

Case Presentation

We present a 71-year-old Caucasian male with aggressive prostate cancer (Gleason 4+4) with known metastases to the bones, bone marrow, and bladder presenting with altered mental status, lower extremity weakness, and diarrhea. The patient complained of dia

Discussion

Leptomeningeal carcinomatosis is a rare complication of advanced-stage malignancies. The diagnostic criteria remain controversial, but MRI findings are considered diagnostic and confirmatory testing such as CSF cytology and meningeal biopsy may be employe

Window of the Heart

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Background

Aortopulmonary window is a rare form of congenital heart disease characterized by a usually large connection between the ascending aorta and main pulmonary artery in the setting of two semilunar valves. The defect may be isolated, although associated lesions are present in up to 50% of patients. We present a case of a large aortopulmonary window presenting in infancy.

Case Presentation

Our patient is a 4-week-old former term infant who presented for cardiac evaluation due to a heart murmur and failure to thrive. An echocardiogram was performed that demonstrated a large type II aortopulmonary window with low velocity left-to-right flow,

Discussion

Aortopulmonary window is a rare form of congenital heart disease that presents with congestive heart failure in infancy. There is a risk for development of early pulmonary vascular disease. Echocardiography is the primary diagnostic tool. Surgical, and

Extended psychosis following methamphetamine use: A case series and review of the literature

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Background

Methamphetamine is produced using chemicals including pseudoephedrine, battery acid, and antifreeze, and can produce psychiatric symptoms such as increased energy, irritability, and decreased appetite and sleep. Residual damage to dentition, memory, and solid organs such as the heart and kidneys can occur, although the mechanisms of such damage remain poorly understood. A dose-response relationship between methamphetamine use and psychotic symptoms has been established but little information has been published on the total duration of such symptoms. Lifetime prevalence of meth use in the United States is estimated at 6.4%, with nearly half a million individuals estimated to use per month.

Case Presentation

We present a case series of prolonged psychosis with paranoid features induced by methamphetamine ingestion, in individuals with no personal or family history of psychotic disorder.

Discussion

These cases serve to address the topic of prognosis and duration of psychosis associated with meth use.

Chronic abdominal pain in a geriatric patient: A rare case of a Spigelian hernia

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Background

Spigelian hernia is a rare ventral abdominal defect along the semi-lunar line of the abdomen that can present with nonspecific symptoms. It occurs as a wall defect between the lateral aspect of rectus abdominis muscle and the medial aspect of aponeurosis of the transversus abdominis muscle. Most patients with a hernia notice the defect and bring it to the attention of their primary care physician. Some will have nonspecific abdominal complaints as in our patient and have a delayed diagnosis.

Case Presentation

A 77-year-old female patient presented with a 3-year history of recurrent bouts of left lower quadrant abdominal cramping followed by diarrhea. Most of the time she could lie down and the pain would improve, but sometimes she would go to the ER.

Episodes

Discussion

Primary care physicians have an important role in the diagnosis of hernias with prompt surgical referral needed to prevent complications. The rare Spigelian hernia can present atypically and should be considered in cases of recurrent nonspecific abdominal

A Case of Delayed Post-Hypoxic Leukoencephalopathy in a Catatonic-Appearing Patient

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Psychiatry - JCESOM

Background

Delayed post-hypoxic leukoencephalopathy (DPHL) is a syndrome of cerebral demyelination following hypoxic brain injury. After the initial hypoxic event, there is a non-sustained return to baseline function lasting days or weeks but is ultimately characterized by rapid decline in neurobehavioral function. For some patients, the clinical presentation is primarily parkinsonian but others display symptoms consistent with akinetic mutism. Establishing the diagnosis can be a challenge due to the delayed nature of symptom onset and limited laboratory and neuroimaging options early in the course of illness. Magnetic resonance imaging (MRI) is often normal upon hospital admission but reflects leukoencephalopathic changes later in the disease process. Either subtype of DPHL has high symptom overlap with other more commonly encountered clinical conditions and diagnosis requires a high index of suspicion. We present a case of DPHL presenting with akinetic mutism originally misdiagnosed as catatonia.

Case Presentation

A 50 year-old with history of depression was found unresponsive, hypoxic, and febrile in her home for unknown duration. Computed tomography (CT) of the head and MRI of the brain were initially normal. Liver function tests, amylase, and lipase were elevated.

Discussion

Delayed post-hypoxic leukoencephalopathy should be considered for patients with catatonia-like symptoms who do not respond to a trial of lorazepam and whose presentation involves a hypoxic event with return to baseline cognition and then followed by neuro

A leptomeningeal cyst with a perfused extradural herniation staying viable for a lifetime: a case report.

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Background

Posttraumatic leptomeningeal cyst is an uncommon sequelae of skull fracture in infancy or early childhood rarely found in adults.

Case Presentation

We report the case of a 68-year old male with an asymptomatic right posterior parietal leptomeningeal cyst with herniation of perfused brain parenchyma that has existed within the leptomeningeal cyst for 66 years. The leptomeningeal cyst has caused unilat

Discussion

See above.

Parvovirus induced haemophagocytic lymphohistiocytosis in a young female

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Comprehensive Cancer Center at Cabell Huntington Hospital

Background

Haemophagocytic lymphohistiocytosis (HLH) is a rare and life threatening condition leading to widespread inflammation, cytopenias, hepatitis, fevers, coagulation abnormalities and profound immune dysregulation.

Case Presentation

We describe the case of a previously healthy 3 year old female who presented with fevers and pancytopenia. Following the results of laboratory studies and a bone marrow aspirate examination, the diagnosis of HLH was confirmed and the patient was commenced

Discussion

Given the plethora of other conditions that HLH mimics and the often fatal nature of the disease, this case highlights the importance of prompt diagnosis and treatment to reduce the mortality and morbidity associated with viral induced HLH.

Pseudo-TTP: a case of severe Cobalamin Deficiency

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Background

TTP is rare, characterized by a "pentad" of microangiopathic hemolytic anemia, fever, thrombocytopenia, renal dysfunction, and neurologic manifestations. Caused by a deficiency of ADAMTS-13 metalloproteinase, it has an untreated survival rate of 10%. Rapid treatment with plasmapheresis and transfusions increase survival significantly, but these treatments carry morbidity.

Cobalamin deficiency impairs DNA synthesis, arresting maturation of hematopoietic cell precursors. This creates ineffective erythropoiesis by intramedullary apoptosis. Intravascularly, large erythrocytes are created with rigid, fragile cell membranes, prone to hemolysis by shearing stress. This combined pathology results in Pseudo-TTP. Plasma infusions and plasmapheresis doesn't treat Pseudo-TTP, which requires parenteral replacement of cobalamin.

Case Presentation

A 60 year old female, who was last seen in her normal state of health one week prior, was found down with vacillating levels of consciousness, disorientation and incomprehensible speech. Physical examination showed a scalp hematoma with generalized bruise

Discussion

Making the distinction between TTP and Pseudo-TTP early can minimize potentially dangerous treatments. In Pseudo-TTP, MMA and Homocysteine increase due to a lack of cobalamin cofactor. Inefficient hematopoiesis blunts the reticulocyte count, elevates the

Galactorrhea Associated with Levonorgestrel-Releasing Intrauterine Device Insertion

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Background

Intrauterine devices (IUDs) are a popular method of contraception worldwide. Key to IUD popularity is prolonged functionality, reversibility and effectiveness in pregnancy prevention. Furthermore, the levonorgestrel-releasing intrauterine device (LNG-IUD) has been shown to be an effective treatment for menorrhagia, making it a therapeutic option for women with abnormal uterine bleeding patterns. Typical risks associated with IUDs include risk of: amenorrhea, uterine perforation, uterine embedment, pelvic inflammatory disease and incidence of ectopic pregnancy. However, in recent literature there have been case reports of galactorrhea secondary to IUD insertion. We report one such case of spontaneous galactorrhea in a nulliparous 15 year old female associated with LNG-IUD insertion.

Case Presentation

A 15 year old gravida zero presented for gynecological screening with complaints of irregular menses and required contraception. Given concerns of compliance and history of irregular menstruation, the decision was made for LNG-IUD insertion. The LNG-IUD was

Discussion

This case, along other similar case reports prompt a need for a more extensive understanding of how these localized devices alter systemic physiology.

Central Hypothyroidism in Castleman Disease

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Background

Castleman disease(CD) is angiofollicular lymph node hyperplasia. The disease has inflammatory background.

Methods

case report

Case Presentation

64 years old female, medical assistant, with unicentric hyaline vascular type CD came to the clinic for abnormal thyroid function tests. she was on synthroid in the past and now off for at least one year. She was feeling tired, gained weight, lost hair, h

Discussion

It has been suggested that endocrinopathy in CD are due to autoantibodies produced by plasma cells. Apparently, Imbalance in angiogenic factors that regulate hormone secretion caused by VEGF(Vascular Endothelial Growth Factor) affects the endocrine axes.

Thoracic Aortic Dissection Involving the Renal Arteries in a 64-year-old Male

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Background

Thoracic aortic dissection is a condition in which blood enters through the intimal layer of the descending aorta creating a false lumen of blood within the media of the vessel. The pressure within the proximal aorta may allow blood to propagate down the false lumen extending the dissection into distal vessels, which can lead to malperfusion in areas supplied by the dissected vessel. This report presents a case of an aortic dissection leading to malperfusion of distal extremities due to a dissection of the descending thoracic aorta involving the renal arteries and distal vessels that was initially misdiagnosed based on history, physical exam and MRI.

Case Presentation

A 64-year-old male presented to the emergency department with back pain, bilateral leg numbness, bilateral leg weakness, and left flank pain. Imaging obtained in the emergency department revealed severe hydronephrosis secondary to a 13x9 mm stone in the r

Discussion

The patient described in this report presented with some of the most common symptoms of aortic dissection. The presence of large renal stones producing flank pain, in addition to the missed dissection on MRI, lead to the patient's presenting symptoms bein

Native Aortic Root Thrombosis in Hypoplastic Left Heart Syndrome

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Background

Staged single ventricle palliation in infants and children with hypoplastic left heart syndrome (HLHS) has led to improved outcomes although complications are common. Lifelong surveillance is required to detect these complications. The native aortic root is frequently overlooked during routine imaging. We present a rare case of native aortic root thrombosis after Fontan completion.

Case Presentation

Our patient is an 8-year-old who presented for a routine follow-up visit. She was doing well without any new complaints. A surveillance echocardiogram demonstrated a 1 cm x 1 cm echogenic mass in her native aortic root suggestive of thrombus. The echoc

Discussion

Aortic root thrombosis in patients with HLHS is a rare but serious complication that may lead to ischemia, arrhythmia, stroke, and sudden death. The prognosis is generally poor since the native aortic root is a conduit to retrograde coronary artery perfu

Bipolar Disorder in setting of Arachnoid Cyst

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Psychiatry and Behavioral Medicine

Background

Arachnoid cysts are benign space occupying lesions containing cerebrospinal fluid which are usually diagnosed incidentally on neuroimaging due to most cases being asymptomatic. However several case reports have shown coexistence of psychiatric illness and arachnoid cyst and clinical presentation varies depending on the size and location of the cyst. We present a case of a 51 year old male with bipolar affective disorder with new onset psychosis.

Case Presentation

Patient is 51 year old, single, Caucasian male with past medical history of coronary artery disease, traumatic brain injury, pseudoseizure, and arachnoid cyst on right middle cranial fossa displacing right temporal lobe tip seen on outpatient setting after

Discussion

In conclusion, although we cannot certainly conclude the arachnoid cyst as initial cause of patient bipolar symptoms, we do believe it may have contributed with worsening of symptoms.

Poland Syndrome: A Case of a Left-Handed Infant

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Background

Poland Syndrome (PS) is a rare vascular insult occurring in the 6th week of fetal development. Clinical manifestations range from unilateral absence of the pectoralis major muscle to involvement of breast tissue, ribs and cartilage. In this case, physical evidence of the disease was so minimal that the diagnosis occurred when the infant presented with favored use of his left upper extremity. Many cases of PS have been described in the literature. Few have presented with changes in functional status, in the setting of minimal obvious physical deformity.

Case Presentation

At a 9 month old routine visit, a mother notes her child is left handed. Delivered by an uncomplicated cesarean section at term after normal antenatal and postnatal courses. Physical examination revealed a subtle asymmetry of the chest wall only. Imagi

Discussion

Overall, there is a human right-handed bias, seen best when the development of handedness is analyzed longitudinally. Infants eventually developing right-handedness, have a more homogenous development trajectory than do eventual non-right hand dominant (

Meckel's Diverticulum as a Rare Cause for Chronic Abdominal Pain in an Adult

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Background

We present a case supporting laparoscopy as an effective diagnostic & therapeutic modality in the management of adult patients presenting with chronic abdominal pain.

Case Presentation

26 yo male presented with periumbilical & RLQ pain persisting for over 2 yrs. The pain was episodic, increasing with food. He had nausea. Occasional diarrhea/constipation but denied hematochezia or melena. EGD, Colonoscopy & Abdominal US; results were neg

Discussion

Meckel's diverticulum is the most common gastrointestinal congenital malformation. Intestinal obstruction from intussusception or a mechanical volvulus around a persistent fibrous band is the most common presentation in adults.¹ Several risk factors for d

Trauma Induced Yellow Marrow Reconversion Mimicking Bone Malignancy in a Toddler

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Background

We describe the case of a 19-month-old who presents with symptoms concerning for osteogenic malignancy of the tibia. However, the only significant finding was asymmetric yellow marrow reconversion of the tibia diagnosed via MRI.

Case Presentation

A 19-month-old male presented to the emergency department with a two-week history of intermittent nocturnal left leg pain, with associated difficulty walking. The patient's symptoms were alleviated by ibuprofen until 2 days prior to presentation when pai

Discussion

Bone marrow conversion is a normal physiologic process in which hematopoetically active red marrow is replaced with yellow marrow. It is well documented that yellow bone marrow can undergo reconversion to red marrow during times of physiologic stress. T

Postural Orthostatic Tachycardia Syndrome; a Dysautonomia from Hypermobile Ehlers Danlos Syndrome

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Background

Chronic fatigue is a common problem encountered by physicians. In the 1800's "Neurosthenia" described the tachycardia and fatigue keeping adolescent soldiers out of the Civil War but wasn't officially recognized as orthostatic intolerance until 1932. In 1993 the dysautonomia, Postural Orthostatic Tachycardia (POTS) was recognized. Six years later it was connected to hypermobile Ehlers Danlos Syndrome (hEDS). Hippocrates recognized hypermobile individuals in the fourth century BC. The heterogeneous spectrum of EDS subtypes lead to a wide array of phenotypic outcomes. With this variety of symptoms, physicians may not easily identify a syndrome from seemingly unrelated traits.

Case Presentation

A high school freshman basketball player developed profound fatigue following a practice. After four weeks of progressive weakness, Mononucleosis was suspected, but tests were normal. After missing more school than attending, the diagnosis of Chronic Fa

Discussion

The ubiquitous presence of connective tissue enables a heterogeneous phenotypic expression, resulting in a wide range of symptoms. Regardless of phenotype, common endpoints are seen. One is chronic pain, which can be due to myofascial, osteoarthritic, he

Use of an Atypical Antipsychotic in Post-Partum OCD

Adam Schindzielorz, MD

Psychiatry

Background

Postpartum OCD is an illness that occurs in roughly 2.3-2.6% of the population. Those with subclinical symptoms occur at an even higher rate, suggesting that these symptoms are not at all uncommon in this population. Comorbid with postpartum OCD are depressive symptoms and suicidality, making this illness something that can easily result in severe functional impairment. Thereby it is of the utmost importance to be aware of the symptomatic progression of the illness, adept at early detection and aggressive in its management.

Case Presentation

Provided is a case of a 22-year-old female who presented to as an OBGYN emergency referral due to severe depressive symptoms. On evaluation she made it known that she had been suffering from severe obsessive ideations involving thoughts of accidentally co

Discussion

Overall our case demonstrates a patient with classic yet severe symptoms of postpartum OCD and illustrates the significant level of impairment that can be instilled by this illness. Furthermore it demonstrates successful management utilizing an atypical a

Movement Disorders as a Prodrome for Schizophrenia

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Marshall Psychiatry

Background

Schizophrenia is relatively common, occurring in 1% of the population and is often highly impairing to its sufferers. Thereby, it is of the utmost importance to be able to recognize and treat this disorder as early as possible. For the last several decades research has attempted to elucidate a variety of markers or predictive factors in order to aid in the identification of patients at high risk of developing a schizophrenia spectrum disorder. One such factor that has been studied are premorbid or prodromal movement disorders. Currently the literature has identified clear motor aberrations early in life, in some cases beginning in infancy; these have ranged from infantile hypotonicity to increased facial and upper body dyskinesias, as was seen in our patient. Many of the aforementioned changes are noted to develop very early on in the patient's course.

Case Presentation

We present a case of a 34-year-old male who developed a persistent motor and vocal tic disorder roughly 4 years prior to the development of schizophrenia with symptoms having continued throughout the course of his illness.

Discussion

The majority of the reviewed literature identifies movement disorders as beginning in adolescence with eventual development of a psychotic illness, however our case is unique in that it demonstrates an individual with no known motor symptoms until adulthood

Preterm Premature Rupture of Membranes in a Fetus with Multiple Anomalies

Emily Sloane, Amy Roy, Brenda Mitchell
Obstetrics and Gynecology

Background

Early detection of fetal anomalies allows for better preparation and planning for both the delivery and care of the infant after birth.

Case Presentation

This patient is a 38 year old primigravida who presented to labor and delivery triage at 33 weeks and 1 day gestation for preterm premature rupture of membranes. The pregnancy was complicated by multiple fetal anomalies, including transitional AV septal d

Discussion

VACTERL association is on the differential diagnosis for this fetus. VACTERL association includes abnormalities derived from the embryonic mesoderm including vertebral, anal, cardiac, trachea-esophageal fistula, renal, and limb defects, typically defined

Rickets Treatment Improves more than Bone Health in Toddler with Autism Spectrum Disorder

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1-3: Department of Pediatrics, Joan C Edwards School of Medicine, Huntington, WV

Background

We present a case supporting vitamin D supplementation as a potential treatment for symptoms of Autism Spectrum Disorder (ASD).

Case Presentation

A 3-year-old male presented with his mother for complaints of decreased urine output, decreased intake, fussiness, vomiting and refusal to walk gradually over two weeks. Medical history for this child included ASD without any development of spoken language.

Discussion

Children with ASD are found to have lower levels of vitamin D than their healthy peers in case-control studies.¹ However, these children are also shown to have a limited food repertoire compared to age-matched peers making it unclear whether vitamin D deficiency

A case of Ceftriaxone induced severe asymptomatic thrombocytopenia

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Background

Drug induced immune thrombocytopenia is a rare and uncommon adverse reaction caused by drug dependent antibodies that bind to platelets only in the presence of implicated drug. Although, commonly implicated drugs include quinine, quinidine, trimethoprim/sulfamethoxazole and vancomycin, Ceftriaxone induced DIITP is relatively uncommon .

Case Presentation

We present a 81 year old elderly, pleasant female with past medical history significant for hypertension, osteoarthritis and recent recurrent UTI's who presented to the CHH ED on 12/02/2017 with generalized weakness, nasal congestion and fatigue worsened

Discussion

In summary, ceftriaxone induced thrombocytopenia is rare and uncommon adverse reaction caused by drug dependent antibodies which bind to platelets. This condition is a challenge to the physicians as it demands not only timely recognition but also ability

Penile Mondor's Disease-Cinical evidence of thrombus extension after initial LMWH administration

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Background

Mondor's disease is a thrombophlebitis of the superficial veins. First described in 1939 by Henri Mondor, a variant of the disease describing an isolated thrombosis of the dorsal superficial vein of the penis was identified in 1958. Penile Mondor's Disease is often associated with pain, sexual dysfunction, and psychological distress. Due to a paucity of published scientific inquiry, effective interventions remain elusive, and the morbidity associated with the condition remains relatively unchanged since discovery. The current work describes the course of the disease in a young man after administration of Low Molecular Weight Heparin.

Case Presentation

A 28-year-old man presented with three days of penile pain exacerbated by erection. History was unremarkable including prior episodes of clotting or abnormal hematologic assays. Palpation of the dorsal penis revealed a tender, non-compressible mass exten

Discussion

There is no consensus for treatment of PMD. Administration of NSAIDS have been reported without clear efficacy. It is thought that early in the disease, inflammatory symptoms cause vein induration with a cordlike appearance with recanalization occurring

**Case of Pantoea agglomerans bacteremia complicating Rituximab Treatment of
Non-Hodgkins lymphoma**
Chelsey White

Pulmonary, Joan C. Edwards School of Medicine

Background

Pantoea agglomerans, formerly known as Enterobacter agglomerans, is a bacteria typically found in plants and soil that rarely causes human infections. It has been reported as an opportunistic infection in those with advanced cancers. This case provides an example of an immunocompromised host whose chemotherapy regimen was complicated by bacteremia.

Case Presentation

A 51 year-old female with a past medical history of recurrent non-Hodgkin's lymphoma and COPD, who presented with fevers, shortness of breath and productive cough. Her oncologic history includes initial diagnosis of NHL in 2010 and recurrence in 2015, tre

Discussion

Pantoea agglomerans is a gram- negative aerobic bacillus, from the family Enterobacteriaceae, which rarely cause infections in humans. It is commonly found on plant material, soil and animal products. Typical infections of P.agglomerans in humans are a re

Code Broken Heart

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Background

Takotsubo cardiomyopathy is a more frequently recognized condition that is still poorly understood. Patients will often present just like an acute ST elevation MI and no significant coronary artery disease found on left heart catheterization. Left ventriculogram will show classic apical hypokinesis. The etiology of this disease needs to be further elucidated. A classic case of Takotsubo cardiomyopathy has been outlined with a complicated presentation.

Case Presentation

57 year old female was found down on her front porch. She was last seen the night before. Prior to this episode she had no medical complaints. She was intubated on arrival and the investigation began. Stroke alert was initiated prior to hospital arrival.

Discussion

Takotsubo cardiomyopathy was first described by Sato et al in 1990 when left ventriculography was thought to mimic an octopus trap. The presence of this condition has been growing rapidly since it was originally described in 1990. The mechanism is though





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