ELEVENTH ANNUAL
ACADEMIC EXCELLENCE DAY
WEDNESDAY, MAY 2, 2007

The Arizona Medical Education Consortium (AzMEC) is pleased to present Academic Excellence Day as an educational program in joint sponsorship with Banner Good Samaritan Medical Center, Maricopa Integrated Health System, Mayo Clinic Arizona, Phoenix Baptist Hospital, Phoenix Children’s Hospital, St. Joseph’s Hospital & Medical Center and Scottsdale Healthcare.

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ACADEMIC EXCELLENCE DAY COMMITTEE MEMBERS:

Arizona Medical Education Consortium
Karen Archibald
Michael Grossman, MD, MACP
Brian Johnson

Banner Good Samaritan Medical Center
Richard Gerkin, MD
Heidi Vega

Maricopa Integrated Health System
David Drachman, PhD
Michael Grossman, MD, MACP
Kathleen Mathieson, PhD
Nancy Partington
Phyllis Thackrah, MS

Mayo Clinic Arizona
Leanne Andreasen
Joseph Drazkowski, MD
Linda Farquhar
Lilia Murray

Phoenix Baptist Hospital
Martin Krepcho, PhD
Wendy Orm, MD

Phoenix Children’s Hospital
Christine Aragon
Grace Caputo, MD, MPH

St. Joseph’s Hospital and Medical Center
Linda Larson Carr, PhD
Charles Daschbach, MD, MPH
Sallie Weems, RN

Scottsdale Healthcare
Suzanne Anderson
Robert Marlow, MD
ELEVENTH ANNUAL
ACADEMIC EXCELLENCE DAY
WEDNESDAY, MAY 2, 2007

BANNER GOOD SAMARITAN MEDICAL CENTER
MEDICAL EDUCATION AMPHITHEATER – ORAL PRESENTATIONS
SANDSTONE CONFERENCE ROOMS – POSTER PRESENTATIONS

SCHEDULE OF EVENTS

7:15 a.m. – 7:25 a.m. Welcome Michael Grossman, MD, MACP Academic Excellence Day

Moderators
Michael Grossman, MD, MACP Joseph Drazkowski, MD
Associate Dean for GME Program Director Epilepsy Fellowship
University of Arizona College of Medicine-Phoenix Co-Director of Comprehensive
Executive Director Epilepsy Center
Arizona Medical Education Consortium (AzMEC) Mayo Clinic Arizona

7:25 a.m. – 12:10 p.m. *Oral Presentations Amphitheater LL2

9:40 a.m. – 9:55 a.m. Mid-Morning Break Medical Education / Refreshments Conference Rooms B/C LL2

12:10 p.m. – 1:10 p.m. “Watch One, Do One, Teach One”.....Never Again! (Will you soon learn surgery at home?)

Marshall (Mark) Smith, MD, PhD Kanav Kahol, PhD
Director of Simulation & Education Assistant Research Professor
Training Center School of Computing & Informatics
Director of Endoscopic Training in Ob/Gyn Arizona State University
Medical Director of Telemedicine Simulation & Education Training Center
Banner Good Samaritan Medical Center Banner Good Samaritan Medical Center

1:10 p.m. – 3:55 p.m. *Oral Presentations Amphitheater LL2

2:25 p.m. – 2:40 p.m. Mid-Afternoon Break Medical Education / Refreshments Conference Rooms B/C LL2

4:00 p.m. – 4:30 p.m. Dessert Reception Medical Education Conference Rooms B/C LL2

4:30 p.m. *Awards Ceremony Amphitheater LL2

*The oral presentations and awards ceremony will take place in the Banner Good Samaritan Medical Education Amphitheater – Lower Level 2 (LL2)

The poster exhibition will take place in the Sandstone Conference Rooms (Lobby Level)

Academic Excellence Day is an opportunity to focus attention on the magnitude and variety of clinical and bench research being done by residents, fellows, graduate students, clinical allied health staff, and physician staff.
### Judges

<table>
<thead>
<tr>
<th>Banner Good Samaritan Medical Center</th>
<th>Phoenix Baptist Hospital</th>
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<tbody>
<tr>
<td>Steven Brown, MD</td>
<td>Robert Kravetz, MD</td>
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<td>Mary Ellen Dirlam, MD</td>
<td>Gary Reichard, MD</td>
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<td>Peter McKellar, MD</td>
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<td>Anne-Michelle Ruha, MD</td>
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<td>Andrea Waxman, MD</td>
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<tr>
<th>Maricopa Integrated Health System</th>
<th>Phoenix Children’s Hospital / Maricopa Integrated Health System</th>
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<tr>
<td>Kevin Foster, MD</td>
<td>Karen Kando, MD</td>
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<td>Patricia Graham, MD</td>
<td>Daxa Patel, MD</td>
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<td>Eric Katz, MD</td>
<td>Mita Sinha, MD</td>
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<td>Karyn Kolman, MD</td>
<td>Shawn McMahon, MD</td>
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<td>Maria Manriquez, MD</td>
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<td>Lora Nordstrom, PhD</td>
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<td>Carla Pauley, BS</td>
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<td>Steve Stacpizynski, MD</td>
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<td>Thomas Zheng, MD</td>
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<th>Mayo Clinic Arizona</th>
<th>Scottsdale Healthcare</th>
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<tr>
<td>Joseph Drazkowski, MD</td>
<td>Wendy Ellis, MC, LPC</td>
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<td>Michael Grover, DO</td>
<td>Cynthia Kegowicz, MD</td>
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<td>David Gullen, MD</td>
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<td>Kenneth Mishark, MD</td>
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<td>Katherine Noe, MD, PhD</td>
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<td>Teri Pipe, PhD</td>
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<td>Susan Wilansky, MD</td>
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<tr>
<td>Frederick Dettmann, MD, Retired</td>
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<td>Peter Jurutka, PhD, UA/ASU</td>
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<td>Sue Kim, PhD, UA/ASU</td>
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<td>Kathy Matt, PhD, UA/ASU</td>
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<td>Maricela Moffitt, MD, MPH UA</td>
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<td>Paul Standley, PhD UA/ASU</td>
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Residents and fellows of Banner Good Samaritan Medical Center, Maricopa Integrated Health System, Mayo Clinic Arizona, Phoenix Baptist Hospital, Phoenix Children’s Hospital, St. Joseph’s Hospital & Medical Center and Scottsdale Healthcare were invited to submit abstracts for oral presentations. Abstracts for poster exhibition were accepted from residents, fellows, attending physicians, nurses, nurse practitioners, physician assistants, allied health professionals, and PhDs associated with these affiliated residency programs or clinical departments.

### Awards

Twenty-eight abstracts were selected for oral presentation. A panel of jurors will judge the presentations and award the prizes. Awards will be presented to a resident and fellow for each of the following placements in each category.

#### Oral Presentation:
- Clinical Research – First Place: $250
- Clinical Research – Second Place: $150
- Clinical Research – Third Place: $100
- Case Report/Series – First Place: $150
- Case Report/Series – Second Place: $100

#### Poster Presentation:
- Clinical Research – First Place: $150
- Clinical Research – Second Place: $100
- Clinical Research – Third Place: $50
- Case Report/Series – First Place $100
- Case Report/Series - Second Place $50

These prizes will be presented during the Awards Ceremony at 4:30 pm in the Medical Education Amphitheater. Primary authors of all submitted abstracts will receive a certificate recognizing their participation in the 2007 Academic Excellence Day program.
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| 7:25 AM | 56   | A COMPARISON STUDY OF PRELIMINARY SOFT TISSUE DISTRACTION VS. CHECK REIN LIGAMENT RELEASE IN THE TREATMENT OF DUPUYTREN’S PIP JOINT CONTRACTURES | Stephen (Aaron) Klomp, MD  
Mayo Clinic Arizona  
Aesthetic & Reconstructive Surgery |
| 7:40 AM | 105  | THERMAL MAN: THREE-DIMENSIONAL INTERACTIVE MODEL FOR DOCUMENTATION OF BURN INJURY AND WOUNDS, INTERVENTION AND HEALING | Mary Lumpkin, MD  
Maricopa Integrated Health System Surgery |
| 7:55 AM | 57   | SPECT/CT FOR THE IDENTIFICATION OF SENTINEL LYMPH NODES IN CUTANEOUS MALIGNANCIES | Bernadette Laxa, MD  
Mayo Clinic Arizona Surgery |
| 8:10 AM | 69   | ANTERIOR MEDIASTINOTOMY FOR PARATHYROIDECTOMY                          | Nagesh Ravipati, MD  
Mayo Clinic Arizona Surgery |
| 8:25 AM | 75   | IMPACT OF MYOCARDIAL SCAR BURDEN ON LEFT VENTRICULAR IMPROVEMENT IN HEART FAILURE PATIENTS UNDERGOING CARDIAC RESYNCHRONIZATION THERAPY (CRT)  | Damrong Sukitpunyaroj, MD  
Mayo Clinic Arizona  
Cardiac Electrophysiology |
| 8:40 AM | 19   | THE EFFECT OF FATIGUE ON COGNITIVE AND PSYCHOMOTOR SKILLS OF SURGICAL RESIDENTS | Mario Leyba, MD  
Banner Good Samaritan Medical Center Surgery |
| 8:55 AM | 12   | BALANCING LIFE AND DEATH: A CASE OF PROLONGED SOMATIC SUPPORT IN A BRAIN DEAD PREGNANT PATIENT | Ruth Franks, MD  
Banner Good Samaritan Medical Center  
Internal Medicine |
| 9:10 AM | 14   | THE FIBROBLAST GROWTH FACTOR SIGNALING PATHWAY AND HUMAN DISEASE        | Omar Ibrahimi, MD  
Banner Good Samaritan Medical Center  
Internal Medicine |
| 9:25 AM | 15   | A QUANTITATIVE EVALUATION OF ST-SEGMENT CHANGES ON THE 18-LEAD ELECTROCARDIOGRAM DURING ACUTE CORONARY OCCLUSIONS | David Kahn, MD  
Banner Good Samaritan Medical Center  
Internal Medicine |
| 9:40 AM |      | BREAK                                                                 |                                                                            |
| 9:55 AM | 30   | HEALTH INFORMATION TECHNOLOGY AND HOSPITAL QUALITY OF CARE             | Terrence Adam, MD, PhD  
Mayo Clinic Arizona  
Internal Medicine |
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<td>10:10 AM</td>
<td>22</td>
<td>VARIABILITY AND PREDICTORS OF BLOOD TRANSFUSION IN PRIMARY CORONARY</td>
<td>Kelly McDonnell, DO Banner Good Samaritan Medical Center Internal Medicine</td>
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<td>ARTERY BYPASS GRAFT PATIENTS (CABG)</td>
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<td>THE NATURAL HISTORY OF DYSPLASIA IN A LARGE COHORT OF PATIENTS WITH</td>
<td>Artur Miernik, DO Banner Good Samaritan Medical Center Internal Medicine</td>
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<td>BARRETT'S ESOPHAGUS</td>
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<td>10:40 AM</td>
<td>130</td>
<td>DIAGNOSING HIRSHPRUNGS</td>
<td>Timothy Owolobi, MD Phoenix Baptist Hospital Family Medicine</td>
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<td>METHIMAZOLE-INDUCED HEPATITIS</td>
<td>Andrew Cunningham, DO Scottsdale Healthcare Family Medicine</td>
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<td>Michael Krue, MD Phoenix Children's Hospital/ Maricopa Integrated Health System Pediatrics</td>
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<td>MICROARRAY-BASED GENOMIC COPY NUMBER ANALYSIS</td>
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<td>Nicholas Perera, MD Maricopa Integrated Health System Emergency Medicine</td>
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<td>EMERGENCY PHYSICIANS</td>
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<td>115</td>
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<td>Gary Sanderson, DO Maricopa Integrated Health System Emergency Medicine</td>
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<td>COMPLIANCE WITH AMERICAN COLLEGE OF CARDIOLOGY AND AMERICAN HEART</td>
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<td>ASSOCIATION GUIDELINES FOR THE TREATMENT OF ACUTE CORONARY SYNDROMES</td>
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<td>11:55 AM</td>
<td>85</td>
<td>CENTRAL LINE EMERGENCY ACCESS REGISTRY (CLEAR); A MULTICENTER STUDY</td>
<td>Adam Ball, MD Maricopa Integrated Health System Emergency Medicine</td>
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<td>TO DETERMINE RESIDENT COMPETENCY WITH CENTRAL VENOUS CATHETER</td>
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<td>LUNCH - KEYNOTE SPEAKERS</td>
<td>Marshall (Mark) Smith, MD, PhD Kanav Kahol, PhD</td>
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<td>146</td>
<td>THE IMPACT OF INDUCTION OF LABOR ON CESAREAN DELIVERY AND NEONATAL</td>
<td>Kyle Beiter, MD **MIHS/SJH Phoenix Integrated Residency in Obstetrics and Gynecology</td>
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<td>RANDOMIZED TRIAL OF INDUCTION VERSUS EXPECTANT MANAGEMENT IN POORLY-DATED POST-DATES PREGNANCY</td>
<td>Saramati Jayaraman, MD **MIHS/SJH Phoenix Integrated Residency in Obstetrics and Gynecology</td>
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<td>166</td>
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<td>Jon Machayya, MD St. Joseph’s Hospital and Medical Center Radiology</td>
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<td>Courtney Mitchell, MD St. Joseph’s Hospital and Medical Center Radiology</td>
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<td><strong>BREAK</strong></td>
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<td>Amy Trahan, MD St. Joseph’s Hospital and Medical Center Radiology</td>
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<td>Christopher Delbridge, DO Maricopa Integrated Health System Radiology</td>
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<td>17</td>
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<td>Geetha Kolli, MD Banner Good Samaritan Medical Center Hepatology</td>
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<td>3:25 PM</td>
<td>73</td>
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<td>Vandana Singh, MD Mayo Clinic Arizona Hepatology</td>
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<td>Christopher Wells, MD Mayo Clinic Arizona Gastroenterology</td>
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**The Phoenix Integrated Residency in Obstetrics and Gynecology (PIROG) program is located at Maricopa Integrated Health System and St. Joseph’s Hospital and Medical Center.**
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<td>Lila Ammouri, MD Internal Medicine Banner Good Samaritan Medical Center</td>
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<td>2</td>
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<td>Jeanine Arndal, MD Obstetrics and Gynecology Banner Good Samaritan Medical Center</td>
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<td>3</td>
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<td>Hojatollah Askari, MD Internal Medicine Banner Good Samaritan Medical Center</td>
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<td>Lydia Aye, DO Internal Medicine Banner Good Samaritan Medical Center</td>
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<td>A RETROSPECTIVE ELEVEN YEAR REVIEW OF ACUTE PANCREATITIS IN PREGNANCY</td>
<td>Charles Bennett, MD Obstetrics and Gynecology Banner Good Samaritan Medical Center</td>
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<td>SURVIVAL WITH AN EXTREMELY HIGH SALICYLATE LEVEL</td>
<td>Robert Cannon, DO Toxicology Banner Good Samaritan Medical Center</td>
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<td>PANCREATICODUODENECTOMY: A COMMUNITY HOSPITAL EXPERIENCE</td>
<td>Alex Cantafio, MD Surgery Banner Good Samaritan Medical Center</td>
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<td>8</td>
<td>COMPLIANCE WITH ACC/AHA GUIDELINES FOR RIGHT - SIDED ECG LEADS IN PATIENTS WITH INFERIOR WALL ST ELEVATION MYOCARDIAL INFARCTION</td>
<td>Micheleanne Celigoj, MD Cardiology Banner Good Samaritan Medical Center</td>
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<td>Adam Cohen, MD Internal Medicine Banner Good Samaritan Medical Center</td>
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<td>FALCI PARUM IN PHOENIX: AN IMPORTED CASE OF SEVERE MALARIA</td>
<td>Wendi Drummond, DO Med/Peds Banner Good Samaritan Medical Center</td>
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<td>PSEUDOINFARTION PATTERN IN A 21 YEAR OLD FEMALE WITH TUBERCULOUS MYOCARDITIS</td>
<td>Nahel Farraj, DO Cardiology Banner Good Samaritan Medical Center</td>
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<td>PEDIATRIC BRAIN TUMOR OR BAD HAIR DAY A CASE REPORT</td>
<td>Bryan Glick, DO Family Medicine Banner Good Samaritan Medical Center</td>
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<td>Jason Klein, MD</td>
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<td>Shahnaz Mazdeh, MD</td>
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<td>THE NATURAL HISTORY OF DYSPLASIA IN A LARGE COHORT OF PATIENTS WITH BARRETT’S ESOPHAGUS</td>
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<td>CONTINUITY OF CARE IN A FAMILY MEDICINE CLINIC WITH OPEN-ACCESS SCHEDULING COMPARED TO TRADITIONAL SCHEDULING</td>
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<td>Dan Quan, DO Toxicology Banner Good Samaritan Medical Center</td>
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**The Phoenix Integrated Residency in Obstetrics and Gynecology (PIROG) program is located at Maricopa Integrated Health System and St. Joseph’s Hospital and Medical Center.
A CASE OF TELEANGIECTATIC FOCAL NODULAR HYPERPLASIA

Lila Ammouri MD; Ester Little MD; Leslie Krahl, MD; Ann Moore, NP; Mark Wong MD; Richard Manch MD

Introduction: Focal Nodular hyperplasia (FNH) is the second most common benign solid lesion of the liver. Its etiology is unclear, it is more common in women and in most cases it is found incidentally. Telangiectatic FNH is considered an atypical variant of FNH. This rare subtype of FNH is more likely to be symptomatic and more commonly seen when multiple rather than single lesions are present. It has been recently shown that telangiectatic FNH displays a molecular and clinical pattern closer to that of hepatocellular adenomas than FNH. The authors describe the case of a patient recently diagnosed with telangiectatic FNH.

Case report: 38 yo Chinese female with a past medical history significant for lactose intolerance and anemia, was referred to the Liver Disease Center for evaluation of liver masses diagnosed by US. The patient presented to her physician with abdominal pain and Ultrasound exam showed 2 liver lesions measuring 1.0 and 1.9 cm. Patient was on oral contraceptive pills (OCP) for several years. She did not take any other medications. She denied tobacco use and had no risk factors for viral hepatitis. She reported 1-2 drinks no more than 2-4 times per month. Patient was raised in the U.S.A., but both parents were born in China. Physical exam was normal. CBC, CMP, PT, AFP, CA 19-9 were all within normal range. HBV and HCV serologies were both negative. CT and MRI were performed and the MRI showed multiple enhancing lesions, not consistent with hemangiomas. Liver biopsy of both the unaffected liver and one of the lesions was performed. Biopsy of the unaffected liver was unremarkable. The lesion itself showed marked sinusoidal congestion and portal tract like areas with arteries and veins, but no bile ducts. Extramedullary hematopoesis was present along with areas of collapse and a variation in cell plate thickness. No evidence of malignancy. Diagnosis: teleangiectatic FNH or telangiectatic hepatocellular adenoma.

Discussion: Telangiectatic type of FNH was first described in 1985 by Wanless and Cols. Other reports have confirmed the initial description that these lesions are more common in female patients on oral contraceptive pills. Unlike patients with classical forms of FNH, patients with telangiectatic FNH are more likely to have abdominal pain, which may be secondary to hemorrhage and necrosis within the nodule. The patient reported meets all the epidemiological and clinical features of teleangiectatic FNH; female, on OCP, presented with abdominal pain and had multiple lesions. Biopsy further confirmed the diagnosis. Recent reports have shown that telangiectatic FNH displays a clinical and molecular pattern closer to that of hepatocellular adenomas than FNH, and suggest that these lesions should be called telangiectatic hepatocellular adenomas. These findings have very important clinical implications because malignant transformation of hepatocellular adenomas while uncommon is well documented in the literature. The patient was asked to discontinue the use of oral contraceptive pills and return to the office for follow up MRI and repeat laboratory tests. Decrease in the size of the lesions can be seen after discontinuation of oral contraceptive pills. Serial MRIs will be done every 3 to 6 months for surveillance.
Purpose: Cervical incompetence refers to the passive and painless dilation of the cervix during the second trimester of pregnancy, which routinely results in recurrent pregnancy loss. The exact incidence in pregnancy remains difficult to determine reliably, in part, because of variation in diagnostic criteria. Transabdominal cerclages are reserved for women with cervical incompetence who have either failed previous transvaginal cerclages or in whom a transvaginal cerclage is technically impossible to perform due to extreme shortening, scarring, or laceration of the cervix. The technical skill and experience of the operator are crucial to the success of the procedure.

Methods: A retrospective chart review was performed at Banner Good Samaritan Medical Center in Phoenix, Arizona for the years 1988-2004. During this time, thirty-three charts were found to have had a transabdominal cerclage placed. Information obtained from these thirty-three charts included gravidity and parity, number of prior losses, number of prior cerclages, current gestational age, gestational age at delivery, complications of procedure, complications of pregnancy, and birth weight of infant.

Results: Results showed that eighteen out of thirty-three (48%) had a history of a previous loss between 12-24 weeks gestation and twelve of thirty-three (45%) had a history of two or more losses between these gestational ages. Thirteen of thirty-three (32.5%) had a history of a previous loss between 24-36 weeks gestation, and five out of the thirty-three (24.2%) had a history of two or more previous losses between these gestational ages. Twenty six of the thirty-three cerclages were placed between 10-15 weeks gestation with the average gestation being twelve to thirteen weeks. Two cerclages were placed in non-pregnant patients. Only one pregnancy was a twin gestation (dichorionic/diamniotic); the remainder were singletons. Of the thirty-three, two suffered a major complication. The first patient experienced premature rupture of membranes and vaginal bleeding at the time of the procedure. The cerclage was immediately removed and the patient delivered at 12 5/7th weeks. The second had vaginal bleeding and a diagnosed abruption with delivery at 18 weeks. Minor complications included a patient with a post-operative fever of unknown etiology, another patient had a wound cellulitis on post-operative day eight, and lastly there was a patient with a wound hematoma, and skin dehiscence. Twenty five of the thirty-three (75%) had pregnancies complicated by preterm delivery (<37 wks). However, some of these deliveries were planned after 36 weeks, and 2 had documented fetal lung studies. Only one pregnancy was complicated by premature rupture of membranes, chorioamnionitis and subsequent deliver at twenty-nine weeks gestation. This occurred in the only twin pregnancy and these infants weighed 1250 and 1450 grams. There was no outcome data available for eleven patients. Of the twenty-two remaining patients, one delivered at 34 weeks, five delivered between 35-36 weeks gestation, ten delivered between 36-37 weeks and four patients delivered after 37 weeks. Fifteen of the twenty-two infants had recorded, available birth weights ranging from 1730-3335 grams. All infants were delivered by cesarean section.

Conclusion: In conclusion, our data is in agreement with that previously published regarding transabdominal cerclage placement. Our postoperative morbidity and incidence of pregnancy complications was low. The overall success rate appears to be 86.9 % based on twenty successful pregnancies out of twenty three possible candidates. This is comparable to world literature that indicated an 89% success rate in 130 pregnancies. Therefore, transabdominal cerclage placement continues to be a safe and effective procedure for reducing the incidence of spontaneous pregnancy loss in select patients with cervical incompetence.
PERICARDIAL EFFUSION WITH SEVERE DILATED CARDIOMYOPATHY DUE TO SYSTEMIC SCLEROSIS: A CASE REPORT

H. Askari, MD, Biglari, David, DO, A. Kaykha, MD

INTRODUCTION: Systemic sclerosis is a chronic multisystem disorder of unknown etiology, characterized by thickening of the skin caused by accumulation of connective tissue by structural and functional abnormalities of visceral organs. Mainly there are two forms 1) diffuse cutaneous disease and 2) limited cutaneous disease. The diffuse form has clinical features such as Raynaud’s phenomenon, skin thickening, subcutaneous calcinosis, telangectasias, arthralgias, myopathy, esophageal dysmotility, pulmonary fibrosis, PHT and rarely severe DCM.

CASE REPORT: A 33 y/o female arrived at the medical facility with joint swelling of upper and lower extremities. Blood was drawn for an ANA titer, and the patient was referred to a rheumatologist. She returned to clinic for follow-up; the ANA titer was positive with a speckled pattern at 1:1280. She was started on PO steroids for suspicion of SLE. Later the patient called her PCP complaining of severe dyspnea on minimal exertion, chest tightness, severe arthralgias and dysphagia. She was admitted to the hospital for further care. PE: Vital signs on admission BP 119/85, pulse 110, RR 32, sats 98% on RA, temp 98.2. General: A&Ox3, anasarca, tachycardic and onychomycosis on fingers. Labs: WBC 16.6, H&H 12.5 and 37.5, Platelets 463, Albumin 1.8, UA with hyaline casts, AST 105, ALT 64, CRP 87.3, ANA positive with titer >1:2280, C3 361 and C4 18, anti-kidney/liver antibodies negative, anti topo-isomerase-1[SCL-70] positive, anti-centromere negative, and protein electrophoresis normal. Her EKG revealed low voltage in the frontal leads; an echocardiogram showed a large pericardial effusion with restriction of RV expansion. Her estimated LVEF was 10-15%. A CXR was positive for bilateral pleural effusions. She had a pericardial window created by a CT surgeon, and also had bilateral chest tube placement. She was treated with systemic steroids. During the course of the hospitalization, she developed MRSA bacteremia, secondary to periungual infection around her fingernails, and was treated with Vancomycin. She was diagnosed with systemic sclerosis and sent home on low dose steroids and a CCB. Post hospitalization she had a repeat echocardiogram with a LVEF of 55-60%.

DISCUSSION: This young woman had rapid development of severe dilated cardiomyopathy and a pericardial effusion due to systemic sclerosis. She responded well to steroids and a pericardial window, with complete reversal of her cardiomyopathy.
ACUTE HEPATITIS IN A 24 YEARS OLD MALE FROM NUTRITIONAL SUPPLEMENT USE: A CASE REPORT

Lydia Aye DO, Kandarp Patel DO

Introduction: Drug induced liver injury (DILI) can present from minor non specific change to the liver to acute liver failure to even liver cancer. DILI is defined as an increase in ALT, alkaline phosphatase, or bilirubin twice the upper limit of normal and variable histologic findings. The hepatotoxicity can manifest within hours to few days and can last from one week up to three to six weeks. DILI is a relatively uncommon cause of jaundice or acute hepatitis; its frequency ranges from 1 in 10,000 to 1 in 100,000. Risk factors for DILI include age, gender, dose, genetic factors, history of other drug reactions, excessive alcohol use, nutritional status, preexisting liver disease, other diseases disease/conditions, and concomitant drug use.

Case Report: A 24 year old male presented to the VA for progressive fatigue for one week. He believed he had the stomach flu – symptoms of nausea, vomiting, diarrhea, and decreased appetite for one week. Most of his symptoms had resolved on presentation except for his diarrhea. He described his diarrhea as five or six watery dark colored bowel movements per day. He also had dark colored urine that started with the diarrhea. He came to the hospital because his girlfriend noticed that he was looking yellow-colored starting about five days prior to admission. On physical exam the patient was a well developed well nourished young gentleman with icterus and hepatomegaly but no other stigmata for liver disease. The patient admitted to heavy drinking (3-4 shots of whiskey per day for 1-2 months), but quit five months prior to admission. He had also been taking some protein supplements for the last month and tried a testosterone supplement for one month six months ago. On admission his labs were significant for elevation of AST, ALT, G-GTP, and total bilirubin. Viral hepatitis panel (Hep A/B/Be/C) was negative. Acetaminophen level was not elevated. Ultrasound demonstrated no obvious hepatic masses or biliary ductal dilatation. There was no evidence of gallstones. With downward trend of his liver enzymes, the patient was discharged home with outpatient follow up. The patient returned to clinic two weeks later feeling fatigued, having constant pruritis, and dark colored urine. His labs demonstrated an elevation of liver enzymes (AST, ALT, and total bilirubin) from discharge. Further workup was negative for autoimmune process (negative testing for PBC, PSC, Wilson’s disease, hemachromatosis, sarcoid, alpha anti-trypsin deficiency, and lupus). MRI/MRCP demonstrated early arterial enhancement of lower lateral right lobe of liver measuring 3.8 cm suggestive of vascular anomaly. Liver biopsy demonstrated marked intrahepatic zone 3 cholestasis and an occasional focus of necrosis. No morphological features of primary biliary cirrhosis or primary sclerosing cholangitis, and no copper or copper binding protein was detected. A drug induced etiology was surmised. The patient’s care was then transferred to a transplant center for possible listing if transplant needed.

Discussion: Acute hepatitis in a young patient can be from a variety of causes. It is important to obtain a good history of drugs or supplements used by the patient, as well as the temporal relationship to the presentation of liver injury. DILI is difficult to assess and diagnose, but it is important for clinicians to consider the diagnosis because of the high mortality associated with DILI.
A RETROSPECTIVE REVIEW OF ACUTE PANCREATITIS IN PREGNANCY

Charles Bennett, MD

Purpose: Our purpose was to evaluate the presentations, etiologies and obstetrical course of acute pancreatitis complicating pregnancy and the effect on maternal and perinatal outcomes.

Methods: A retrospective chart review of acute pancreatitis in pregnancy during an eleven year study period from January 1, 1995 through April 3, 2006 was performed. Charts were identified by searching the hospital database for acute pancreatitis and pregnancy. 127 cases were identified; 4 charts not available. Of the 123 charts available, 25 charts were dismissed upon further review secondary to one of the following: chronic pancreatitis with no acute flares during pregnancy (10), acute pancreatitis presented in post-partum period (7), or no acute pancreatitis diagnosis (8). Thus, 98 patients were found to be appropriate for the study and confirmed by and elevated amylase and/or lipase. Criteria identified for evaluation included demographics, presenting symptoms, etiologies, imaging, lab values, treatment modalities, hospital stay, ICU care, medical complications, obstetrical complications, gestation at delivery, indication and mode of delivery, birth weight, APGAR, cord pH, neonatal complications, and post partum complications.

Results: The incidence of acute pancreatitis complicating pregnancy was one in 814 deliveries. The mean age of patients was 26.5, ranging from 16-42. Nulliparous patients accounted for 37% and 63% were multiparous, while 96% of the pregnancies were singleton. There were only 3 twin pregnancies and one quadruplet pregnancy. The gestational age at presentation ranges between 7 and 38 weeks with a mean of 25. The ethnicity of patients involved in the study was Hispanic (43.9%), Caucasian (29.6%), Native America (12.2%), African American (5.1%), Asian (3.1%), and other (6.1%). The most common presenting symptom was epigastric pain (95%), but many patients also complained of nausea (84%) and vomiting (81%). The etiologies of acute pancreatitis during pregnancy were gallstone (56%), idiopathic (28%), pre-eclampsia/HELLP (5%), alcohol (4%) and hypertriglyceridemia (1%). Diagnostic imaging included ultrasound (85%), ERCP (22%), CT (5%), and HIDA (5%). Multiple lab values were normal including WBC, calcium, AST, ALT, and total bilirubin. Amylase and lipase values were elevated with medians of 363 IU/L and 665 IU/L. All patients received supportive therapy including bowel rest and intravenous hydration. There were 19 patients who received antibiotics; only 16 patients required TPN and 3 patients had duodenal tube feedings. Surgeries were performed on 39 patients including laparoscopic and open cholecystectomy, ERCP, and dilation and curettage. Only 4 patients required short-term ICU care, ranging from 2 to 6 days. Obstetrical complications occurred in 39 patients and a significant number of patients with preterm contractions (21%), preterm labor (12%), preterm delivery (18%), IUGR (5%) and IUFD (4%). Delivery information was available for 52 patients. Patients with non-resolving or recurring flares caused multiple admissions (11%) and/or immediate delivery (38%). The gestational age at delivery ranged between 15 and 41 weeks, with the mean of 35 weeks and median of 36.5 weeks. In particular, 6 of the 18 preterm deliveries occurred prior to viability (<24 weeks). Birthweights correlate with earlier gestation at delivery with a mean of 2071 grams and median of 3020 grams (range: 260 grams to 3800 grams). Most APGAR scores were normal and only 2 babies having scores lower than 7 at five minutes.

Conclusion: This was one of the largest retrospective studies of acute pancreatitis in pregnancy. Our study showed overall good maternal and fetal outcomes, mostly requiring only supportive care and occasionally surgical intervention when indicated. Many patients had recurring or non-resolving flares of pancreatitis throughout pregnancy that caused multiple hospitalizations and/or immediate delivery. The data also suggests an association with multiple obstetrical complications, especially preterm contractions/ labor/ delivery, and possibly IUGR, IUFD.
SURVIVAL WITH AN EXTREMELY HIGH SALICYLATE LEVEL

Robert Cannon DO, Aryn O’Connor MD

Introduction: Salicylate toxicity is associated with significant morbidity and mortality unless recognized early and treated aggressively. We report a case of severe acute salicylate toxicity with an excellent outcome despite having one of the highest salicylate levels ever reported in a survivor.

Case Report: A 39 year-old female presented to an outside hospital with complaints of nausea and tinnitus after reportedly ingesting more than 400 tablets of 325mg Aspirin. An initial salicylate level was 75 mg/dl 4 hours after ingestion. The ABG at that time was: pH 7.47, pCO2 23, HCO3 16. The patient was admitted to the intensive care unit and started on a bicarbonate infusion with the plan to repeat the salicylate level in 6 hours. However, 3 hours later, a toxicology consult was requested secondary to the development of confusion, hallucinations, and diaphoresis. A repeat salicylate level 7 hours post-ingestion was 121 mg/dl, and transfer to our facility for emergent dialysis was arranged. Upon arrival to our facility the patient’s vital signs were: HR 153, RR 44, BP 101/53, T 101.7°. She was diaphoretic, delirious, and agitated. Three amps of NaHCO3 were immediately given and the bicarbonate drip was increased to 500cc/hr while a femoral hemodialysis catheter was placed. Repeat labs were drawn and dialysis was initiated. Her labs revealed a pH 7.5, pCO2 19, HCO3 18, anion gap 24, and a salicylate level of 152 mg/dl. The patient subsequently developed hypotension which did not respond to aggressive fluid resuscitation. Consequently, norepinephrine was required for the next 8 hours. After 12 hours of continuous hemodialysis, the patient was asymptomatic with normal vital signs and a clear mental status. The salicylate level was 15 mg/dl at that time, and continued to decline. The CK and PT rose mildly peaking at 3673 IU/L and 13.7 s, respectively. The patient was transferred to an inpatient psychiatric facility 2 days later.

Conclusion: To our knowledge, a salicylate level of 152 mg/dl represents one of the highest levels reported in a patient who survived without morbidity. This patient’s severe clinical deterioration likely would have been prevented, by initiation of earlier dialysis, if clinical assessments and laboratory evaluation had been done at more frequent intervals. This case emphasizes the importance of aggressive treatment and frequent clinical and laboratory assessments early in the course of salicylate toxicity.
Abstract 7
Banner Good Samaritan Medical Center
Surgery

PANCREATICODUODENECTOMY: A COMMUNITY HOSPITAL EXPERIENCE

Cantafio, A, MD; Graf, E, MD; Brandenberger, J, MD

**Purpose:** Demonstrate that pancreaticoduodenal resection can be performed safely in the community hospital environment.

**Methods:** Retrospective chart review of 314 pancreaticoduodenal resections performed over 5.5 years from 1998 to 2004. Source documentation included notes, operative reports, pathology reports, discharge summaries and clinic notes. Main outcome measures included in hospital and thirty day mortality, length of hospital stay, perioperative complications, and thirty day readmission and reoperation rates.

**Results:** Three hundred and fourteen patients underwent pancreaticoduodenal resection with an operative mortality of 3.2%. Of those who underwent Whipple resection operative mortality was 2.8%. One hundred and fifty-one patients underwent pancreaticoduodenal resection for malignancy and 19.5% of these patients had positive resection margins. 68% of patients were discharged with 15 days and median length of hospital stay was 12 days. Mean operative blood loss was 550 ml. Both readmission and reoperation rates were 10% for the study population.

**Conclusion:** Pancreaticoduodenal resection can be performed safely with low morbidity and mortality in the community hospital environment. This review represents a large volume community hospital experience with results similar to those published from large volume university centers as well as those published from lower volume community hospital experiences.
COMPLIANCE WITH ACC/AHA GUIDELINES FOR RIGHT-SIDED ECG LEADS IN PATIENTS WITH INFERIOR WALL S-T ELEVATION MYOCARDIAL INFARCTION

A Celigoj, M Rosenberg, R Garcia-Orr, KB Desser, R Gerkin

Purpose: To determine compliance with the 2004 ACC/AHA Class I recommendations for right-sided ECG leads in patients with inferior wall S-T elevation myocardial infarction. Such screening is advised to exclude co-existing right ventricular infarction.

Methods: Lectures regarding the above recommendations were provided by cardiovascular fellows to house-staff at a large university-affiliated community hospital and at a Veterans Affairs Medical Center. Additionally, the ACC/AHA class I recommendations that nitrates not be administered to patients with right ventricular infarction was emphasized. Following such lectures, a prospective study was undertaken to determine compliance with the guidelines.

Results: During a 21 month period, 62 patients with inferior wall ST elevation myocardial infarction were identified at the community hospital and 12 at the Veterans Affairs Medical Center. When the frequency of right ventricular leads at the community hospital and Veterans Affairs Medical Center were compared there was a highly significant difference (Community Hospital 95% CI: 0.004-0.112; Veterans Affairs Medical Center 95% CI: 0.779-1.00, p<0.0001).

Conclusion: Despite instructions regarding right ventricular leads to housestaff at both institutions, there was minimal application of right-sided leads at the community hospital compared with Veterans Affairs Medical Center. Reasons for the difference appear to be greater use of early echocardiography and percutaneous coronary intervention at the community hospital and aggressive cardiovascular fellow driven guideline implementation at the Veterans Affairs Medical Center.
IS MONOCLONAL GAMMOPATHY OF UNDETERMINED SIGNIFICANCE A RISK FACTOR FOR VENOUS THROMBOEMBOLIC DISEASE? AN INTERIM ANALYSIS

Adam L. Cohen, MD and Rami Sarid, MD

Purpose: Venous thromboembolic disease (VTD) affects 1 in 1000 people per year in the United States. Patients with cancer are in a hypercoagulable state that increases their risk of VTD. It is not known whether precancerous conditions also increase risk of VTD. Two published studies in 2004 reported an increased risk of VTD among patients with monoclonal gammopathy of undetermined significance (MGUS). However, these studies lacked control groups, so they may be subject to selection bias. Moreover, they were in the oncology departments of university hospitals, so they may not be applicable to the general population, particularly the veteran population. Nevertheless, testing for MGUS is now being included by some groups in hypercoagulable workups. The purpose of this study was to assess the rate of VTD in the general male veteran population of MGUS patients and to compare it to an age-matched control group of patients who tested negative for MGUS.

Methods: Between 1996 and 2005, we identified all 166 patients at the Carl T Hayden VA Medical Center who had a serum immunofixation consistent with MGUS. An age-matched group of control patients three times as big as the control group was drawn from the population of all patients who had serum electrophoresis performed during this 10-year period. A retrospective chart review was performed for collection of longitudinal data. Data was collected on new diagnoses of deep venous thrombosis and pulmonary embolism. Cox proportional hazard survival analysis was used to compare the rate of VTD between the MGUS groups and controls.

Results: The subjects with MGUS averaged 70 years of age (range 42-90). The average M-protein level was 0.9 g/dl. 60% of the paraproteins were IgG, 11% were IgA, and 29% were IgM. The subjects were followed for an average of 2.5 years (range 0.5 months-10.75 years). The rate of VTD was 2.2/100 person years. So far, 262 members of the 498 member control group have been analyzed. These control subjects have been followed for an average of 3.5 years (range 0-10.5 years). The rate of VTD in the interim analysis of the control group is 1.2/100 person-years. The difference between the groups is not significant (HR 1.6, p=0.3)

Conclusion: Similar to the published reports, our MGUS patients had a rate of venous thromboembolism much higher than the general population. However, in our initial analysis, patients both with and without MGUS have a higher than average risk of venous thromboembolism. The final analysis will be available by May, 2007. However, this interim analysis suggests that the association of MGUS with venous thromboembolism may be a product of selection and referral biases rather than a true causal relationship.
FALCIPARUM IN PHOENIX: AN IMPORTED CASE OF SEVERE MALARIA

Wendi Drummond DO, MPH; Ruth Franks MD; Soumya Pandalai MD

Introduction: Malaria is a devastating cause of morbidity and mortality in the developing world accounting for an estimated 300-500 million cases annually. In the United States in 2004, 1,324 cases were identified, 99% of which were imported cases. Given the complex sequelae and potential mortality of severe malaria, early identification is critical for management.

Case Report: A 59 year old male missionary recently returned from a trip to Ghana, West Africa. Prior to his trip, he received appropriate vaccines but did not take the recommended anti-malarial prophylaxis. He presented to a local urgent care complaining of rigors and low grade fevers for 2 days. The patient was diagnosed with a flu-like illness and sent home. The following day, he sought care at a local emergency department for the same symptoms as well as persistent vomiting, was diagnosed with pneumonia, given a prescription for azithromycin, and sent home. He returned the following day with worsening symptoms including fever to 103°F, headaches, dyspnea, hematochezia, hematuria and confusion. On transfer to our facility, 4 days following initial presentation, the diagnosis of malaria was made based on a positive smear. Significant laboratory findings on admission included thrombocytopenia, hyperbilirubinemia, elevated transaminases, and an increased serum creatinine. Physical exam was significant for splenomegaly. Plasmodium falciparum was subsequently identified with 15% parasitemia. Therapy with IV quinidine and doxycycline was initiated with constant monitoring for potential quinidine toxicity. The patient clinically decompensated requiring intubation secondary to respiratory failure/ARDS. He subsequently required CVVHD for treatment of acute renal failure and pressor support with multiple agents. He received a whole blood exchange transfusion, but had continued clinical decompensation, resulting in death.

Discussion: The non-specific nature of presenting symptoms underscores the difficulty in diagnosis of malaria and emphasizes the importance of having a high index of suspicion in patients who have recently returned from areas of endemicity. Plasmodium falciparum is the most dangerous and life threatening form of malaria. It is critical that travelers receive education regarding preventive measures and appropriate prophylaxis. It is also important that patients are transferred to an appropriate facility once the diagnosis is made so that immediate treatment may be instituted given the potential for rapid decompensation and high risk of mortality in patients with severe falciparum malaria. The mortality of severe, cerebral malaria, even in ICU settings exceeds 30%, and with the complication of ARDS has been estimated to be as high as 80%.
Abstract 11
Banner Good Samaritan Medical Center
Cardiology

PSEUDOMIYOCARDITIS PATTERN IN A 21 YEAR OLD FEMALE WITH TUBERCULOUS MYOCARDITIS

Nahel Farraj, Jason D. Klein, Gopi Cherukuri

Introduction: Tuberculosis (TB) can affect any part of the heart including the pericardium, myocardium, endocardium, and epicardium. Tuberculous pericarditis (TBP) is the most common cardiac manifestation occurring in 0.35% cases of TB. In TBM, the myocardium is affected either by a direct spread from mediastinal lymph nodes, extension of TBP, as part of military TB, or as a result of retrograde lymphatic and hematogenous spread. Various abnormalities have been noted on ECG, but there have been no cases of TBM in which diffuse ST elevation was captured on ECG.

Case report: We present a 21 year old G2P2 African American female with history of anemia and who presented with a three week history of nausea, non-bloody emesis, headache, intermittent fevers, chills and night sweats, a 20 pound weight loss, and fatigue. She denied specifically cough, chest pain, dyspnea, hemoptyisis, rash, arthralgias, diarrhea or hematochezia. She also denied recent travel or sick contacts and chemical or environmental exposure. She had no prior surgery and denied tobacco, alcohol and drug use. Her father had TB many years ago and died at the age of 65. She had no allergies and was taking no medications. Her vital signs on admission were temp. 97.3º, BP 97/57 mmHg, heart rate 84bpm, respiratory rate 18/min, O2 saturation 97% on room air. Physical exam was normal except for fine crackles in right lower lung field. Cardiac exam found no abnormalities, and she had no JVD or lower extremity edema. A CXR showed bibasilar reticular nodular infiltrates with small bilateral pleural effusions. Initial laboratory studies showed WBC 6.1, Hgb 9.4, Plt 330,000 with MCV 62 and 82% segmented neutrophils. CMP was completely normal except for low albumin. TSH, Beta HCG, Cocci serology, HIV, blood cultures, urine culture, legionella, and fungal culture, and pneumocystis DFA, influenza, CMV, and RSV were negative. Initial sputum culture was negative for AFB. Admission ECG showed sinus tachycardia with diffuse nonspecific T wave abnormalities. The patient was started on antibiotics for community acquired pneumonia. She underwent bronchoalveolar lavage which revealed no organisms on culture including acid fast bacilli. She continued to have fevers and her pulmonary function was not improving and she was referred for VATS. Lung tissue biopsy revealed numerous necrotizing granulomas involving the lung parenchyma and pleura. Several acid fast organisms were identified. The patient was initiated on 4 drug anti-TB therapy for miliary TB. Ultimately the patient developed respiratory failure requiring emergent intubation. CT angiogram showed no evidence of pulmonary embolism. ECG showed sinus tachycardia with anterolateral ST elevation and poor R wave progression over the precordial leads. A stat 2D echocardiogram showed severe left ventricular global hypokinesis with an estimated ejection fraction of 10-15% and no detectable pericardial effusion. This represented a dramatic change from an echocardiogram performed 5 days prior. Troponin-I was 2.43 at this time. Cardiac catheterization was performed and showed normal coronary anatomy. The patient remained hypotensive and was transferred back to the ICU with an intra-aortic balloon pump. The patient’s condition continued to decline over the next several days, and she required multiple vasopressors. She developed multisystem organ failure and coagulopathy. Subsequent chest x-rays revealed new cavitary lesions in the right lung. Her family elected to withdraw life-sustaining measures and the patient expired 5 days post code arrest.

Discussion: ECG patterns that have been associated with TBM were discussed above. Conditions that may create a pseudoinfarction pattern include ventricular aneurysm repolarization abnormality, pericarditis, and myocarditis. This case illustrates the importance of considering TBM in a patient with suspected TB who shows diffuse ST elevation on ECG and has an echocardiogram with no pericardial effusion, and global hypokinesis.
BALANCING LIFE AND DEATH: 
A CASE OF PROLONGED SOMATIC SUPPORT IN A BRAIN DEAD PREGNANT PATIENT

Ruth Franks, M.D.

**Introduction:** Somatic support refers to non-neurological care provided after brain death. Typically the goal of somatic support is to sustain the patient until the time of organ donation procurement. This is a description of a case using somatic support to optimize gestational time in order to give a pre-viable fetus a chance at life.

**Case Report:** A 36-year-old woman two years after successful treatment for breast cancer discovered she was pregnant. Sixteen weeks into her pregnancy she was diagnosed with recurrence of the cancer to the mediastinum and lung. After discussion of the risks and benefits, the patient chose to defer systemic chemotherapy until after delivery. Within 4 weeks, she was found to have leptomeningeal carcinomatosis and central nervous system (CNS) metastases, and intrathecal chemotherapy was begun. The patient continued to deteriorate and by 23 weeks of pregnancy she had lapsed into a coma. Three days after intubation, the patient’s Glasgow coma scale was 3, she became apneic, and her pupils were midsized and fixed. A brain perfusion scan showed no intracranial circulation, and the patient was pronounced brain dead secondary to cerebral edema and herniation. Because the fetus had not reached the age of reasonable viability, and it was known that the patient had wanted to carry on with the pregnancy, the decision was made to continue somatic support. Over the next six weeks, she was managed with intravenous desmopressin, levothyroxine, hydrocortisone, and neosynephrine for intermittent hemodynamic instability and panhypopituitarism. Ventilator settings were adjusted to reproduce the physiological respiratory alkalosis of pregnancy. Warming blankets were used for eutherma. She had several severe hospital acquired infections which were successfully treated with antibiotics. The baby continued to grow slowly, with every attempt made to optimize uterine and placental blood flow to effect fetal maturation. At 30 weeks and 2 days gestation, the patient went into septic shock and a caesarian section was performed. A baby weighing 2 lbs and 15 oz was born with APGARs of 8 and 8. The baby was named Veronica for her mother from whom artificial support was withdrawn the following day.

**Discussion:** The diagnosis of brain death is a challenge and was further complicated in this case by attempting prolonged somatic support; a first for this institution. Fetal viability improves exponentially from 23 weeks to 30 weeks gestation and in this rare situation baby Veronica’s birth is a testimony of the effectiveness of modern physiological support systems in the intensive care unit.
Introduction: False-positive test results can lead to further, potentially harmful, invasive testing and charge take an emotional toll on patients and their family members. We report a case of a non-indicated skull series with a concerning finding that led to 24 hours of upset for a family of a six-year old girl.

Case Report: A six-year-old girl presented to her primary care provider on her birthday with one and a half weeks of nasal congestion, headache, and malaise. There were no gait abnormalities, ataxia, or signs of increased ICP noted on exam. Chest and Sinus x-rays were performed (See lateral skull film). That evening the girl’s parents received a call from the doctors’ office, stating that a lesion seen on a lateral skull film could be medulloblastoma. An MRI was scheduled for the following day. In the meantime, the girl and her parents were fearful and anxious that their daughter might have a malignant brain tumor. A subsequent MRI and CT were normal and the lesion was the result of the girl’s pigtails, placed by her father that morning and not removed prior to imaging.

Discussion: This case of this six-year old girl highlights a number of issues:

• All tests, especially those with poor specificity, have consequences. In addition to the subsequent invasive testing, false positive tests may have psychological consequences
• Sinus X-rays are not indicated in the diagnosis or management of suspected acute bacterial rhinosinusitis.
• Medulloblastoma is the most common pediatric malignancy of the central nervous system. Most medulloblastomas arise in the cerebellum and have a higher prevalence in boys. Patients usually present with 2-3 months of gait abnormalities, ataxia and increased intracranial pressure. The tumor has a characteristic hyper attenuation on un-enhanced CT scans and typically appears heterogeneous on MRI.
• Appropriate discussion of potentially worrisome test results may help patients or families manage a potentially emotionally disturbing diagnosis.

This false-positive test was both not indicated and not correlated clinically to this six-year-old girl’s symptoms. We emphasize the potentially serious emotional consequences of a false-positive test result and the importance of the appropriate discussion of these test results with patients and their families.
THE FIBROBLAST GROWTH FACTOR SIGNALING PATHWAY AND HUMAN DISEASE

Omar A. Ibrahimi, M.D., Ph.D. and Moosa Mohammadi, Ph.D.

Purpose: The Fibroblast Growth Factor (FGF) signaling pathway plays a ubiquitous role in human physiology as a regulator of embryonic development, homeostasis and regenerative processes. Mutations in FGFs and FGF receptors (FGFRs) lead to a diverse variety of diseases including skeletal, anatomic, reproductive, olfactory, dermatological and metabolic disorders, as well as cancer.

Methods: A battery of biochemical, biophysical and structural methods was employed to characterize the mechanisms by which these mutations impact the FGF signaling axis.

Results: The effects of these pathogenic mutations on the FGF signaling axis were diverse. The FGFR related skeletal dysplasias were generally characterized by gain-of-function of the FGF signaling axis, through a variety of molecular mechanisms. In contrast, reproductive/olfactory disorders were largely typified by loss-of-function of the FGF signaling cascade. Other pathogenic mutations were also characterized as either gain- or loss-of-function mutations.

Conclusion: This represents the first comprehensive characterization of pathogenic mutations in a signaling cascade responsible for a variety of human diseases. We provide biomolecular mechanisms by which these mutations disrupt normal functioning of the FGF signaling axis. Furthermore, these studies provide an atomic framework for the rational design of modulators of the FGF signaling cascade that offer hope for the treatment of a number of FGF signaling related disorders.
A QUANTITATIVE EVALUATION OF ST-SEGMENT CHANGES ON THE 18-LEAD ELECTROCARDIOGRAM DURING ACUTE CORONARY OCCLUSIONS

David Y. Kahn, MD, MPH, and Shu-Fen Wung, PhD, RN, ACNP, FAHA, FAAN

Purpose: Controlled coronary artery occlusion during percutaneous coronary intervention (PCI) produces individual-specific reproducible “ischemic fingerprints”, and is used as a clinical model to assess myocardial ischemic changes on the electrocardiogram (ECG). Limited studies investigated the usefulness of additional posterior and right ventricular (RV) leads during PCI. However, a comprehensive description of the ST-segment changes on the 18-lead ECG, including RV and posterior leads, during controlled coronary artery occlusion has not been fully undertaken. Therefore, this study quantified ST-segment changes on the 18-lead ECG during PCI in each of the three major coronary arteries and compared the sensitivity in detecting acute myocardial ischemia using routine cardiac monitoring leads (II and V1), 12-lead ECG, and 18-lead ECG.

Methods: 155 subjects with coronary artery disease who underwent a nonemergent cardiac catheterization to either a community hospital or 1 of 3 academic medical centers were chosen for this study. Continuous 18-lead ECGs, including standard 12 leads, posterior (V7-9), and right ventricular (RV) leads (V3-5R) were recorded for all subjects undergoing percutaneous coronary occlusions, the maximum intervention. Each patient served as his/her own control. Sample characteristics were analyzed using frequencies and measure of central tendency. Mean ST changes for each major artery during PCI were reported. Differences in sensitivity in detecting acute myocardial ischemia among the routine monitoring leads (II + V1), standard 12-lead ECG, and 18-lead ECG were compared using analysis of variance.

Results: During 58 left anterior descending (LAD) coronary occlusions, the maximum ST elevation and depression were in V3 (4.2mm) and III (-0.9mm), respectively. During 44 right coronary artery (RCA) occlusions, the maximum ST elevation and depression were in III (2.2mm) and aVL (-1.4mm), respectively. During 53 left circumflex (LCX) occlusions, the maximum ST elevation and depression were in V7 (0.8mm) and V2 (-1.6mm), respectively.

Conclusion: ST elevation often occurred in the anteroapical (V1-V6), lateral (I, aVL), and RV lead V3R during LAD occlusions; in the inferior, RV, and posterior leads during RCA occlusions; and in the posterior, inferior, and apical leads (V5-V6) during LCX occlusions. Additional posterior leads significantly increase the sensitivity of detecting ischemia during LCX occlusion. Frequencies of ST-segment elevation and depression on 18-lead ECG may be valuable for differentiating occlusions in the RCA and LCX.
Purpose: End-stage renal disease (ESRD) is the final stage of chronic kidney disease that occurs as a result of multiple medical conditions. The prevalence and financial burden of ESRD in the United States continue to rise. Of all of the approaches to management of ESRD, kidney transplantation offers the greatest potential for return to near-normal renal function, increased longevity, enhanced quality of life, and lower healthcare costs. Living laparoscopic donor nephrectomy (LLDN) has developed to address the great demand for functioning organs. Options for hemostasis during this procedure that have been used in the literature include suture ligation, titanium clips, Ethicon Endo-GIA with vascular staple load (EEGIAV), Weck Heme-o-lok Polymer Ligating (WHPL) clips. This retrospective review relates the experience of a single surgeon performing LLDN at a quaternary care university-affiliated community hospital.

Methods: A retrospective review of 149 consecutive LLDN between January 2000 and September 2004 was completed. All donors (n=149) were thoroughly evaluated by a transplant coordinator, transplant surgeon, and laparoscopic surgeon. Each patient also underwent computed tomography (CT) angiogram to evaluate renal vascular anatomy and to assess for anatomical variants. In most cases, the left kidney was harvested using the hand-assisted laparoscopic technique. Major vessel hemostasis was achieved using an EEGIAV, WHPL clips, or titanium clips. All ligated vessels were covered with Tisseal fibrin glue after hemostatic device application. Data collection included patient age, gender, antibiotic use, renal artery and vein hemostatic technique, conversion rate to open procedure, need for blood transfusion, warm ischemic time, and donor morbidity and mortality. In addition, recipient data collected included graft survival duration, morbidity and mortality.

Results: The donors included 89 females and 60 males ranging in age from 19-66 (mean 38.1). The recipients ranged in age from 2-66 (mean 40.8). Preoperative antibiotics were given in all cases. 148 left kidneys and 1 right kidney was removed. 180 renal arteries were encountered in 149 patients. 117 renal arteries were controlled with EEGIAV (65%), and 63 renal arteries were controlled with WHPL clips (35%). 149 renal veins were encountered. Hemostasis was achieved by EEGIAV in 38 renal veins (25%), 109 renal veins were controlled with WHPL clips (73%), one renal vein was controlled with a titanium clip, and one with suture ligation. Warm ischemic time ranged between 39 and 255 seconds (mean 99.09 seconds). Two patients required conversion to open procedure, one due to difficult exposure, the other due to lumbar vein bleeding. No donor patient required intra-operative blood transfusion; however, two patients had a gradual decline in hemoglobin requiring transfusion postoperatively. There were no intraoperative or postoperative deaths. There were 2 incisional hernias, 1 pulmonary embolism, 1 pleural effusion, 1 surgical site infection, and 1 allergic reaction to antibiotics. Two patients required re-operation due to small bowel obstructions. At one year post-transplant, 124 of 126 grafts were functional (98.4%). Data available for 2 year post-transplant follow-up shows 95 of 100 grafts functional (95%). Data available for 3 year follow-up shows 54 of 60 grafts functional (90%).

Conclusion: Living laparoscopic donor nephrectomy is a safe and effective method for procurement of kidneys for transplantation. There was no significant difference in immediate or delayed postoperative bleeding risk between methods of vascular control utilized in this series. The manufacturer recalled the WHPL clips on April 18, 2006 for ligation of the renal artery during LLDN; however, our data do not reflect inferiority of these clips to EEGIAV. Our experience shows no increased risk of bleeding with proper application of the clips, and that more investigation is needed to determine the safest and most effective method of vascular control during LLDN.
SAFETY OF AN INTRACRANIAL PRESSURE MONITOR IN PATIENTS WITH ACUTE LIVER FAILURE AND GRADE III AND IV ENCEPHALOPATHY.

Geetha Kolli, Silke Rempe, Mark Wong, Steve Curry, Robert Raschke, Richard Manch

PURPOSE: Intracranial pressure (ICP) monitoring has been recommended in patients with acute liver failure (ALF), but safety data are scarce. The purpose of our study is to evaluate the safety of an intraparenchymal ICP monitor placement in patients with ALF.

METHODS: Patients with ALF and grade 3-4 encephalopathy underwent placement of a Codman Microsensor® ICP monitor in the non-dominant frontal lobe. Hemostasis protocols were used to achieve specific coagulation laboratory goals before monitor placement and for the duration of its use. Single-donor platelets were transfused to achieve a platelet count > 100 K/mm³. Activated factor VII (40-90 mcg/kg IV) and fresh frozen plasma (FFP) were used to achieve a prothrombin time (PT) < 16 seconds. Cryoprecipitate was given to attain plasma fibrinogen levels of at least 100 mg/dL. Desmopressin (30 mcg/Kg IV) was administered to mitigate potential platelet dysfunction.

RESULTS: Seventeen women and five men were enrolled. Patients received 1.5+/-1.9 units (mean+/-S.D.) of single donor platelets, 4.0+/-1.7 units FFP, 6.0+/-7.0 units of cryoprecipitate, and 6.4+/-3.3 mg of activated VII prior to ICP monitor placement, achieving a platelet count of 156+/-90 K/mm³, PT 11.8+/-1.7 secs, and fibrinogen 176+/-41 mg/dL. Hemostatic parameters for the duration of monitor use were: platelet count 96+/-58 K/mm³, PT 16.4+/-3.9 secs, and fibrinogen 249 +/- 100 mg/dL. Outcomes were evaluable in 17 pts. Fourteen had no evidence of clinically important bleeding as evidenced by brain computerized tomography in ten, autopsy in two, and complete neurological recovery in two. Three patients had documented bleeds. Two patients had focal bleeding at the site of the monitor – one died from severe sepsis and one made a complete neurological recovery. Only one patient had clinically significant bleed – a subdural hematoma associated with seizures. In five pts the safety of ICP monitor placement was not evaluated because they died before a CT scan was performed, 3 from sepsis, one from abdominal compartment syndrome, and one from ischemic bowel.

CONCLUSION: ICP monitor placement is relatively safe in patients with ALF with careful attention to hemostatic support.
NEUROPSYCHIATRIC SYMPTOMS ASSOCIATED WITH BACLOFEN:
A REVIEW OF TWO CASES

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INTRODUCTION: Baclofen is an analogue of GABA (β-4-chlorophenol derivative of gamma-aminobutyric acid), GABA being the major inhibitory neurotransmitter in the central nervous system. It is used clinically to control spasticity and pain in patients with spinal cord injury, multiple sclerosis, trigeminal neuralgia and hemifacial spasm. We present these two cases to bring attention to the potential neuropsychiatry effects of baclofen.

CASE REPORTS: 1st Case: Mrs. S is a 42 year old Caucasian female with past history of panic disorder diagnosed 20 years prior and fibromyalgia. She was brought to the ER by her husband due to acute change in mental status and erratic behavior. According to the husband, his wife had been doing well until recently and her symptoms of panic disorder had been stable for nearly 20 years. She presented to the ER with confusion, disorganized speech, labile affect, hallucinations, somatic and religious delusions. Upon further investigation it was found that the patient had history of chronic pain treated with baclofen. Her husband had recently taken her baclofen pills away from her as he suspected that she had been taking them more than prescribed due to uncontrolled pain. Extensive workup including head imaging was done to rule out medical causes for the new-onset psychosis and mania and was unremarkable. Upon reviewing patient’s presentation, history and medication regimen it was thought that this was consistent with delirium associated with baclofen withdrawal. The patient was restarted on baclofen and the dosage was tapered down slowly and finally discontinued. With this regimen the patient’s sensorium cleared and her symptoms resolved.

2nd Case: A 53 year-old Caucasian female with past history of bipolar disorder diagnosed three years ago multiple sclerosis and arthritis was brought to the ER by her husband due to agitation and bizarre behavior for four days. On admission patient was found to be intrusive, loud, hyper-verbal, hypersexual, and paranoid. Other symptoms included hallucinations, religious and grandiose delusions. Her husband reported that these symptoms had started after the patient had a baclofen pump placed recently for multiple sclerosis. Her husband also reported that the patient was initially diagnosed with bipolar disorder three years prior for a similar manic and psychotic episode that was precipitated by initiation of oral baclofen at that time. Upon review of the patient’s presentation, history and medication regimen it appeared that the patient’s manic and psychotic symptoms were likely induced by the use of baclofen. Therefore, during the hospitalization the patient had the baclofen pump gradually titrated down every three days, until the baclofen was discontinued and the pump was replaced with saline. The patient’s condition gradually improved as the baclofen was titrated down.

CONCLUSION: These two cases depict two different scenarios in which psychiatric symptoms can be explained by adverse effects of baclofen therapy. Although there have been several reports of neuropsychiatry adverse effects associated with the use of baclofen, awareness is still low, which contributes to low suspicion and under-diagnosis. Diagnosis and treatment in a timely manner can help reduce the morbidity and mortality associated with these cases. A thorough history remains the best way to identify these cases.
THE EFFECT OF FATIGUE ON COGNITIVE AND PSYCHOMOTOR SKILLS OF SURGICAL RESIDENTS


Purpose: Investigate and quantify the effect of overnight call associated fatigue on psychomotor, memory and attention skills of surgical residents.

Methods: Simulations were created using a visio-haptic joystick attached to a modified laparoscopic surgical probe that allows realistic intimate interactions with real-time haptic based feedback. Psychomotor skill evaluation of residents was evaluated with tasks involved with grasping a series of virtual rings and placing each on randomly highlighted pegs on a virtual board (Fig 1). This task was modified to evaluate attention and memory skills on a pre and post-call basis. The attention task primed the user by highlighting a peg for 1 second with the user tasked to place the ring on the peg. Customized software does not permit placement of the ring on an incorrect peg. The memory task consisted of 3 sessions in which 4 pegs were highlighted in a sequence. The user is tasked with sequence recall and placement of the ring on the pegs in that specific sequence. An error is recorded every time the user does not correctly identify the peg for the specific task or sequence. Time taken for completion of the task was measured for each respective task. 32 surgical and obstetrical residents performed a predefined order of ring transfer tasks while wearing unique datagloves, which measure precise wrist, hand and finger movements in real time. These data were then analyzed using complex Hidden Markov Model based interpretation and analysis to model certain aspects of minimally invasive surgery. Common surgical gestures can then be evaluated by these pattern recognition models which are useful for decomposing a task such as suturing into basic gestures, thus allowing the proficiency of the complex gesture to be analyzed. Pre and post-call standardized survey’s assessed resident fatigue levels and relevant overnight call practices. Acceleration of the hand was measured as smoothness of movement during the task. Errors in memory and attention tasks with associated time lags for each trial were evaluated. Initial data was collected over a period of 4 weeks with 4 pre-call and post-call trials for each resident. Average number of errors and associated time lag in the pre and post-call condition was used to perform t-test analysis.

Results: A statistically significant decrement (p<0.05) in the smoothness of hand movements was observed post-call (Fig 1b) and in errors of memory and attention based tasks (Fig 1c and 1d). Average time lags in post call conditions were also evaluated.

Conclusion: Call-associated fatigue is associated with increased error rates in psychomotor and cognitive skills. Cognitive skill demonstrated a significant decline. These results demonstrate the potential importance and benefit of visio-haptic based teaching and surgical skill attainment in surgical resident curriculum and training.
OUTCOME OF MONOCHORIONIC MULTIPLE PREGNANCIES

Vivian Lin, MD, John Elliott, MD, Vivienne Souter, MD

**Purpose:** Twins and higher order multiples that are at greatest risk of complications are those that are monochorionic, or have a shared placenta. These fetuses are believed to arise from splitting of the embryo at an early stage of development (around 3 to 12 days after fertilization) and are, for the most part, genetically identical. Monochorionic multiples are at increased risk for pregnancy complications including twin-to-twin transfusion syndrome, which is a unique complication of monochorionic pregnancies. They are also at increased risk for preterm labor, fetal loss, and probably fetal anomalies. The goal of this study was to retrospectively review our own experience of monochorionic multiples, including their complications and outcomes.

**Methods:** This was a retrospective study of monochorionic multiples delivered at Banner Good Samaritan between January 2001 and January 2006. These deliveries were identified by searching the pathology database for “monochorionic placenta”. Each medical record was then reviewed and the following information was collected: demographics, chorionicity by ultrasound, pregnancy history and complications, presence of twin-to-twin transfusion and subsequent complications, maternal medical problems, indications for delivery, fetal outcome, and placental pathology.

**Results:** A total of 283 monochorionic multiple pregnancies were identified. At this time, the medical records of 93 consecutive pregnancies delivering between April 2004 and January 2006 have been reviewed. The results of these 93 cases are presented in this abstract. The mean age of the subjects was 28 years old (range from 15 - 45 years). Eleven percent (10/93) of records indicated that the pregnancy was conceived through infertility treatments. Prenatal ultrasound determined seventy-five percent (70/93) of pregnancies to be monochorionic diamniotic, fourteen percent (13/93) to be dichorionic diamniotic, and four percent (4/93) to be of uncertain chorionicity. In five percent (5/93) of charts, the chorionicity was not documented. The incidence of twin to twin transfusion syndrome was 18.2% (17/93). Thirty-seven percent (35/93) were recorded as having preterm labor or contractions, 17.2% (16/93) developed preeclampsia, and 11% (10/93) had IUGR with EFW <10th percentile of either twin. The mean and median gestational ages at delivery were 32 and 33 weeks, respectively. Four sets of twins delivered before viability, three sets before 28 weeks and twelve sets before 32 weeks. In addition, the Caesarean section rate was 91% (68/93). Of these, 59% were emergent and 41% were elective. Cord pH was available in 72 % of cases. The mean cord pH was 7.29, and 7.5% of liveborn infants had a cord pH of <7.2. The live birth rate was 91.3% for Twin A, and 93.5% for Twin B. Lastly, the mean birth weight for baby A was 1846 grams; and for baby B was 1818 grams.

**Conclusion:** Our study showed that the most common method of delivery for monochorionic twins was Caesarean section at our institution. In addition, to our surprise, prenatal chorionicity is either undetermined or wrongly assigned in a sizeable number of cases. Our study also supported the understanding that monochorionic twins are at increased risk of obstetrical complications, and therefore, may require closer antenatal surveillance. Lastly, the study is limited by the selected high-risk population seen at a tertiary referral center.
ACROMEGALY AND CARDIOMYOPATHY IN A 38 YEAR-OLD MALE WITH PANHYPOPITUITARISM: A CASE REPORT

Shahnaz Mazdeh MD, Laura Knecht MD, Sylvia Vela MD

Introduction: Acromegaly is an uncommon disorder with an annual estimated incidence of 3-4 cases per million people. Acromegaly affects middle-aged adults and can result in serious illness, comorbidities, and premature death. It may be difficult to diagnose in the early stages and is frequently missed for many years. It is characterized by hypersecretion of growth hormone (GH). In more than 95% of cases, a pituitary somatotroph adenoma is the source of GH hypersecretion, though ectopic sources can include excessive hypothalamic secretion of GHRH and nonendocrine tumor secretion of GHRH or GH. Cardiovascular complications are the leading cause of morbidity and mortality in patients with acromegaly. Coronary heart disease, cardiomyopathy with arrhythmias, left ventricular hypertrophy, decreased diastolic function, and hypertension occur in 30% of patients. Acromegalic cardiomyopathy is a clinical manifestation of the disease, with age and duration of GH and IGF-1 hypersecretion being the main contributors.

Case Presentation: A 38 year-old Native American male was admitted to the Carl T. Hayden VA Medical Center to be evaluated for heart transplant. On arrival he was unable to walk due to severe dyspnea and fatigue. He had been suffering from fatigue and dyspnea for many years, which resulted in quitting his job. Three weeks before admission paroxysmal nocturnal dyspnea and orthopnea forced him to become bedridden. He also complained of severe headache behind his right eye, loss of weight and sexual function, and inability to grow a beard. His shoe size began to increase, and his military cap felt small. Past medical history revealed anemia, depression and carpal tunnel syndrome. On physical exam his vital signs were T96.7 F, P85, RR20, BP105/73, Ht66 in, Wt204 lbs, O2 sat 95%/3L; he was in severe respiratory distress. HEENT: frontal bossing, no JVD and carotid bruit Lungs: clear to auscultation bilaterally Heart: S1, S2 heard distant, no murmur, rubs Abdomen: benign Ext: no edema, cyanosis, clubbing, and enlargement of hands and feet. Neurologic: diffuse weakness. Labs and imaging showed: CBC wnl, Na 131, K 4.5, Cl 96, HCO₃⁻ 23, BUN 10, Cr 0.8, BS 170, Ca 9.3, Protein 6.9, Albumin 4.5, Alp 63, AST 87, ALT 172, Total bili 2.6, BNP 1045, Free T4<0.40. First GH and IGF-1 were normal, but glucose suppression test of growth hormone was elevated at 6 ng/ml. TTE showed LVEF less than 20% with moderate increase in left ventricular cavity size and normal wall thickness; there was a restrictive pattern of LV diastolic filling. MRI of the pituitary demonstrated a sellar mass that extended toward the right and anteriorly with some encroachment but no obvious invasion of the right cavernous sinus.
He received aggressive treatment for heart failure with weight loss and improvement in dyspnea, and replacement of thyroid hormone and hydrocortisone for his panhypopituitarism. He received octreotide for 4 weeks prior to transsphenoidal surgery to remove the macroadenoma. He tolerated surgery well. EF increased to 35-40% after one year. GH remained suppressed post-operatively off octreotide. His panhypopituitarism remained.

Discussion: Clinical manifestations of GH hypersecretion may be indolent and missed clinically. Cardiomyopathy is a major cause of morbidity and mortality in patients with acromegaly. Surgical treatment may be curative, and correction of other underlying endocrinopathies and suppression of GH secretion should be a goal for treatment.
Purpose: The widespread use of allogeneic blood products has led to a reassessment of blood consumption and the development of blood conservation programs. Transfusions related to cardiac surgery have become a focus of blood conservation. From 10-20% of the nation’s blood supply is consumed during cardiac surgery. A recent observational study indicated an 11% transfusion rate during cardiac surgery. The transfusion rate was related to pre-operative factors of prothrombin time, RBC mass, creatinine $\geq$ 1.3, number of vessels bypassed and emergent surgery. Diminished RBC mass and creatinine $\geq$ 1.3 were the strongest predictors of transfusion. The purpose of this study was to report on transfusion rates of physicians performing elective coronary artery bypass surgery. Additionally, this study assessed the impact of transfusions on length of hospitalization.

Methods: This was a retrospective chart review of patients admitted to Banner Good Samaritan Medical Center (BGSMC) for elective coronary artery bypass surgery to determine transfusion rates and determine if transfusions predict the length of stay. Data had already been collected as part of QI by the Blood Conservation Program. Inclusion criteria include adult patients having elective coronary artery bypass surgery from April 1, 2005 to March 31, 2006 at BGSMC. Outcome variables included transfusions received, hospital length of stay, and surgical length of stay. The main predictors assessed were age, lowest hematocrit on pump, pre-op hemoglobin, lowest postop hematocrit, creatinine, protime, ferritin, LV ejection fraction, BMI, smoking and diabetes.

Chi square analysis was used for comparing categorical variables, and independent t-tests for continuous variables. Logistic regression was used to relate categorical outcomes to predictor variables, and linear regression for continuous outcomes. A two-tailed $p<0.05$ was considered significant. A power calculation was not performed.

Results: There was a significant variation in transfusion rates and volume between surgeons. Surgeon A transfused 0.68 Units (95% CI: 0.46-0.89) compared to surgeons B, C and D whose combined usage averaged 1.97 Units (95% CI: 1.44-2.49) Patient co-morbidities were similar between surgeons, i.e. age, EF, creatinine, vessels bypassed, and PT with the exception of slightly higher pre-op hemoglobin levels with Surgeon A. Hematocrit post-operatively did not predict hospital length of stay, yet pre-operative hemoglobin significantly predicted transfusions and hospital length of stay. Transfusions did not shorten hospital length of stay.

Conclusions: Adherence to red blood cell transfusion guidelines vary between surgeons and suggest over-utilization of blood products, while transfusions do not positively affect outcomes. Strategic implementation of pre-operative interventions and the tolerance of mild anemia in post-cardiac surgery may reduce unnecessary transfusions and subsequently improve hospital length of stay.

At Banner Good Samaritan Medical Center, the initiation of an innovative Anemia Center will provide one avenue for addressing pre-operative hemoglobin levels and intervening prior to the need for transfusion.
THE NATURAL HISTORY OF DYSPLASIA IN A LARGE COHORT OF PATIENTS WITH BARRETT’S ESOPHAGUS

Artur Miernik, DO, Anu K. Mathew, MD, Richard Gerkin, MD, Francisco Ramirez, MD

Purpose: For implementing a screening and surveillance program for patients with Barrett’s Esophagus (“BE”), it is important to understand the natural history of the disease, particularly when dysplasia is present. The aim of this study is to describe the natural history of patients with BE and any type of dysplasia.

Methods: Endoscopic data from all patients with suspected BE were reviewed. Those patients with intestinal metaplasia and who were found to have dysplasia and at least 1 endoscopic follow up 12 months apart were included. Those undergoing endoscopic therapy for BE were excluded. Patients who presented with adenocarcinoma at index endoscopy were excluded unless there was a prior endoscopy with histology negative for dysplasia. The study period was January 1, 1997 to December 31, 2004.

Results: Of 1879 patients with suspected BE on EGD, 1106 had a confirmed diagnosis (presence of intestinal metaplasia). Of these, 108 met the criteria of dysplasia (9.8%). These patients had a mean follow up of 3.92 years. Eighty-four (18.4%) patients had no histological follow-up. Fifty (2.0%/year) patients had negative histologies prior to developing dysplasia. When dysplasia was found, regression to no dysplasia and absence of recurrence was seen in 32 (29.6%) cases. Persistent dysplasia without regression to a lower degree or no dysplasia was seen in 5 (4.6%) cases. Fluctuation and progression of dysplasia was observed in 57 (52.8%) and 11 (10.2%) cases, respectively. There were 51 prevalence (5.6%) and 4 incidence (0.2%/year) cases of adenocarcinoma. The 4 incidence cancers had 2 initial endoscopies of IM and 2 of LGD (Figure 1). BE Length was the only predictor of histology.

Conclusion: Surveillance is controversial.

Figure 1: Progression of Barrett’s Esophagus to Adenocarcinoma

- Pt 1 (follow-up 10.8yrs)
- Pt 2 (follow-up 14.7yrs)
- Pt 3 (follow-up 12yrs)
- Pt 4 (follow-up 6.3yrs)
Purpose: 800,000 needle-stick injuries occur annually among healthcare workers with potential exposures to infectious blood-borne pathogens. We sought to survey obstetricians regarding their experience with the use of blunt suture needles (BSN) for laceration/episiotomy repair at vaginal delivery, and to determine whether BSNs represent a safe and effective alternative to sharp needles.

Methods: BSNs were made available from November 2004 through June 2005 for all laceration/episiotomy repairs. Participating physicians completed questionnaires indicating their previous experience using BSNs and personal history of needle-stick injuries. Participants rated their BSN experience and indicated whether they would use BSNs in the future. Categorical variables were analyzed using Fischer’s Exact Test, and a two-tailed p<0.05 was considered significant.

Results: Eighty surveys were completed by 29 attending physicians, 31 upper level residents (PGY 2-4), and 20 interns. The vast majority of physicians reported previous needle-stick injuries (83%), and all (100%) admitted concern regarding needle-stick injuries. BSNs were rated as excellent or good by 92.5% (95% CI = 84.6-96.5%) of participants and 77.5% (95% CI=67.2-85.3%) would consider using BSNs for repairs at vaginal delivery in all future patients. Physicians with more surgical experience (PGY2 or greater) rated BSNs more favorably than interns (p<0.001). No needle stick injuries or glove perforations occurred during blunt needle repairs.

Conclusion: 1. Needle-stick injuries are ubiquitous among obstetricians. 2. Technical satisfaction with BSNs is high, especially among those with greater surgical experience. 3. Widespread use of BSNs may reduce the incidence of percutaneous needle-stick injuries.
IS DEFIBRILLATION THRESHOLD TESTING NECESSARY AT THE TIME OF CHANGE OUT OF THE IMPLANTABLE CARDIOVERTER DEFIBRILLATOR PULSE GENERATORS?

Angelica Motta, MD, Praveen Jammula, MD, Sammy Dizon, MD, Iyad N. Daher, MD and Mohammad Saeed, MD.

**Purpose:** Initial Defibrillation Threshold (DFT) testing of an Implantable Cardioverter Defibrillator (ICD) is routinely done at implantation. The need for repeat DFT testing at change out of the pulse generator (PG) is not well defined. This study is aimed to assess the necessity of DFT testing during PG change out by analyzing a series of patients and determining if their thresholds were within a specific safety margin.

**Methods:** Consecutive patients with initial ICD implant and change out at UTMB between June 1997 and September 2005 were included. A safety margin ≥10 J was defined as 1 successful shock at 17 J or 2 shocks at 20 J at DFT testing. Exclusion criteria included inadequate safety margin and need for lead revision. Subgroup comparisons were performed using non-parametric testing due to normality and sample size concerns.

**Results:** Fifty-one patients (35 males), age 62.1± 13.6 years underwent initial ICD implantation with adequate safety margin on DFT testing. At change out, 48 patients had ≥ 10 J safety margins, with 39 patients requiring only 1 shock. All 3 patients that did not have a ≥10 J safety margin on repeat DFT testing were receiving Amiodarone. Seven additional patients with an adequate safety margin were also on Amiodarone at pulse generator change out. No significant differences in patient demographic, clinical and echocardiographic characteristics were noted between the Amiodarone and the non-Amiodarone groups (see table 1). However, at change out, the Amiodarone group had significantly higher mean DFTs than the non-Amiodarone group.

**Conclusion:** Patients with ≥10 J safety margins at initial ICD implantation and unchanged clinical status may not need repeat DFT testing at ICD change out. In patients who have been started on Amiodarone after initial ICD implantation, DFT testing should be done, and higher energy devices should be considered at pulse generator change out.

<table>
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<th>Table 1</th>
<th>Amiodarone (n=10)</th>
<th>Non-Amiodarone (n=41)</th>
<th>p value</th>
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<tr>
<td>Age (yrs)</td>
<td>68.2±7.7</td>
<td>60.6±14.3</td>
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<td>BMI</td>
<td>26.8±5.7</td>
<td>29.3±6.5</td>
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<td>NYHA functional class III - IV (%)</td>
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<td>LVEDD (cm)</td>
<td>6.6±1.5</td>
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<td>Mean EF at Implant (%)</td>
<td>22.8±4.8</td>
<td>31.5±14.5</td>
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<td>Mean EF at Change out (%)</td>
<td>28.8±17.7</td>
<td>31.2±14.7</td>
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<td>Time from implant to change out (mos)</td>
<td>51.7±16.3</td>
<td>43.2±17.2</td>
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<td>Age of shock lead (mos)</td>
<td>60.1±22.1</td>
<td>47.3±20.6</td>
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<tr>
<td>Mean DFT at change out (J)</td>
<td>23.7±4.3</td>
<td>18.5±2.7</td>
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INCIDENCE OF CERVICAL INSUFFICIENCY IN TWIN GESTATION

Ryan Ollerton, MD

Purpose: Cervical insufficiency (CI) is a problem that potentially affects many pregnancies. Previous studies have attempted to determine the incidence in the general population. None has been able to give a reliable and accurate answer, possibly due to the difficulty in diagnosing CI. Published studies have suggested an overall incidence of CI by studying the ratio of cerclage, a common intervention for CI, to deliveries. The reported ratios range anywhere from 1/2000 to 1/200 births. There have been no studies looking specifically at the prevalence and outcome of CI in twin gestations. The purpose was to determine the incidence of cervical insufficiency in twin gestation and briefly look at outcomes in terms of maternal and neonatal morbidity and mortality.

Methods: This is a retrospective chart review of all twin pregnancies that had a diagnosis of CI made between 14^{0/7} and 27^{6/7} weeks and/or received a cervical cerclage at Banner Good Samaritan Medical Center (BGSMC) between 2001 and 2005. Fifty-nine patients were identified. Two of the 59 patients were excluded, one for incomplete information and the second because she had an abdominal cerclage in place. The remaining 57 met inclusion criteria for determining prevalence and 55 met criteria for outcomes assessment. Data collection included: maternal age, presenting symptoms, gestational age at diagnosis, history of cervical trauma or manipulations, and mode of conception. Neonatal outcomes were recorded as infants being discharged from the hospital alive versus neonatal death at birth or prior to discharge.

Results: Fifty-seven twin gestations met the inclusion criteria for review, 42 met the classic definition of CI having no symptoms to only mild symptoms (pressure, leaking, spotting), and the remaining 15 reported the presence of contractions upon presentation, but went on to receive the diagnosis of CI and/or cerclage placement. There was delivery data available on 55 of the 57 cases. For the same time period there were 1052 Twin gestations delivered at BGSMC. The incidence of CI was 5.4% (57/1052) with a 95% confidence interval of 4.2-7.0%. The incidence of classic cervical insufficiency was 4.0% (42/1052) with a 95% confidence interval of 3.0-5.4%. This was determined by excluding the 15 patients who reported contractions as a presenting symptom.

A cerclage was placed in 35 of 55 (64%) at an average gestational age of 18^{2/7} weeks. Of the 35, there were 31 cerclages placed that were considered emergent and 4 prophylactic. The average gestational age at delivery for patients with cerclage was 32^{2/7} weeks, this was the same for both the emergent and prophylactic cerclages. The average gestational age at delivery for patients with no cerclage was 22^{2/7} weeks. Other variables include: a mean maternal age of 30.5 years, a prior second trimester loss in 23% (13/57), a history of cervical manipulations in 14% (8/57), and conception by ovarian stimulation in 28% (16/57). The remaining 72% either conceived spontaneously or the data was not reported in the record. Presenting symptoms were: asymptomatic in 49% (28/57), contractions in 26% (15/57), leaking fluid in 11% (6/57), pressure in 11% (6/57), and spotting in 5% (3/57). Neonatal outcome revealed survival in 55% (61/110) and the neonate either dying at birth or prior to discharge in 45% (49/110).

Conclusion: The incidence of CI in twin gestations at Banner Good Samaritan Medical Center (2001-2005) was 5.4% (57/1052), and the incidence classic CI is 4.0% (42/1052). These data suggest that a twin gestation is a significant risk factor for CI. Patients with twin pregnancies should receive serial assessment of the cervix similar to patients with more traditional risk factors of CI. Furthermore, if it is prospectively established that serial ultrasonographic surveillance of the cervix in patients with twins provides earlier diagnosis, and if intervention with cerclage is established as a beneficial therapy, then women with twin gestations should be counseled about CI and possible management options.
CONTINUITY OF CARE IN A FAMILY MEDICINE CLINIC WITH OPEN-ACCESS SCHEDULING COMPARED TO TRADITIONAL SCHEDULING

Kathy Phan, MD and Steven R. Brown, MD

Purpose: Delay of care contributes to increasing patient dissatisfaction with primary care. Patients are at times unable to see a primary care physician due to congested physician office schedules. In contrast to traditional scheduling, open access scheduling allows for only same day appointments for both urgent and preventative health care needs. Open access scheduling improves access, but because of its restrictions on pre-booking, may affect continuity of care. Continuity of care remains emphasized in family medicine residencies but can be difficult to achieve due to the nature of resident training. We examined continuity of care in a community-based family medicine residency program under open access scheduling compared to traditional scheduling.

Methods: Open access scheduling was implemented in July, 2003. Traditional scheduling existed prior to open access. No modifications in the assignment of continuity patients took place with the change in scheduling. We examined patient visits over a 2 year period, from January 2001 to December 2002, under traditional scheduling and with open access scheduling from January 2004 to December 2005. The number of patient visits and the provider seen during the studied time period were reviewed. Patients with less than 3 visits were excluded. Two previously published indices to measure continuity were used: the Usual Provider Continuity Index (UPC); (number of visits to most frequently seen provider/total visits to all providers) and the Modified Modified Continuity Index (MMCI); ([1- (n of providers/{n of visits + 0.1})]/[1-1/{n of visits + 0.1}]). Continuity scores for both indices range between 0 (if visits are to multiple providers) and 1 (if all visits are with the same provider). Descriptive statistics were used. Continuous variables were reported as means ± standard deviations, and categorical variables were reported as percentages. The Mann-Whitney test was used to determine differences between groups because the data were not normal. A two-tailed p < .05 was considered significant.

Results: Of 2208 patients seen during traditional scheduling, 475 had three or more visits. In the open access group, 2418 patient charts were reviewed, 375 had three or more visits. Both the mean UPC and MMCI decreased with open access scheduling. The mean UPC was 0.561 with traditional scheduling versus 0.535 with open access scheduling (p=0.013). Mean MMCI was 0.489 for traditional scheduling and 0.429 with open access scheduling (p=0.001). With regression analysis, the factors that contributed most to a decline in continuity were a decreased number of visits to the usual provider and an increased number of providers seen per patient with open access scheduling.

Conclusion: Continuity of care decreased in our clinic as an unintended consequence of implementation of open access scheduling. The results are significant to our residency since one of the hallmarks of family medicine is maintaining the physician and patient relationship. Open access scheduling improves access to care. However, primary care offices making this change may need to prioritize the maintenance of continuity during the implementation of this innovation.
PALPITATIONS AND TACHYCARDIA FROM THE USE OF HERBAL SUPPLEMENTS: SEVERAL CASE REPORTS

Dan Quan DO, Frank LoVecchio, DO

Introduction: Herbal products are ubiquitous on store shelves. Some herbal products are purported to enhance sexual arousal and performance. The products are available at convenience store, etc. to facilitate the amorous desires. We report three such cases in which they developed palpitations and tachycardia.

Case Report: Case One: A 21-year-old man ingested four tablets of Blue Up Supplement™ prior to attempting intercourse. Thirty minutes post ingestion the patient developed restlessness, tachycardia, agitation, and palpitations. Physical examination revealed diaphoresis, the inability to maintain eye contact, and the patient unable to sit still. His heart rate was 138 beats per minute and blood pressure was 154/105 mmHg. An electrocardiogram showed sinus tachycardia. Urine EMIT™ screen was positive for cannabinoids and negative for cocaine and amphetamines. He was administered lorazepam (4 mg total) over one hour. His vital signs normalized and he was asymptomatic within four hours.

Cases Two and Three: Two men (24 and 31 years old respectively) ingested Stinger RX™. They developed palpitations and tachycardia similar to the patient in Case One. Both of these patients’ symptoms resolved within four hours after they both received lorazepam 1 mg.

In all of the cases presented above, none of the three patients developed an erection. At 24-hour telephone call follow-up, all remained asymptomatic.

Discussion: We describe three cases of otherwise healthy young men ingesting yohimbine and guarana containing “natural sexual enhancers,” and developing palpitations and tachycardia. Yohimbine is a plant extract taken from bark of the West African Yohimbe tree native to Zaire, Cameroon, and Gabon. Yohimbine is a potent α₂-adrenergic receptor antagonist. Other effects include monoamine oxidase inhibition as well as calcium channel and peripheral serotonin receptor antagonism. High doses can cause tachycardia, dysrhythmias, hypertension, CNS stimulation, urinary frequency and salivation. The most severe toxicities are paralysis, cardiac failure, hypotension and death.

Guarana is harvested from the seed of the Guarana grown from a small tree that is native to the area of northern Brazil and Venezuela. Guarana has significant amounts of caffeine but also contains other stimulant substances such as theobromide and theophylline. Toxicity can cause tachydysrhythmias, mental status changes such as agitation, tremor and convulsions.

In all three of our cases the patients developed cardiovascular manifestations such palpitations and tachycardia. Symptoms resolved within four hours after supportive care and small doses of benzodiazepines.
Abstract 29  
Banner Good Samaritan Medical Center  
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A COMPARISON OF GLARGINE AND NPH INSULIN ON MATERNAL AND FETAL OUTCOMES IN WOMEN WITH DIABETES DURING PREGNANCY

Jaime Testa, MD, Karrie Francois, MD, Michelle Bez, DO

Purpose: Diabetes mellitus is the most common medical complication of pregnancy, affecting 2-5% of all live births. Prior to the introduction of insulin, pregnancies of diabetic women were associated with a significantly increased risk of maternal-fetal morbidity and mortality. The use of insulin has dramatically improved maternal glycemic control, resulting in healthy maternal and fetal outcomes. Traditional therapies include intermediate-acting insulin (NPH), to mimic the basal insulin release from the pancreas, and short-acting agents (regular or humalog) that mimic the bolus of insulin after eating. The nonphysiologic overlap of these regimens can result in both hyper- and hypoglycemic episodes and associated adverse pregnancy outcomes. Insulin glargine, a long-acting insulin analog, provides a steady state of basal insulin and may help prevent the nonphysiologic overlap of more traditional insulin regimens. In non-pregnant women, insulin glargine has resulted in decreased fasting glucose levels, improved hemoglobin A1C levels, and decreased nocturnal hypoglycemic episodes. It is currently a pregnancy category C (uncertain safety) drug, but has been used in a limited fashion during pregnancy. To date, no studies of its efficacy in pregnancy have been published. The purpose of this study is to compare the maternal and fetal outcomes for diabetic women on traditional insulin regimens (NPH/regular or humalog) versus insulin glargine.

Methods: This investigation was a case-control study, using medical and delivery records of women with diabetes mellitus who required insulin treatment during pregnancy for the year of 2005. Where appropriate, descriptive statistics, chi squared tests, and regression techniques were used for data analysis. A P value <0.05 was considered significant.

Results: A total of 27 cases were identified for the study: 22 control patients with traditional intermediate/short-acting insulin regimens and 5 patients with insulin glargine use. There were no differences between the insulin glargine cases and the controls in regard to fasting glucose levels (P= 0.41), postprandial glucose levels (P=0.50), or hemoglobin A1C levels (P= 0.47-0.86). The gestational age (GA) at delivery was significantly different between the two groups. The mean GA at delivery for the control group was 36 2/7 weeks, whereas the mean GA at delivery for the insulin glargine cases was 34 1/7 weeks (P=.041). The impact of this finding is unclear since one of the insulin glargine cases delivered at 27 weeks. There were no differences in neonatal outcomes between the two groups, including birth weight (P=0.66), respiratory distress syndrome (P=0.46), jaundice (P=0.78), and hypoglycemia (P=0.31).

Conclusion: The use of insulin glargine appears to be as effective as more traditional insulin regimens for glycemic control in pregnancy. This investigation will continue as an ongoing study in order to collect additional data for further comparisons between the insulin regimens and maternal-fetal outcomes.
HEALTH INFORMATION TECHNOLOGY AND HOSPITAL QUALITY OF CARE

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Purpose: This study evaluates the association between health information technology (HIT) implementation and hospital quality of care using nationally representative datasets from Healthcare Information and Management Systems Society (HIMSS) Analytics and the Center for Medicare and Medicaid Services (CMS). Previous health information technology (HIT) implementation evaluations have demonstrated improved medical outcomes for medication utilization, length of stay and order writing behavior. Prior studies have been limited in scope to individual hospitals and self-developed information systems. No prior national studies have examined the relationship between HIT implementation and hospital care quality.

Methods: Quality of care data was obtained from the 2005 CMS Hospital Quality Alliance (HQA). HIT implementation data was obtained from the 2004 HIMSS Analytics database. Hospital data was obtained from the 2002 American Hospital Association database. The data was linked via hospital identifiers and analyzed using a generalized linear model. The dependent variables included HQA hospital quality measures for myocardial infarction, heart failure, pneumonia, and surgical infection. HIT independent variables included clinical documentation, medical records imaging, computerized patient records, decision support, computerized provider order entry (CPOE), automated dispensing machines, medication bar coding, robotic drug dispensing, and electronic medication administration record. Control variables include facility size, hospital ownership, system membership, contract management, teaching status, specialty services, payer mix, case mix index, RNs per adjusted patient day, patient volume, rural location, and state fixed effects.

Results: After adjusting for hospital characteristics and geographic location, HIT is associated with higher hospital quality measures for AMI, heart failure, pneumonia, and surgical infections. The HIT effects varied by specific HIT application and across hospital quality measures. Significant effects were found across two aggregate measures of HIT implementation: the level of adoption of documentation systems and pharmacy systems. The components of documentation with significant effects included the presence of clinical documentation and computerized patient records. The components of pharmacy with significant effects included bar coding for dispensing and administration. No significant effects were found for CPOE and clinical decision support.

Conclusions: Despite significant literature on the beneficial effects of health information systems, most evidence is based on single center, self-developed applications which may not be generally available to community hospitals. This study uses nationally representative measures of HIT implementation and hospital quality of care and found significant relationships between the availability of specific HIT applications and higher hospital quality. The study is limited by the cross-sectional design and self-reported nature of the data. The benefits of HIT implementation may not be captured in a single year and accounting for the time lag may better gauge the effects of HIT. Overall, the study found that the availability of HIT is associated with higher hospital quality of care, but the effects of HIT implementation vary by HIT application and across hospital quality measures.
THE USE OF REPEAT CT ENTEROGRAPHY TO MONITOR CROHN’S DISEASE ACTIVITY


Purpose: To determine if imaging changes of Crohn’s Disease (CD) at sequential CT enterography (CTE) examinations correlate with disease progression or regression based on presenting symptoms and clinical follow-up.

Methods: A retrospective review identified 20 patients (15 women, 8 men; mean age=51.3y) with known CD who underwent 2 CTE exams. CTE exams were evaluated while blinded to clinical history to determine if imaging findings of CD were present and if so, if the findings progressed, regressed or remained stable between exams. Disease progression or regression based on CTE findings were then compared with presenting symptoms and clinical follow-up. Any endoscopic exams performed within 6 months of CTE were also compared.

Results: Mean time between CTE exams was 10.6 months (range 1-26 mo). The observed agreement for disease progression or regression by CTE and presenting symptoms was 16/20 (80%). In 4/20 (20%) patients, symptoms increased while CTE findings were negative or unchanged. None of the 4 patients had any change in CD treatment and at follow-up, 3/4 pts were asymptomatic and 1/4 had no change in symptoms. The weighted kappa, which measures the “chance adjusted” agreement between CTE and symptoms was 0.64 (95% CI=0.33 to 0.94). Ten patients had 12 endoscopic exams (ileoscopy = 11, capsule endoscopy =1). Endoscopy correlated in all CTE cases (12/12, 100%) and correlated less well with symptoms (9/12, 75%).

Conclusion: In the majority of CD patients, evidence of disease progression or regression correlated between sequential CTE exams and patient symptoms. In a subset of patients, however, patient symptoms did not correlate with active disease, and in these patients, CTE was more accurate in determining disease progression or regression.
CASE SERIES OF PAINFUL LEGS MOVING TOES: CLINICAL AND ELECTROPHYSIOLOGICAL OBSERVATIONS

Maria V. Alvarez, M.D., Virgilio G. Evidente, M.D., Charles H. Adler, M.D., PhD., John N. Caviness, Erica D. Driver-Dunckley, M.D.

OBJECTIVE: To characterize the clinical and electrophysiological features of patients with Painful Legs Moving Toes (PLMT).

BACKGROUND: Spillane et al first described PLMT, which later was broadened to include Painful Hands Moving Fingers (PHMF), and its painless variants Painless Legs Moving Toes (P-LMT) and Painless Hands Moving Finger (P-HMF). Descriptions of PLMT have been limited to case reports and one case series from England in 1994.

METHODS: We retrospectively reviewed the Movement Disorders database at Mayo Clinic Arizona from 1996-2006 for patients diagnosed with PLMT, PHMF, P-LMT, and P-HMF.

RESULTS: Of 4780 database patients with movement disorders, we identified 10 cases (4 men, 6 women): 6 PLMT, 2 PLMT/PHMF, 1 PLMT/P-HMF, 1 P-LMT. Age ranged from 55 to 84 years (average 75). 6 patients had bilateral limb movements, while 4 had unilateral movements. Movements consist of flexion-extension of the toes/fingers, and sometimes of the foot, asynchronous & asymmetric if present bilaterally. Pain preceded the movements, 5 had burning pain in legs/feet, others described numbness, tingling, shooting, or dull nagging pain. Family history revealed Parkinson’s disease in 2, and Alzheimer’s in 1. Four had degenerative joint disease on lumbosacral MRI, three had brain MRI/CT studies: 1 was normal, 1 showed a thalamic lacune, while 1 showed right frontal encephalomalacia. 8 patients had NCS/EMG: 3 had sensorimotor polyneuropathy, 2 had L5-S1 radiculopathy, 2 normal, and 1 had right median neuropathy but had PLMT. 1 patient with PLMT/PHMF had sural nerve biopsy that showed segmental demyelination presumably from Sjogren’s. 10 patients had neuropathic/radiculopathic symptoms or signs, with presumed etiologies as follows: 3 from Sjogren’s, 2 from lumbar stenosis, 2 from diabetes (1 of which also had IgG monoclonal gammopathy), 2 from drugs: perphenazine and trifluoperazine, and 1 from B12 deficiency. 1 patient on trifluoperazine and 1 on perphenazine had movements thought to be tardive in nature. 6 patients underwent surface EMG studies. These showed semi-continuous irregular EMG bursts lasting 80-1000 ms in the extensor digitorum brevis, tibialis anterior, and medial gastrocnemius, with co-contracting pattern most commonly. There were semi-rhythmic brief runs of 4-9 Hz frequency. The movements were partially suppressible and persistent during sleep. 3 had improvement of pain and movements with gabapentin, while one with pregabalin. Other medications tried unsuccessfully included SSRI’s, TCA’s, Antiepileptic drugs, lidocaine patch, quinine, hydrocodone, NSAIDs, and acetaminophen. 2 patients tried TENS, but were unsuccessful.

CONCLUSION: Our series of PLMT/variant patients represents the 2nd largest reported in literature. Most common triggering factor was pain due to neuropathy/radiculopathy. Moving fingers seen in 30% of cases in association with PLMT. Surface EMG studies show that movements are most akin to dystonia, similar to some cases of dystonia developing after peripheral nerve/tissue injuries. In PLMT, movements may be centrally generated, though triggered by peripheral nerve mechanisms. Gabaergic agents seem most successful in treating pain and movements.
IS THE CAT THE CULPRIT? A CASE OF CULTURE-NEGATIVE ENDOCARDITIS

Kirstin Bacani MD and Holenarasipur R. Vikram MD, FACP

Introduction
The diagnosis of blood culture-negative endocarditis requires definite evidence of endocarditis with aerobic and anaerobic blood cultures drawn over 24 to 48 hours remaining negative. Up to 20% of cases of endocarditis have negative blood cultures, but this is often due to antibiotic administration before drawing cultures. The incidence of true culture-negative endocarditis is closer to 3%. Bartonella species endocarditis accounts for 1-3% of infective endocarditis and 9-10% of culture-negative endocarditis. Cases due to B. quintana or B. hensalae are most common. Prosthetic valves are rarely affected. We report a case in which two prosthetic valves were affected by B. hensalae endocarditis.

Case report
A 43-year-old man was admitted for evaluation of endocarditis. Past medical history included culture-negative endocarditis seven years prior with placement of an aortic valve homograft and porcine mitral valve. He received antibiotics for six weeks following surgery and remained healthy until six months prior to admission, when he developed intermittent fevers. He had a history of polysubstance abuse and a kitten in the home. Outside evaluation revealed vegetations on the mitral valve and aortic valve thickening. Fourteen sets of blood cultures were negative. Serologies for Legionella, coccidiodomycosis, Q fever, Whipple’s disease, mycoplasma, cryptococcal antigen, Brucella, and HIV were negative. Chlamydia serologies were interpreted as the result of recent infection. He completed six weeks of ceftriaxone, daptomycin, doxycycline, and rifampin. Fever recurred immediately after completion.

On admission, cardiovascular exam disclosed regular heart tones with a II of VI systolic ejection murmur at the upper sternum, a II of VI diastolic murmur along the left sternal border, and a diastolic rumble at the apex. Prominent Corrigan’s pulsations were present with difficulty distinguishing carotid pulsations from jugular venous pressure. Skin and extremity exams revealed no findings of peripheral emboli.

The patient remained afebrile for six days without antibiotics. Echocardiogram revealed aortic valve vegetations with severe aortic regurgitation, mitral valve regurgitation, and severe mitral valve stenosis. Nine sets of blood cultures were negative. Laboratory evaluation was significant for Bartonella hensalae IgG 1:1024 and IgM <1:20 along with Bartonella quintana IgG 1:16382 and IgM <1:20. The prosthetic aortic and mitral valves were surgically excised and mechanical valves placed. Post-operative antibiotics included doxycycline, gentamicin, ceftriaxone, and vancomycin. The valves were sent for broad range 16-S PCR, which revealed a 100% match for Bartonella hensalae on the mitral valve.

Discussion
Patients with B. hensalae endocarditis often present subacutely with fever, heart failure, clubbing, hepatosplenomegaly, or embolic skin lesions. Diagnosis is made with extended incubation of blood cultures in combination with serologic studies. A titer of 1:800 IgG has 95% positive-predictive value. Cross-reaction between Bartonella and Chlamydia frequently occurs. Treatment includes antibiotic therapy with ceftriaxone or doxycycline for six weeks and an aminoglycoside for two weeks. Valve replacement is reported in 80% of cases. Survival is greater than 80% with the combination of antibiotics and valve replacement. The patient is doing well one year after surgery.
A ZEBRA WITH A HEADACHE, SYNCOPE, AND FLUSHING

Dianna M. Bastian, MD and Harry G. Teaford MD

Mastocytosis is proliferation of mast cells and their subsequent accumulation in various organ systems. This disease can be limited to the skin (cutaneous mastocytosis) or affect extracutaneous tissues (systemic mastocytosis). Organ systems predominantly affected are the skin, gastrointestinal tract, spleen, liver, lymph nodes, bone marrow and skeletal system. Respiratory tract and the endocrine system are rarely involved. There are no reliable estimates regarding incidence or prevalence of mastocytosis due to its under-diagnosis. The various presentations of this disease are often confused with other disorders.

A 40-year-old Caucasian female, without any significant medical history, presented with intermittent headaches, dizziness, flushing and syncope for nearly 15 years. These episodes occurred at various times without any identifying triggers. Despite many medical evaluations, she had not received a satisfying diagnosis or treatment. All previous diagnostic tests including electrocardiogram, 24-hour Holter monitor, echocardiogram, stress testing, and thyroid evaluation were negative. She was thought to have anxiety disorder along with migraine headaches. The patient was started on anxiolytics and migraine medications without relief. On our examination, she had no rashes, hives, abnormal skin pigmentation, lymphadenopathy or organomegaly. Her physical examination was benign. Our diagnostic workup was negative as well, except for an elevated serum tryptase level and an elevated urine histamine level.

Subsequently, the patient underwent a bone marrow biopsy, which revealed mast cell aggregation in the marrow. She was diagnosed with systemic mastocytosis and was treated with H1 and H2 blockers and disodium cromolyn. On follow-up, her symptoms had not completely resolved, but were much milder since initiating treatment.

Mastocytosis is a rare disease and because of its rarity physicians have limited exposure to clinical symptoms, diagnosis, and management. Systemic mastocytosis should be suspected in those patients who present with symptoms related to mast cell mediator release. The World Health Organization has proposed major and minor criteria to help with establishing the diagnosis of mastocytosis. The pathogenesis of mastocytosis is largely unknown, but scientists continue to identify growth factors and genetic mechanisms responsible for increased mast cell proliferation. Treatment varies with extent of organ involvement. Currently H1 and H2 blockers, disodium cromolyn, epinephrine, and oral steroids are used in treatment. More recent treatments such as interferon alpha, imitinab, and bone marrow transplant have been studied. As scientists discover more details of this disease, treatment options continue to expand.
ENDOCARDITIS MASQUERADE: THROMBOTIC VALVE OBSTRUCTION

Mayur Bhakta, MD; Joseph Charles, MD; Farouk Mookadam, MD

Introduction: Patient who presents with valvular masses with new-onset congestive heart failure and fevers are felt to be endocarditis until proven otherwise. It would be a mistake to practice this type of medicine and miss a diagnosis that calls for a different therapeutic modality altogether: thrombic valve obstruction.

Patient Presentation: Patient was a 70 year old Caucasian female with a history of rheumatic heart disease status post mitral valve replacement with Edwards Life pericardial tissue valve 2 months prior to presentation to the Mayo Clinic for 3 weeks of intermittent low grade fevers, chills, and two days of shortness of breath. Physical exam revealed a 3/6 pan-diastolic murmur heard loudest at the apex with a 2/6 holosystolic murmur heard best at the left upper sternal border. Chest x-ray demonstrated bilateral pleural effusions. Laboratory results showed a subtherapeutic INR ~ 2.14 and no leukocytosis. Transthoracic echocardiogram showed a mitral valve vegetation vs. thrombus that was causing a diastolic mean Doppler gradient of 10 mmHg, suggesting an obstruction. Right ventricular pressures were estimated at 68 mmHg with moderate-severe tricuspid regurgitation. Left ventricular was of normal size and function, as was the aortic valve. Patient was started on imipenem-cilastatin, vancomycin, and gentamicin empirically. The next day, a transesophageal echocardiogram (TEE) was obtained to further clarify the obstruction. The mitral valve no longer contained an obstruction, and the mean Doppler gradient was 6 mmHg. Right ventricular systolic pressure was 39 mmHg, and tricuspid regurgitation had dramatically improved. The left atrial appendage had a layered thrombus contiguous with the left atrial wall. Antibiotics were discontinued and anticoagulation was started, and over the next 7 days, fevers defervesced and pleural effusions resolved.

Discussion: This case highlights two disease states that are consistent with the above presentation: thrombotic and infectious complications of prosthetic valves. The aforementioned patient had only 1 major Duke Criteria for endocarditis on presentation. Further studies and clinical course were consistent with thrombus. Recommended prevention of this complication is adequate anticoagulation with vitamin K antagonists with goal INR 2.5. The change in diagnosis also changed therapeutic modalities, likely leading to a better outcome.
IMPACT OF CAVOTRICUSPID ISTHMUS ABLATION ON THE OUTCOME OF ATRIAL FIBRILLATION ABLATION

Nisha L. Bhatia, MD, Terrence J. Adam, MD, PhD, Michael D. Crowell, PhD, Komandoor Srivathsan, MD, Gregory T. Altemose, MD and Luis R. Scott, MD

Purpose: Atrial fibrillation (AF) and typical atrial flutter (AFL) often coexist in the same patient and likely share an arrhythmogenic substrate. However, the impact of cavotricuspid isthmus (CTI) ablation on the outcome of AF ablation is unclear.

Methods: Therefore, the effect of CTI ablation was analyzed in 59 consecutive AF ablations performed at our institution. The primary outcome was AF recurrence, occurring after or persisting beyond a 90-day blanking period. Successful CTI ablation was defined as bidirectional block along the CTI. Statistical methods included univariate chi-squared testing, proportional hazards, multivariate logistic regression and Kaplan-Meier analysis.

Results: The mean age was 62 ± 10 years and the follow-up ranged from 91-1202 days (median=215). Thirty-seven patients (63%) remained free of AF and 22 (37%) had recurrence. In patients who had CTI ablation, the recurrence of AF was significantly lower (risk ratio=0.36, p<0.05). The one-year chance of remaining free of AF was 78 ± 8%, compared to 50 ± 14% in those without CTI ablation (p<0.05). When only the patients without known typical AFL prior to AF ablation were analyzed (n=38), CTI ablation was still associated with an improved outcome (risk ratio=0.26, p<0.05). There was no association between AF recurrence and age, gender, prior SVT ablation, LA volume, type of catheter ablation (wide-area ablation or pulmonary vein isolation), and anti-arrhythmic drug use. However, the development of atypical atrial flutter on follow-up resulted in an increased risk for developing recurrent AF (odds ratio=28.0, p<0.01).

Conclusions: CTI ablation reduces the recurrence of AF after AF ablation, even in patients without prior typical AFL.
ADVERSE EFFECTS AND THE INCIDENCE OF ENDOSCOPIC REMOVAL OF THE BRAVO™ PH-METRY CAPSULE


Background: Ambulatory, wireless pH-metry with the BRAVO™ capsule (Medtronic Inc. Shoreview, MN) has gained popularity because of improved patient tolerability and fewer restrictions on normal diet and activity. With increased utilization, several small studies and case-reports have suggested that some patients have substantial awareness and symptoms during monitoring. Typically, the capsule detaches spontaneously, but occasionally severe discomfort requires endoscopic dislodgement of the capsule.

Aim: To evaluate the incidence of unexpected events from our clinical experience, including the frequency of endoscopic capsule removal and to provide a systematic review of all adverse events reported from published studies using the BRAVO™ capsule.

Methods: A retrospective chart review of 360 patients that had completed BRAVO™ pH-metry between Jan 2005 to Dec 2006 was completed. We also reviewed all available English-language literature in Medline, EMBASE and PubMed databases from 1966 to Sept 2006. An additional search of abstracts presented at annual gastroenterology meetings such as Digestive Disease Week (DDW) and the American College of Gastroenterology (ACG) was performed. Inclusion criteria entailed English language publications, adult human subjects, male and females, GERD and healthy subjects. Studies involving pediatric patients, BRAVO™ capsule placement other than esophagus, studies with patients with esophageal strictures, obstructions or manipulations of the upper gastrointestinal tract were excluded.

Results: Within our systematic literature review, eleven published articles, 7 abstracts, and 2 case reports were identified totaling 1367 BRAVO™ subjects. Chest discomfort was reported by 152 (11.1%), and 75 (5.5%) described esophageal discomfort. Throat discomfort and/or foreign body sensation was reported in 83 (6.4%) and 4 (0.3%) patients reported disturbed sleep. Consistent with these publications, our patients reported chest, throat, or esophageal discomfort, foreign body sensation and/or sleep disturbance. Endoscopic dislodgement due to moderate to severe chest discomfort was required in 2/360 (0.5%) patients at our institution. Both were female and complained of heartburn as the indication for the pH-metry. Similarly, chest discomfort was the most common complaint prompting endoscopic dislodgement in thirteen subjects (0.9%) and one reported complication of a perforated esophagus in the systematic review.

Conclusions: This is the first systematic review of BRAVO™ capsule related adverse events. The most frequent adverse events reported were chest discomfort. Endoscopic removal at our institution was <1%, which is consistent with the published literature. Additional studies prospectively evaluating predictors of adverse events might help guide the most appropriate use of BRAVO™ wireless pH-metry.
Abstract 38
Mayo Clinic Arizona
Advanced Radiology

STEADY STATE FREE PROCESSION: APPLICATIONS IN ABDOMINAL MR IMAGING

Kimberly Burkholz, MD, Alvin Silva, MD, Amy Hara, MD, Mayo Clinic Arizona; James Glockner, MD, PhD, Mayo Clinic Rochester

Purpose:
The purpose of this poster is to review Steady-State Free Precession (SSFP) technique and to illustrate various applications of the SSFP technique as it pertains to abdominal imaging. Additionally, we demonstrate artifacts and pitfalls related to this technique.

Methods/Results:
Methods for optimizing Steady-State Free Precession (SSFP) sequence for abdominal imaging are reviewed. We demonstrate multiple lesions with the SSFP MR sequence as compared to other MR sequences in the following organ systems:

Liver: Examples of T2 and SSFP for cyst, hemangioma, HCC, and various T2 hypointense and hyperintense metastases
Biliary: Depict normal/abnormal MRCP using 2D- & 3D-SSFP
Small Bowel: Use of SSFP for MR Enterography
Vascular: Uses in MRA/MRV including thrombosis, emboli, & vaculitides
Artifacts with SSFP

CONCLUSION: Technological advances have allowed for an expansion of the role of SSFP in abdominal imaging. In this regard, it can be a helpful adjunct as a complementary sequence for characterizing hepatic lesions. It is also a useful sequence in evaluating biliary, vascular and small bowel abnormalities.
A TWIST IN THE TALE

Dr Alexis Christie, Dr Daniel Roberts

Introduction:
Melanoma is a disease that tends to affect younger people, and as a result the potential years of life lost are huge. Half of all melanomas are found in people under the age of 57. If detected early the cure rate is almost 100%, however fewer than 5% of people with metastatic melanoma survive 2 years. The incidence of melanoma worldwide is increasing faster than any other cancer, and the mortality has risen 50% since 1973. In the US, the lifetime risk of developing melanoma is now 1 in 87 (in Australia it is 1 in 25). Arizona has twice the risk of the other US states. Faced with these statistics, as internists we need to identify and monitor melanoma efficiently.

Case Report:
A 78 year old gentleman presented to his local hospital with deteriorating functional level, manifest by fatigue, weakness, urinary incontinence and falls. Further questioning elicited a weight loss of 9 kilograms, abdominal pain and constipation and mild weakness in his left leg which had been gradually worsening over 5 months. His daughter had noticed blood stains on his underwear.

On examination he was a frail stooped man with pale skin and conjunctiva. He had LIF fullness and tenderness. Rectal exam revealed external haemorrhoids and a small amount of fresh blood. Lab tests revealed a microcytic, microchromic anaemia. ESR was 61 and CRP 133. Due to radiology pressures an USS was done initially, which showed an 11cm heterogeneous mass in the right upper quadrant, and a second mass of similar texture in the mid pelvis. CT scan confirmed the presence of a 9cm mass on the right adrenal, a 3cm mass on the left adrenal, and a large 10x12x25cm mass replacing the left iliopsoas, extending from the left kidney to the inguinal region. All three deposits had the appearance of metastatic melanoma.

Most interestingly in this case, far from being lost to follow up the patient had been seen ad infinitum at his local hospital. He was diagnosed 9 years earlier with a 9mm diameter lesion on his right great toe, which was excised and closed with a split skin graft. Histology showed a Clarke level 3 melanoma with a Breslow thickness of 3.6mm. The lesion was well clear of all margins. Between the initial excision and his terminal presentation, the patient was seen a total of 35 times for specialist melanoma follow up, and had 5 lymph node excisions, 3 further non malignant skin lesions excisions, a CT and an MRI (On re examining the MRI spine taken 3 months prior to diagnosis the radiologist revised his report and admitted it was visible.)

The patient continued to deteriorate and passed away less than 4 weeks after diagnosis, 6 weeks after admission.

Discussion:
This patient broke all the established rules of melanoma. He was a white male who had never had excess sun exposure, did not recall being sunburnt, had worked his whole life in a desk job, and lived his whole life in the UK. He had no family history of melanoma, nor was he ever immunocompromised. His melanoma presented on a non sun exposed area.

This case illustrates the point that we can never be too careful with melanoma, and we should make few if any assumptions about the manner of presentation or recurrence. Where melanoma is in the past medical history, it should always be high on the list of differential diagnoses.
IS THERE A ROLE FOR SENTINEL LYMPH NODE BIOPSY IN NONMELANOMA SKIN CANCER?
Craft R., Pockaj B., Gray R., Casey W.

Background: The purpose of this study was to determine the feasibility of sentinel lymph node (SLN) biopsy in nonmelanoma skin cancers.


Results: Twenty-two patients (mean age 60 years, range 17 to 85) with high-risk nonmelanoma skin tumors underwent SLN biopsy: 11 squamous cell carcinomas (SCCs), 6 Merkel cell carcinomas (MCCs), and 5 other skin cancers, all clinical stage N0. All patients had at least one identifiable SLN. In 5 patients (2 SCCs, 2 MCCs, and 1 pilomatrix tumor) the SLNs showed histological evidence of metastatic disease. In 4 of these 5 patients, radical lymph node dissection (RLND) was performed, revealing additional lymph node involvement in 1 patient with pilomatrix tumor. Of the 16 patients with a negative SLN, none demonstrated evidence of systemic disease after a mean follow-up of 11.7 months (range 0 to 34.7 months, median 9.5 months). No patients experienced post-operative complications related to their SLN or RLND; 2 patients experienced wound dehiscence at the site of wide local excision, and 1 patient had documented cellulitis during adjuvant radiation therapy.

Conclusion: Our data suggests that SLN biopsy is an effective, minimally invasive tool in the treatment of high-risk nonmelanoma skin cancer.

Table 1. Clinical and histological characterization of the 11 patients with squamous cell carcinoma

<table>
<thead>
<tr>
<th>Patient (age)</th>
<th>Sex</th>
<th>Tumor localization</th>
<th>Size (cm)</th>
<th>Differentiation</th>
<th>Perineural/vascular involvement</th>
<th>Vertical depth</th>
<th>SLN</th>
</tr>
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<tr>
<td>1(60)</td>
<td>M</td>
<td>Forehead</td>
<td>4.5x5.5</td>
<td>Well-differentiated</td>
<td>N</td>
<td>Bone</td>
<td>-</td>
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<td>2(67)</td>
<td>M</td>
<td>Temple</td>
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<td>Y</td>
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<td>3(78)</td>
<td>M</td>
<td>Cheek</td>
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<td>Well-differentiated</td>
<td>Y</td>
<td>Deep dermis</td>
<td>-</td>
</tr>
<tr>
<td>4(77)</td>
<td>M</td>
<td>Scalp</td>
<td>2.5x2</td>
<td>Moderately-differentiated</td>
<td>Y</td>
<td>Deep dermis</td>
<td>-</td>
</tr>
<tr>
<td>5(61)</td>
<td>M</td>
<td>Cheek</td>
<td>3.5x2.5</td>
<td>Moderately-differentiated</td>
<td>Y</td>
<td>Muscle</td>
<td>-</td>
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<td>6(43)</td>
<td>M</td>
<td>Scalp</td>
<td>-</td>
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<td>Deep dermis</td>
<td>-</td>
</tr>
<tr>
<td>7(67)</td>
<td>M</td>
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<td>-</td>
<td>Poorly-differentiated</td>
<td>N</td>
<td>Bone</td>
<td>-</td>
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<td>8(73)</td>
<td>F</td>
<td>Shin</td>
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<td>Y</td>
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<tr>
<td>9(72)</td>
<td>M</td>
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<td>4.5x2</td>
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<td>N</td>
<td>Deep dermis</td>
<td>-</td>
</tr>
<tr>
<td>10(74)</td>
<td>F</td>
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<td>Moderately-differentiated</td>
<td>Y</td>
<td>Subcutis</td>
<td>+</td>
</tr>
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<td>11(69)</td>
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<td>Poorly-differentiated</td>
<td>N</td>
<td>Deep dermis</td>
<td>+</td>
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EFFECT OF LOCAL, LONG-TERM DELIVERY OF PLATELET DERIVED GROWTH FACTOR (PDGF) ON INJECTED FAT-GRAFT SURVIVAL IN SCID MICE

Randall Craft, MD; John Rophael, MBBS; Wayne A Morrison, MDBS; Aditya V Vashi, MSc; Geraldine M Mitchell, PhD; Anthony J Penington, MBBS

Background: Autogenous fat injection is widely used for the correction of acquired and congenital soft tissue defects. However, the high absorption rate results in the need for over-correction of the defect and repeat procedures. We hypothesized that platelet-derived growth factor (PDGF), a potent mitogen and known stimulant for murine preadipocytes, would improve fat-graft survival when concentrations were sustained with a gelatin microsphere delivery system.

Methods: Abdominal fat was harvested from an otherwise healthy 43-year-old woman during a breast reconstruction. Prior to subdermal injection into severe combined immunodeficient mice, the fat grafts were divided into 1 ml aliquots, mixed with microspheres bound to PDGF, free PDGF, or nothing depending on its experimental group, and weighed. The following experimental groups were thus created (minimum n= 8 per group): (1) fat graft control, (2) fat graft with free PDGF, (3) fat graft with blank microspheres, and (4) fat graft with microspheres bound to PDGF. After 12 weeks, the fat xenografts were harvested for analysis of weight maintenance and histological and morphometric evaluation.

Results: The addition of PDGF bound to gelatin microspheres was effective in improving xenograft weight maintenance (p=0.018) and preservation of adipose tissue architecture (p<0.0005) compared to controls at 3 months. The microspheres were completely absorbed at 12 weeks.

Conclusions: Sustained, local delivery of PDGF via a gelatin microsphere delivery system resulted in improved weight maintenance of the xenografts with greater preservation of adipose tissue architecture at 3 months compared to controls.
ANEMIA FOLLOWING INITIATION OF ANDROGEN DEPRIVATION THERAPY FOR METASTATIC PROSTATE CANCER: A RETROSPECTIVE CHART REVIEW

Kelly K. Curtis MD, Terrence J. Adam MD, PhD, Shu-Chuan Chen PhD, Rajiv K. Pruthi, MD, Michael K. Gornet MD

PURPOSE: Androgen deprivation therapy (ADT) is the mainstay of therapy for advanced prostate cancer. Hemoglobin levels often decline into the anemic range with ADT. Little is known about the consequences of this anemia. We conducted a chart review of patients receiving ADT for metastatic prostate cancer to determine hemoglobin levels before and during treatment, and assessed anemia-related symptoms.

METHODS: 135 Stage IV prostate cancer cases were reviewed for treatment given (radiation, orchiectomy, hormonal agents and/or chemotherapy); hemoglobin values before and after beginning treatment; and symptoms of anemia. Mean hemoglobin levels before and after for all treatment forms, for leuprolide alone, and for combination leuprolide/bicalutamide were calculated and evaluated for significant differences. The numbers of patients developing symptoms were recorded and the effects of specific therapies evaluated. The Mayo Clinic Institutional Review Board approved the conduct of the study.

RESULTS: For all forms of treatment, mean hemoglobin declined by -1.11 g/dL (p<.0001). Patients treated with leuprolide alone had a mean decline of -1.66 g/dL (p<.0001). Patients treated with leuprolide and bicalutamide had a mean decline of -0.78 g/dL (p=0.0426). 16 of 43 patients were identified to have anemia symptoms. Contingency analysis with Fisher’s exact test shows patients receiving leuprolide therapy alone versus other forms of ADT were significantly less likely to have symptoms ($\chi^2 = 0.0190$).

CONCLUSIONS: The present study confirms that ADT results in a significant drop in hemoglobin levels into the anemic range. A number of patients become symptomatic from this change. Practitioners should monitor hemoglobin levels, and treat symptomatic patients in accordance with national guidelines.
A 22-year-old female presented with complaints of nausea and vomiting over one week. Abdominal pain was limited to the time around episodes of emesis only. Otherwise, she was without fevers, chills, or diarrhea. She had no previous history of gastrointestinal complaints and no previous abdominal surgeries. Her past medical history and review of systems were notable for intermittent complaints of hand and feet swelling which had been occurring over the previous six months. Her only medication was an oral contraceptive which was not a new prescription. The remainder of the patient's history was unremarkable.

Physical exam revealed a well-developed, afebrile female with stable vital signs. Her exam was most remarkable for peri-orbital fullness or edema and mild diffuse abdominal tenderness. There was no evidence of distal extremity swelling. Labs showed a normal white count and a pregnancy test was negative. Computerized tomography of the abdomen and pelvis was the most remarkable study showing thickening of the wall of the duodenum starting at the pylorus and extending through to the proximal jejunum. The differential diagnoses considered included an infectious process, inflammatory bowel disease, and angioedema of the bowel. Enteroscopy showed normal appearing mucosa which appeared slightly edematous. Given her overall history, markers for angioedema were checked. The patient was found to have decreased C1 inhibitor levels consistent with angioedema.

Angioedema is a self-limited, often localized swelling of soft tissues or viscera. Symptoms typically develop over minutes to hours and resolves in days. Several categories exist including acquired, hereditary, idiopathic, or medication induced forms. Visible manifestations include swelling of the hands, feet, lips, and tongue. Internal swelling may also occur including the airway or, as in this case, the gastrointestinal tract. Diagnosis of gastrointestinal involvement is arrived at by a careful history, physical exam, laboratory testing including tryptase levels and complement component levels, and imaging. Accurate diagnosis is important as there have been a number of cases of angioedema of the bowel that have been mistaken as an acute abdomen requiring surgery. Therapy for angioedema is driven by the form. For example, remove an offending agent if it is suspected as the etiology. Medications that have been used include steroids, epinephrine, antihistamines, and stanozolol and danazol. Which medication is used is again directed by the type of angioedema.
INTRODUCTION: There are many causes of a soft tissue mass in the region of the cubital tunnel. An accessory anconeus epitrochlearis muscle is a well described variant in this location that can be a rare cause of a focal soft tissue mass. The muscle can vary in size and shape from very small and fusiform to a thick, rectangular structure, which can be palpated on physical examination. As demonstrated in this case, in the setting of gout, soft tissue tophi can also mimic an accessory muscle.

CASE REPORT: A 31-year-old male had been having problems with intermittent locking and catching of his elbow for several years. The last episode of locking, approximately 1 year prior, terminated with a sudden extension which was accompanied by the development of a nodular soft tissue mass in the medial aspect of his elbow. Since that episode, his locking symptoms have disappeared. The mass has increased in size a minimal amount. No pain at the elbow and he denied any history of trauma to the area, fever, chills, night sweats, or weight loss. Past medical history was significant for gout, currently taking Indocin and allopurinol. Physical examination revealed a full range of motion at the elbow. Pronation and supination were normal. A nodular firm mass could be palpated in the subcutaneous tissues along the medial aspect of the elbow.

Review of outside MR imaging demonstrated a soft tissue mass adjacent to the medial epicondyle, which followed muscle signal intensity on all sequences. Enhancement of the mass was similar to adjacent muscle. A mild amount of edema and enhancement was present in the subcutaneous fat surrounding the mass. The appearance favored an edematous anconeus epitrochlearis accessory muscle.

The patient subsequently underwent open excision of the mass. A piece of thickened, rubbery, yellow-tan tissue measuring 2.1 x 1.2 x 0.9 cm was excised. Adherent to the tissue was white chalk-like material. The pathologic examination revealed urate crystal deposition with foreign body giant cell reaction and chronic inflammation in connective tissue, consistent with a gouty tophus. Direct visualization of the area revealed no evidence of an accessory muscle.

DISCUSSION: The anconeus epitrochlearis is an accessory muscle that, when present, originates from the medial border of the olecranon, crosses the ulnar nerve and inserts on to the medial epicondyle of the humerus. In humans, the muscle is often replaced by a band which also extends from the medial epicondyle to the olecranon and is called the epitrochleoanconeus ligament. The variant anconeus epitrochlearis, when present, can contribute to the roof of the cubital tunnel and be a rare cause of cubital tunnel syndrome. Treatment of cubital tunnel syndrome in the setting of an anconeus epitrochlearis consists of surgical decompression with local excision of the anconeus epitrochlearis muscle, with or without anterior subcutaneous transposition of the ulnar nerve.

Although the MR appearance of this case mimicked an edematous anconeus epitrochlearis, final pathology proved a gouty tophus. Subcutaneous tophaceous deposits of monosodium urate may occasionally occur as the initial manifestation of gout. Generally, soft tissue tophi are more common in patients with longstanding disease or who have responded poorly to treatment. In the elbow, soft tissue swelling is often caused by extra-articular tophi in the olecranon bursa, or in the soft tissues. Pressure from tophi can produce mass effect on adjacent neurovascular structures. MR imaging of gouty tophi can be nonspecific and can mimic an infectious or neoplastic process or, as demonstrated by this case, an accessory muscle.
PNEUMOMEDIASTINUM AND PERICARDIAL EFFUSION IN A 40 YEAR OLD MALE WITH ANOREXIA NERVOSA

Mackram F. Eleid, M.D., Joseph C. Charles, M.D.

Introduction: Pneumomediastinum (PM) is defined as free air or gas in the mediastinum and is an uncommon finding. The etiology is usually from the airway, esophagus, or external trauma/surgery. Spontaneous PM can exist in isolation or in conjunction with pneumothorax and soft-tissue emphysema. Elevated intraalveolar pressures related to mechanical ventilation or activities involving valsala maneuvers along with pre-existing lung disease account for the majority of pulmonary-related PM. Esophageal tear or rupture is another less-common cause of PM. We report a case of pneumomediastinum along with a moderate pericardial effusion in a middle-aged male with anorexia and no known history of esophageal or airway trauma.

Case Report: A 40 year old male with a history of anorexia, depression, and recent weight loss presented for a general medical evaluation prompted by his concerned father. A computed tomography (CT) scan of his chest showed a moderate amount of pneumomediastinum (PM) extending superiorly into the tissues of the neck. He also had a moderate-sized pericardial effusion. The patient denied symptoms of chest pain, shortness of breath, nausea, vomiting, or recreational drug use. Specifically the patient admitted to a depressed mood but denied any vomiting, retching, or autodestructive behavior. He had no history or evidence of underlying pulmonary disease. Other notable findings consistent with the patient’s eating disorder were BMI (body mass index) of 15, leukopenia, hyponatremia, bradycardia and low blood pressure. A subsequent gastrograffin esophogram showed no obvious leaks or abnormalities. The patient was admitted to the hospital, allowed nothing by mouth, and placed on intravenous piperacillin/tazobactam and nutrition. Transthoracic echocardiogram to evaluate the pericardial effusion on the first hospital day showed early tamponade physiology. Repeat evaluation 2 days later showed mild right atrial collapse but no evidence of hemodynamic compromise. On the fifth hospital day a repeat CT scan showed moderate improvement of the PM. The patient was discharged home with outpatient follow-up.

Discussion: The age and gender of the patient were atypical for anorexia nervosa although he indeed had a restrictive eating disorder. The pneumomediastinum (PM) and pericardial effusion were additive unique findings that likely related to his malnourished state and possible undisclosed autodestructive behavior. Identifying the etiology of PM and monitoring for further progression or complications is important.
COMMON VARIABLE IMMUNODEFICIENCY IN A PATIENT WITH CONGENITALLY CORRECTED TRANSPOSITION OF THE GREAT ARTERIES

Rodney Engel MD, Richard Helmers MD, A Jamil Tajik MD

Congenitally corrected transposition of the great arteries (CCTGA) is a rare disorder where patients have the anatomical right ventricle as their systemic pumping chamber. While multiple cardiac disorders have been described over the course of this disease, there are no reports of infectious complications in these otherwise debilitated patients.

We report a case of a 59 year old male with CCTGA who presented to our institution with life threatening sepsis and a history of recurrent pneumonias. The patient was aggressively resuscitated with fluids, vasoactive medications, and antibiotics. Given his history of recurrent pneumonias, secondary causes for these disorders were investigated. After diagnostic workup we determined that this patient additionally has common variable immune deficiency (CVID).

CVID is a heterogenous disorder characterized by low serum immunoglobulins, recurrent bacterial infections, and impaired antibody response despite the presence of B cells. CCTGA has had numerous descriptions of infective endocarditis associated with it. The etiologies of both of these diseases are poorly understood. As they are both rare entities it may be that a molecular or genetic basis for a relationship. As more information about these disorders arises there may be evidence of an association between these two rare conditions.
USE OF THE PEDICLED TENSOR FASCIA LATA MYOCUTANEOUS FLAP IN THE SALVAGE OF UPPER EXTREMITY HIGH VOLTAGE ELECTRICAL INJURIES

Grant Fankhauser, MD, Aaron Klomp, MD, Anthony Smith, MD, Alanna Rececca, MD

Introduction: High voltage electrical burns of the upper extremity are often limb threatening. Typically, emergency fasciotomies are followed by serial debridements until only viable tissue remains. Post-debridement flap coverage is required to preserve viable but exposed tendons, nerves, vessels, bones, and joints and to salvage these seriously injured upper extremities. Flap options are generally limited to large pedicle flaps or free tissue transfer. Despite the array of flaps available, surgical options become limited when upper extremity injuries are extensive or the initial flap fails. The most commonly employed pedicle flap, the groin flap, may not provide adequate soft tissue coverage in these cases. Additionally, free tissue transfer can be difficult, due, in part, to the uncertainty in determining the complete zone of injury and whether the flap recipient vessels are suitable for the transfer.

An ideal flap for coverage would be relatively thin and pliable, have a constant, reliable pedicle, and be large enough to cover wounds of significant size. Few surgeons have experience with the pedicled TFL flap for upper extremity coverage. We demonstrate its use in the salvage of extensive upper extremity injuries on 3 limbs in 2 patients. We believe this flap offers a distinct advantage compared with the groin flap when pedicled flap coverage of the upper extremity is required.

Case Report: Patient 1- A 27 yr old man sustained bilateral upper extremity electrical burns. Initial free tissue transfers to both arms were unsuccessful. The patient subsequently underwent simultaneous bilateral pedicled TFL myocutaneous flaps. Both flaps were delayed at 2 weeks and divided at 3 weeks. There was complete flap survival bilaterally, leading to salvage of both upper extremities.

Patient 2 – A 23 yr old man sustained severe electrical burns to his right upper extremity. Following serial debridements, a pedicled TFL myocutaneous flap was used to provide soft tissue coverage of this extensive injury. The flap was delayed at 2 weeks and inset at 3 weeks. There was complete survival of the flap, leading to salvage of the extremity.

Discussion: Limb salvage in severe upper extremity electrical injuries is difficult even in the best circumstances. Dependable flap coverage is mandatory to prevent infection and avoid the need for early or late amputation. The pedicled TFL flap in our series of patients has served to be a dependable flap in these severe upper extremity injuries and should be added to the surgical armamentarium of those caring for these difficult surgical problems.
SCLERODERMA RENAL CRISIS OR THROMBOTIC THROMBOCYTOPENIC PURPURA?

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1Department of Internal Medicine, 2Division of Rheumatology, Mayo Clinic Arizona.

Introduction: Scleroderma renal crisis (SRC) is a severe form of kidney disease that develops in 10-15% of patients with systemic sclerosis. It is characterized by an abrupt onset of hypertension with associated onset of renal failure and mild proteinuria. Occasionally, microangiopathic hemolytic anemia may be present which can delay the diagnosis of SRC due to concern about possible thrombotic thrombocytopenic purpura (TTP).

Case Report: A 47 year-old female presented for evaluation of scleroderma. One year prior she noticed Raynaud’s phenomenon and progressive tightness of the skin of the hands, upper and lower extremities, face, chest and abdomen. More recently she had noted discoloration of the skin, pruritus, fatigue and migraine headaches. At diagnosis ANA was 1:320, with negative anti-centromere and anti-SCL-70 antibodies. On exam patient was normotensive, had decreased oral aperture and was noted to have diffuse skin sclerosis. No telangiectasia, digital ulcers or livedo reticularis were noted. Musculoskeletal exam was otherwise unremarkable. Cardiopulmonary and abdominal exam were normal. Initial laboratory exams were significant for serum creatinine of 2.2 mg/dL, K 2.5 mEq/L, Hb 10.2 g/dL, WBC 16.9, platelets 88, moderate schistocytes on blood smear, haptoglobin < 14 mg/dL and LDH 849 U/L, with mild proteinuria and microscopic hematuria. Due to the presence of microangiopathic hemolytic anemia, thrombocytopenia and increased serum creatinine, a presumed diagnosis of TTP was made and plasmapheresis was promptly started. SRC was also considered in the differential diagnosis and captopril was also given. Further laboratory work-up included studies that revealed normal amounts of von Willebrand antigen with a very high plasma renin activity, further supporting the diagnosis of SRC. Plasmapheresis was discontinued and captopril continued. Thrombocytopenia and anemia improved, but non-oliguric renal failure progressed with increasing BUN and serum creatinine in spite of good blood pressure control. Six weeks after discharge her serum creatinine was 9.6 mg/dL. At her latest follow-up, 5 months after diagnosis, creatinine improved to 2.3 and BUN to 24. She has not required hemodialysis and is currently on enalapril.

Discussion: Although the association of TTP with scleroderma is rare, the distinction between TTP and SRC is relevant because of their different management. Microangiopathic hemolytic anemia, the hallmark of TTP, can also be present in patients with SRC. Other laboratory studies can provide useful information to distinguish SRC from TTP. These include the presence of high levels of plasma renin activity in patients with SRC and decreased activity of von Willebrand factor-cleaving protease activity in patients with TTP. This case illustrates the similarities and differences in diagnosis and management of SRC and TTP.
PUBLIC REPORTING FOR TREATMENT OF ST SEGMENT ELEVATION MYOCARDIAL INFARCTION IMPROVES COMPLIANCE WITH CLINICAL GUIDELINES: A SINGLE CENTER EXPERIENCE

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INTRODUCTION:
The quality of care of patients with AMI is evaluated by publicly reported adherence to clinical guidelines. Our goal was to measure adherence to clinical guidelines before and after the inception of public reporting.

METHODS:
We performed a retrospective chart review of patients admitted between 1999 and June 2006 (n=268) with the diagnosis of STEMI. Subjects were divided into three groups: before public reporting (A), transitional period between the inception of public reporting and the implementation of admission and discharge order sets and hospital staff education (B), and after implementation of these measures (C).

RESULTS:
Post-hoc analysis of a one-way ANOVA revealed significant difference between groups in mean times from arrival in the emergency department (door) to time of balloon inflation (door to balloon), door to ECG, and from catheterization lab arrival to guidewire across lesion (lab to wire). There was no significant difference in length of stay or in-house mortality between the groups.

CONCLUSION:
Given that discharge and admission order sets did not address door to balloon times, the fact that these times did improve suggests that public reporting itself improves adherence to published guidelines (analogous to the Hawthorne Effect). Analysis of other publicly reported AMI measures for these patients is pending.

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<th>A</th>
<th>B</th>
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<td>Reperfusion Times (mean, minutes)</td>
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<td>Door to Balloon</td>
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<td>Lab to Wire</td>
<td>35.5 ± 1.6</td>
<td>33.4 ± 3.4</td>
<td>22.5 ± 1.1</td>
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<td>#&lt;90 minutes</td>
<td>44/109 (40%)</td>
<td>26/48 (54%)</td>
<td>55/93 (59%)</td>
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<td>Mortality</td>
<td>3/120 (2.5%)</td>
<td>1/31 (3.2%)</td>
<td>2/111 (1.8%)</td>
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<tr>
<td>Length of Stay (days)</td>
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<td>4.6 ± 0.4</td>
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<td>0.739</td>
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RECTAL BLEEDING: A CASE REPORT OF LOCALIZED AMYLOIDOSIS OF THE COLON

Stephanie L. Hansel, MD MS and Arthur D. Shiff, MD, Department of Gastroenterology

Introduction: Primary (AL) amyloidosis is usually classified as a systemic disease involving the heart, kidneys, liver, peripheral nervous system, and gastrointestinal tract. Patients present with weakness, fatigue, and weight loss. Once diagnosed with amyloidosis, the median survival rate is only 13.2 months depending on the organ system involved. Current treatment for primary systemic amyloidosis consists of hematopoietic cell transplant, clinical trials, or melaphalan/dexamethasone. Interestingly, AL amyloidosis can also be a localized disease affecting only one organ system. When it is a localized disease, the amyloid deposits are found mainly in the respiratory tract, lower genitourinary tract, or skin. However, there are scattered case reports in the literature of a rarer entity, localized AL amyloidosis of the colon. In these cases, patients often present with rectal bleeding and further testing is negative for systemic deposition of amyloid. The prognosis for these patients is excellent and they do not require systemic treatment. In the few patients that have been followed long-term, none have gone on to develop systemic amyloidosis. Thus it is very important to distinguish between systemic and localized amyloidosis of the colon as it has significant impact on prognosis and treatment implications for the patient.

Case Report: A 57 year old male presented to Gastroenterology complaining of rectal bleeding for the past 3 weeks. He noted frank blood on the toilet paper as well as mixed in his stool. He otherwise was feeling well and denied joint pain, iritis, and any skin lesions. He had a similar episode 5 years prior. At that time, he underwent a colonoscopy with biopsies which were non-diagnostic. He was started on mesalamine but only took the medication for 3 weeks time as his rectal bleeding resolved. He reported no family history of inflammatory bowel disease. Laboratory studies including a CBC and CMP were within normal limits. His colonoscopy revealed patchy non-specific lesions involving the distal 50 cm of his colon (see photograph below). Biopsies were obtained and showed amorphous globular material in the lamina propria, vessel walls, and muscularis mucosae. It stained positive for amyloid. Further immunohistochemical stains were positive for primary or AL amyloidosis of lambda light change type. The patient was referred to Hematology for further work-up of amyloidosis. He underwent a bone marrow aspirate and biopsy, an echocardiogram, chest x-ray, 24-hour urine analysis for protein, and a battery of blood tests. The results of these extensive tests were negative for systemic amyloidosis, thus leaving the patient with a diagnosis of localized AL amyloidosis of the colon.

Discussion: Localized AL amyloidosis of the colon is an uncommon disease. Unlike systemic amyloidosis, it has a very good prognosis. Since both localized and systemic AL amyloidosis can affect the colon, it is important to distinguish between the two for prognostic and treatment implications. Patients found to have only localized disease of the colon may require localized treatment such as argon plasma coagulation to control bleeding but they do not require systemic treatment. Due to the lack of long-term data, it is unknown if these patients should undergo periodic surveillance for systemic amyloidosis.
**MYCOBACTERIUM MARINUM “FISH TANK GRANULOMA” AS A CAUSE FOR A MYSTERIOUS TENOSYNOVITIS IN A 53-YEAR-OLD MALE: A CASE REPORT**

Jennifer R. Hartmark-Hill, MD and Keith Frey, MD, Family Medicine

**Introduction:** Mycobacterium marinum infection (otherwise known as “fish tank granuloma”), is a rare cause of chronic granulomatous flexor tenosynovitis, leading to significant morbidity in the hand. Often, treatment is delayed by months or even years because of lack of consideration of diagnosis. Mycobacterium marinum is one of the five most common bacterial soft tissue infections that arise as complications to injuries with exposure to water or water-related animals. The most typical presentation of a Mycobacterium marinum infection is one in which there is a history of traumatic injury, such as by puncture wounds due to fishhooks or fish spines, or lacerations due to boat motor propeller blades preceding the onset of infection. We report a case in which significant morbidity resulted from hand wound exposure to fish tank water.

**Case Report:** A 53 year-old male with a history of chronic fatigue, fibromyalgia, chronic prostatitis and recurrent herpetiform oral lesions was otherwise in a good state of health when he sustained multiple, mild superficial abrasions to his right fourth finger from an electric sander while building cabinetry. Although the wounds were not deep, the patient noted unusually slow healing, with resolution occurring about 6 weeks after the initial trauma. One month after the healing of his wounds the patient sought medical attention for right fourth finger swelling and redness. Exam revealed significant tenderness over the level of the A1 pulley with mild flexor tendon crepitus. Laboratory tests revealed no elevation in neutrophil count along with normal values of erythrocyte sedimentation rate, c-reactive protein, anti-neutrophil antibody, rheumatoid factor and uric acid. A plain film demonstrated only an old volar plate avulsion fracture of the right fourth middle phalanx. The patient was subsequently diagnosed with tenosynovitis and given a steroid injection. After initial relief of his symptoms, the patient experience acute flare of pain, erythema and edema of the right fourth finger, with rapid extension into his surrounding digits and hand, accompanied by fever. The patient was admitted to the hospital for emergent treatment, and underwent incision and drainage with open carpal tunnel release and tenosynovectomy of the right wrist, hand, ring and long fingers. Non-malodorous gross purulence was noted with large amounts of thick yellowish adherent boggy synovium and dark yellow coloration of gelatinous, “fish-flesh”-type consistency of the tenosynovial tissues. Acid-fast staining was positive and tissue cultures identified the causative agent as Mycobacterium marinum. Although the patient had originally denied any infectious exposures, after being given the diagnosis, he recalled having submerged his hand in the family’s fish tank to adjust the thermostat soon after his original carpentry-related injury. Following six months of antibiotic treatment with trimethoprim-sulfamethoxazole and clarithromycin and occupational therapy, the patient was noted to have no evidence of infection and near-full activity of his right hand.

**Discussion:** Mycobacterium marinum is a rare but significant cause of infectious tenosynovitis. Familiarity with the common water-borne illnesses and their various presentations as part of the differential diagnosis for infectious presentations could lead to more timely diagnosis and treatment and a reduction in morbidity in affected patients.
Abstract 52
Mayo Clinic Arizona
Internal Medicine

SYSTEMIC MASTOCYTOSIS- HAVE YOU SEEN THIS DISEASE?

Deborah L. Hastings MD, MSc, Mehrdad Mazlumzadeh MD, JC Lewis MD, Mayo Clinic Arizona,
Department of Internal Medicine

Introduction:
Episodes or “spells” may be frightening for patients and a diagnostic challenge for clinicians. The differential diagnosis is broad, and ranges from benign anxiety/panic attacks to life-threatening anaphylaxis. Many of the conditions causing spells require specific tests, without which diagnosis cannot be made. Therefore, a high index of suspicion is needed when ordering tests. Discussed is a case of systemic mastocytosis.

Case:
We saw a 35 year old woman who had experienced four “spells” during which she became pre-syncopal, flushed and had blurred vision, palpitations, tingling in her hands and severe abdominal pain. With one attack she was documented to be hypotensive and with one to have an elevated tryptase level. The patient was evaluated by specialists in cardiology, neurology and rheumatology, then referred to the Division of Allergy, Asthma, and Clinical Immunology when other tests were negative and a diagnosis of systemic mastocytosis was suspected. Based on her history and evaluations in her baseline and event tryptase values, she underwent bilateral, iliac crest bone marrow aspirates and biopsies and the diagnosis of systemic mastocytosis was confirmed based on the finding of increased numbers of mast cells with atypical cell surface markers and morphology.

Discussion:
Systemic mastocytosis is rare and potentially fatal disease with many forms and presentations. Routine labs and studies are usually normal or unrevealing. Anaphylaxis and systemic mastocytosis need to be considered in the differential diagnosis especially when there are symptoms involving two or more organ systems. Critical tests include plasma or serum tryptase and a 24-hour urine collection for n-methylhistamine and prostaglandin F2. One or more of these mediators should be elevated at baseline in systemic mastocytosis, whereas in anaphylaxis, they will only be elevated during an episode. Additional studies to help diagnose and “stage” the disease are a whole body bone scan (sclerotic lesions more common than lytic) and CT scans of the thorax, abdomen and pelvis to assess for lymphadenopathy and organomegaly. Ultimately, a tissue diagnosis is necessary and usually involves performing bilateral bone marrow biopsies with special stains for mast cells and possibly a flow cytometric analysis of the mast cells for markers CD2 and CD25. Prominent gastrointestinal symptoms should prompt studies to obtain mucosal biopsies for routine H&E and special mast cell stains.
IMPROVEMENT OF VAGUS NERVE STIMULATION-ASSOCIATED VOCAL CORD PARALYSIS WITH MEDIALIZATION THYROPLASTY

Matthew Hoerth MD, Joseph Drazkowski MD, Joseph Sirven MD, Michael Hinni MD, Benn Smith MD, David Labiner MD

Introduction: Vagus nerve stimulators have shown efficacy for partial seizure disorders, especially in those patients whose seizures are difficult to control with anti-epileptic drugs (AEDs) alone. The most common side effect is alterations in voice. Usually this is stimulation related hoarseness associated with device activation. The mechanism of vocal symptoms is thought to stem from concurrent stimulation of the left recurrent laryngeal nerve. Another common cause of voice alteration is related to surgical manipulation, which is usually temporary.

Case Report: A 31 year-old man with medically intractable epilepsy and seizure onset at three-and-a-half years of age was refractory to multiple AEDs. He presented for evaluation of intractable complex partial seizures and a hoarse voice after vagus nerve stimulator (VNS) replacement. At 22 years-old, the patient had his first VNS placed. The patient was on a high output and rapid cycling program and subsequently required two device replacements due to the battery running down. Shortly after the device was replaced for a third time, he developed a sudden onset of severe cough, and subsequent hoarseness. After this device change, it was discovered that the patient had been reprogrammed to the high output (2.5 mA, 1.3 min) and rapid cycling paradigm used pre-operatively. The device was turned off but the hoarseness persisted for more than one year. The permanent nature of the impairment was verified by EMG studies showing no voluntary contraction of the left vocal cord and complete denervation of the left thyroarytenoid muscle. The patient ultimately underwent a left medialization thyroplasty. A scialastic block was custom shaped to adduct the patient’s left vocal cord and was correctly positioned while listening to the patient’s voice in the operating room. Indirect laryngoscopy showed adequate contact between the vocal cords with phonation becoming essentially normal. No fluctuation of the voice was noted when the device was reactivated at low stimulation intensities.

Discussion: The absent function of this patient’s left vocal cord after battery replacement suggests another possible mechanism of injury to the recurrent laryngeal nerve. Injury to nerve may have occurred when the device was set at high output settings immediately after battery replacement rather than ramping up after the stimulus intensity. As the battery nears the end of useful life, the stimulus output will likely be reduced to lower than the settings programmed. Subsequently, when the device is turned on following battery replacement using the previously programmed settings, this may introduce a more intense stimulus than the patient had been receiving. A left medialization thyroplasty was successful in giving this patient symptomatic improvement of his voice. Caution should be used when reprogramming the VNS after replacement, especially if the original device was near the end of its duty cycle. Furthermore, when vocal symptoms are severe, medialization thyroplasty should be considered as a therapeutic intervention for significant VNS-associated left vocal cord paralysis.
ONCOGENIC OSTEOMALACIA: PHYSIOPATHOLOGY AND MULTIMODALITY IMAGING EVALUATION OF AN UNCOMMON PARANEOPLASTIC SYNDROME

CJ Ingui MD, BD Nguyen MD, MC Roarke MD, PC Ram MD
Department of Radiology, Mayo Clinic Arizona

INTRODUCTION:

Oncogenic osteomalacia (OO) is an uncommon paraneoplastic syndrome characterized by symptomatic clinical features of a neuromuscular wasting disorder induced by an occult tumor causing increased renal phosphate excretion. The clinical presentation of oncogenic osteomalacia may be confusing and its diagnosis handicapped by difficult imaging search for the culprit neoplasm, predominantly represented by vascular lesions such as hemangiopericytomas and mesenchymal tumors. Oncogenic osteomalacia is characterized by hypophosphatemia, hyperphosphaturia, increased alkaline phosphatase serum level, low 1-25 dihydroxy vitamin D level, and normal calcium and parathyroid hormone serum levels. Patients present with slow but steady progression of generalized skeletal pain, muscular weakness, bone deformities and fractures. These lesions are often small and can be located anywhere in the body, and functional nuclear imaging (Thallium and technetium-99m sestamibi) and fused functional and anatomic imaging (PET/CT) play a key role in localization of these tumors. This education exhibit posts three objectives: 1. to review the physiopathology of this rare syndrome based on intricate mechanisms of phosphatonin, 2. to describe the clinical characteristics of oncogenic osteomalacia and its differential diagnosis, and 3. to present a pictorial essay of imaging based on radiographs, CT, MR, technetium-99m sestamibi, somatostatin receptor scintigraphy and F-18 FDG PET/CT in 4 patients with this syndrome.

CASE SERIES:

Overall the patient population consists of mostly adults over the age of 30 years with slight male predominance (male to female ratio of 1.2). OO may, however, be observed from childhood to the eight decade of life (7 to 73 years of age). Our series consists of five patients (3 males, 2 females, ages 54-73) with a spectrum of presenting symptoms including progressive neuromuscular wasting, weakness and fractures. The complete biochemical and imaging work up will be presented in each case.

DISCUSSION:

OO is due to a circulating factor referred to as phosphatonin, which is produced in elevated quantity by the phosphaturic lesions. The resection of these lesions terminates the source of this humoral factor and completely cures the phosphate wasting disorder. The OO physiopathology involves similar circulating molecular protagonists, which interact in X-linked hypophosphatemic rickets (XLH) and autosomal dominant hypophosphatemic rickets (ADHR). These two metabolic disorders may represent the differential diagnosis of OO in younger patient population. The best therapy for oncologic osteomalacia is the surgical removal of phosphaturic tumors with reversal of clinical symptoms and biochemical abnormalities.
A CASE OF METASTATIC COLLECTING DUCT CARCINOMA IN A 33 YEAR OLD MAN
Omar Khan MD, Mark Edwin MD, Donald Northfelt MD

INTRODUCTION: The practice of palliative care medicine is characterized by:
• management of patients with active, progressive, far advanced disease for whom
  prognosis is limited
• focus of care on the quality of life
• recognition in 2006 by American Board of Medical Subspecialties as a medical
  subspecialty
• a continuum of patient care for individuals near the end of life
• not restricted to by a prognostic time line, nor pursuit of aggressive or curative therapies
• provides a bridge across the “cure vs. comfort care” dichotomy of traditional medicine
• goals include control of symptoms, and communication and prognosis sharing in order to
  attain quality of life
To illustrate these concepts in action, we report a case of 33 year old male diagnosed with a
rare metastatic collecting duct cancer of the kidney, and describe how application of palliative
care principles in concert with conventional anticancer therapies has helped him achieve a good
quality of life.

CASE REPORT:
Clinical presentation: 33 year old man with fatigue, hematuria, left flank and sacral pain, and
gradual weight loss.
Physical exam: Notable for cachexia, resistance to deep palpation in the left upper quadrant.
Diagnostic data:
alkaline phosphatase: 148 IU/L (normal 38-126 IU)
CT of abdomen and pelvis: 9 cm mass obstructing the left upper kidney collecting system and
the lower pole
radionuclide bone scan: abnormal isotope uptake in sacrum, right acetabulum, and both ischial
tuberosities with subtle lytic lesions within the pelvis.
Clinical Course and Interventions:
1. Sacral pain had become a major issue for the patient and was inadequately controlled
with oxycodone/acetaminophen, and immediate release morphine. Initially, patient’s
pain on 1-10 scale, with 10 being the worst, was a 6/10. Treatment was changed to:
2. MS Contin 30 mg every 12 hours15 mg of immediate release morphine every 2 hours as
needed for breakthrough pain Outcome: after proper medication adjustment, his pain
was a 2/10.
3. The patient developed opiod induced constipation. He was started on GoLYTELY and
mineral oil enemas until he regained bowel function, and readjustments were made to
his pain medications.
4. Following this, patient underwent palliative nephrectomy, and pathologic evaluation
revealed renal collecting duct carcinoma.
5. For further pain control, sacral radiation was offered to the patient, and he inquired about
sperm banking, anticipating growth of his young family. The palliative team then
directed the patient and his family in regards to his prognosis being in months, and risk
and benefits of different treatments.

DISCUSSION
Currently, the patient has opted for chemotherapy, which has shown favorable results, and
he has overall good pain control. He has now gone back home and spends time with his
wife and child.
A COMPARISON STUDY OF PRELIMINARY SOFT TISSUE DISTRACTION VS. CHECK REIN LIGAMENT RELEASE IN THE TREATMENT OF DUPUYTREN’S PIP JOINT CONTRACTURES

Aaron Klomp, MD, Grant Fankhauser, MD, Anthony Smith, MD, Alanna Rebecca, MD

Purpose: Dupuytren’s contractures involving the PIP joint remain a difficult surgical problem. Check rein ligament release (CRLR) is the gold standard of surgical treatment. Unfortunately, an isolated CRLR fails to address two problems encountered in these digits: 1) a shortened neurovascular bundle, and 2) an insufficient skin envelope, particularly in re-operated cases. As such, a full thickness skin graft (FTSG) is frequently applied to a less than optimal wound bed following check rein ligament release. The innovative Digit-Widget® relies on the principle of soft-tissue distraction to overcome these problems. The purpose of this study is to compare our operative experience in treating Dupuytren’s PIP joint contractures with a CRLR to treating Dupuytren’s PIP joint contractures with preliminary placement of the Digit-Widget® followed by operative release.

Methods: A total of 23 patients (29 digits) were treated. There were 19 men and 4 women. Ages ranged from 45 to 81 years (mean 70.3 yrs). Seventeen patients underwent CRLR in 20 digits with PIP contractures ranging from 10 to 80 degrees (mean 52.4 degrees). Six of these 20 digits (30 percent) had been operated on previously. Six patients (9 digits) were treated with Digit-Widget® distraction with PIP contractures ranging from 30 to 90 degrees (mean 66.7 degrees). Three of these nine digits (33 percent) were operated on previously.

Results: In 16 digits treated by CRLR improvement ranged from eight to 70 degrees (mean 38.56). In four digits treated by CRLR increased contracture ranging from two to 48 degrees (mean 16) was noted. When the digits which had improved contractures were combined with the digits which had worsened contractures, the overall mean improvement for all 20 digits dropped to 27.65 degrees. The mean gain in extension for pinned digits was 35.3 degrees. The mean gain in extension for non-pinned digits was 20 degrees. There were 4 complications: One digit had a wound separation. Two digits had partial losses of the FTSG. One pin was removed after one day for digital ischemia. In six of the nine digits treated with Digit-Widget® distraction with PIP contractures ranging from 30 to 90 degrees (mean 44.11). In no digits did the contracture worsen. Percutaneous pinning, FTSG, or CRLR was not used in this group. One Digit-Widget® was removed early secondary to impingement on an adjacent digit. In one patient a splint blocking MP extension was needed to appropriately direct the forces of soft tissue distraction. Three digits improved to full extension without evidence of residual Dupuytren’s contracture and did not require surgical release. Mean improvements in contractures of reoperated digits treated by CRLR or Digit-Widget® distraction were 32 and 52 degrees, respectively. In primarily treated digits, contractures treated by CRLR or Digit-Widget® distraction improved by means of 16 and 34 degrees, respectively. For contractures less than 30 degrees, CRLR worsened contracture by a mean of 13 degrees. Digit-Widget® distraction improved contractures less than 30 degrees by a mean of 12 degrees. Contractures greater than 60 degrees treated by CRLR or Digit-Widget® distraction improved by means 30 and 55 degrees, respectively.

Conclusions: Kirschner wire immobilization following CRLR produces greater gain in contracture improvement when compared to CRLR alone. Digit-Widget® soft tissue distraction followed by operative release showed greater correction of the contractures than CRLR for both primarily treated and reoperated groups. Preliminary soft tissue distraction is particularly effective in contractures greater than 60 degrees. In reoperated digits the CRLR technique is more likely to worsen than relieve the PIP joint contracture.
SPECT/CT FOR THE IDENTIFICATION OF SENTINEL LYMPH NODES IN CUTANEOUS MALIGNANCIES

Laxa B, Pockaj B, Roarke M, Gray R, Casey W

Purpose: Lymphoscintigraphy is the current imaging standard for sentinel lymph node (SLN) mapping prior to surgical lymphadenectomy in a number of malignancies. Single-photon emission computed tomography/computed tomography (SPECT/CT) is a modality that provides three-dimensional imaging in addition to identification of “hot” nodes, and has exhibited great potential for detecting and accurately localizing sentinel lymph nodes. There are a growing number of reports that determine SPECT/CT to be a comparable, if not superior method of imaging when compared with lymphoscintigraphy for SLN mapping. In order to determine the utility of SPECT/CT for SLN mapping, we analyzed this new imaging technology in our patients undergoing SLN mapping.

Methods: A retrospective review was performed in fifteen patients diagnosed with cutaneous malignancies. These patients underwent both lymphoscintigraphy and SPECT/CT for SLN mapping prior to surgical excision of skin lesions and removal of SLN’s. We examined each technique’s ability to identify and localize sentinel nodes.

Results: Fourteen patients had melanoma (12 new primary, 2 recurrent), and 1 patient had Merckel cell carcinoma. Nine patients were male. Average age at surgery was 69 years. The locations of cutaneous malignancies were: head and neck (6), trunk (6), and extremity (3). SPECT/CT and lymphoscintigraphy identified SLNs in 14/15 patients. One patient with a head and neck melanoma had no SLN’s identifiable by either technique. In-transit (IT) lymph nodes were identified in 2 patients; SPECT/CT delineated the exact locations of the IT nodes. The ability to define the exact location of the SLN was best observed in the patients with head and neck malignancy and this facilitated surgery. SPECT/CT was also superior in distinguishing low to high axillary node levels. For example, a “supraclavicular” sentinel node seen on lymphoscintigraphy was later clarified as a high axillary sentinel node by SPECT/CT. In the 3 patients with extremity lesions, SPECT/CT confirmed SLN locations and in one case, identified the drainage pattern from inguinal to deep pelvic (external iliac) lymph nodes. Interestingly, SLN biopsy of the groin nodes in this patient revealed metastatic melanoma. Subsequent deep pelvic node dissection was performed, with 4/4 external iliac nodes being found positive for metastatic disease. Without SPECT/CT in this patient, metastatic disease would have been missed.

Conclusion: We found that SPECT/CT is superior to lymphoscintigraphy in identifying and revealing the precise anatomic location of sentinel nodes. We found SPECT/CT especially useful in the following situations: head and neck malignancy, identification of in-transit nodes, distinguishing inguinal from pelvic nodes, and SLN’s near the injection site. Due to the enhanced localization of SPECT/CT we have now adopted its use for all cases of cutaneous malignancy.
RETENTION OF THE CAPSULE ENDOSCOPE: A SINGLE CENTER EXPERIENCE OF 1000 PATIENTS

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Purpose: Capsule endoscopy (CE) permits direct and painless visualization of small bowel mucosa. It has become a powerful imaging modality in evaluating diseases of the small bowel. Retention of the capsule is the most significant complication. We aimed to determine the incidence of capsule retention and investigate the causes and clinical outcomes.

Methods: A retrospective review of all patients undergoing CE from June 2002- March 2006 was carried out. A chart review was done to investigate the indication for the CE study, causes of retention found on surgery, and post-operative clinical outcomes.

Results: One thousand patients underwent CE for suspected small bowel disease. Eleven patients (1 male, 10 female, average age 60) were found to have radiologically confirmed capsule retentions. The indication for CE was obscure gastrointestinal bleeding in 8 patients and suspected Crohn’s Disease in 2 patients. One patient underwent CE for evaluation of possible radiation enteritis associated abdominal pain. Eight patients failed to pass the capsule because of small bowel strictures due to NSAID enteropathy (diaphragm disease). One patient had capsule retention due to an obstructing carcinoid tumor in the small bowel. Metastatic ovarian cancer with invasion of the ileum was the cause of retention in another patient. One patient who did not have surgical removal of the capsule due to loss of follow up had retention caused by a small bowel tumor suspicious for carcinoid tumor on CT enterography. All patients remained “asymptomatic” from the retained capsules. 10 patients underwent elective partial small bowel resection and capsule removal. No mortality was associated with these surgeries. 8 patients recovered promptly while 2 patients developed mild post-op ileus.

Conclusion: Retention of the capsule endoscope appears to be infrequent. The most common cause appears to be diaphragm disease due to NSAIDs. The second most common cause appears to be small bowel tumors. In most cases, capsule retention is asymptomatic and is unlikely to cause acute obstruction. Capsule retention usually leads to surgical removal which appears safe and also identifies and treats the underlying small bowel pathology.
Abstract 59
Mayo Clinic Arizona
Internal Medicine

RETROPERITONEAL HEMATOMA:
AN UNCOMMON COMPLICATION OF A COMMON PROCEDURE

Andrea Loiselle, MD, MPH, Sarah V. Kelly, MD, Christopher R. Conley, MD,
James L. Slack, MD

Introduction. Bone marrow aspiration and biopsy is an indispensable tool for the diagnosis of
many hematologic disorders. The procedure is considered to confer a low risk for complications.
The most common of these are minor bleeding, localized infection and pain. Major
complications are rarely reported in the literature.

Case Presentation. We report the case of a 72 year-old female with a diagnosis of essential
thrombocythemia who presented to our institution seeking advice on disease management. As
part of her evaluation she underwent bone marrow aspiration and biopsy while receiving
maintenance therapy with hydroxyurea and aspirin. The bone marrow aspirate and biopsy were
obtained from the posterior superior iliac crest in the usual manner after administration of local
anesthetic. The procedure was uneventful, and the patient was discharged home in stable
condition. Several hours later, the patient reported severe pain unrelieved by codeine. She was
advised to continue analgesics, and instructed to use hot compresses with periodic ambulation
for symptom relief. The patient developed escalating pain with antalgic hip flexion limiting her
ability to ambulate. She presented to a local emergency room where her hemoglobin was
measured to be 7.4 g/dL (baseline 9.7 g/dL). Computed tomography of the pelvis revealed a
retroperitoneal hematoma measuring approximately 8.2 by 4.6 centimeters at its largest
diameter involving the psoas and portions of the iliacus muscles. She was successfully
managed with blood transfusions and analgesia. Upon further questioning, the patient revealed
that she had become concerned over her rising platelet count and had, without the input of her
physicians, doubled her prescribed aspirin dose for several days prior to the biopsy. Ultimately,
bone marrow biopsy revealed an overlap syndrome with refractory anemia with ringed
sideroblasts (RARS) and thrombocytosis, a provisional WHO diagnosis. Her treatment was
changed to anagrelide in an attempt to avoid hydroxyurea-associated suppression of
erthropoiesis.

Discussion. The death of a patient in the United Kingdom from a severe retroperitoneal
hematoma following bone marrow biopsy in 2001 prompted the creation of an annual
confidential survey of biopsy-associated morbidity and mortality. Recent published data
reflecting the 2004 information gathered from 120 hospitals totaling 20,323 procedures involving
aspirate and/or biopsy uncovered a total of 15 adverse outcomes, representing a complication
rate of less than 0.1%. Hemorrhage was the most common reportable adverse event. Of the
seven reported episodes of hemorrhage, the most frequently identified risk factors were
myeloproliferative disorders and aspirin therapy.

Conclusion. Bone marrow aspiration and biopsy is a common procedure that carries a low risk
for complications. However, patients with known myeloproliferative disorders and those on
aspirin therapy can experience post-procedural hemorrhage. Recognizing risk factors for
adverse events may help providers avoid future complications. In addition, severe pain or pain
that is unresponsive to analgesics following a bone marrow biopsy should be promptly
evaluated.
ACTINOMYCES MEYERI OSTEOMYELITIS OF THE SYMPHYSIS PUBIS FOLLOWING PUBOVAGINAL SLING WITH BONE ANCHORS

Jaime B. Long MD, Joseph M. Collins MD, Christopher P. Beauchamp MD, Rosanne Kho MD, Jeffrey L. Cornella MD

Introduction: Pubic bone anchors have been utilized in incontinence and prolapse surgeries since the 1990s. Several reports now exist describing osseous complications, most notably osteomyelitis, associated with their use. This case represents the first report of *Actinomyces* as the infectious agent.

Case: A 61yo G5P4 presented to our center with complaints of vaginal bleeding, pelvic pain, urinary urgency/frequency, and dyspareunia which began following a pubovaginal sling utilizing bone anchors in 2000. She had subsequently undergone operative evaluation and excision of the sling and permanent suture material in 2004 and 2005 without resolution of her pain or urinary symptoms. Magnetic resonance imaging described a markedly abnormal 2x8cm soft tissue thickening consistent with inflammation anterior to the urinary bladder abutting the pubic bone. This was adjacent to a necrotic lesion at the left pubic bone consistent with an abscess and osteomyelitis. Computed tomography described osteomyelitis involving the left superior pubic ramus extending to the pubic bone with focal bone loss at the site of the left metal suture anchor. In consultation with the orthopedic surgeon, the patient was taken to the operating room where the space of Retzius was entered and the symphysis pubis identified. Under fluoroscopic guidance, both suture anchors were extracted and the area was thoroughly debrided and irrigated. Cultures were obtained, which grew mixed flora 4+ with *Actinomyces meyeri* 3+. She was prescribed six weeks of combination antibiotics that included ceftriaxone intravenously and Flagyl orally. She was also given doxycycline orally for one year. At six week postoperative follow up, the patient noted extreme satisfaction with regards to her pain relief and urinary urgency.

Discussion: Previous reports of pubic osteomyelitis associated with bone anchors describe symptoms presenting ten days to twelve months post-operatively with typical pathogens including *Streptococcus, Staphylococcus, Citrobacter*, and *Pseudomonas*. Through July 2000, Rackley et al reviewed approximately 30 reports involving more than 1000 patients to estimate the prevalence of bone anchor related infections in female pelvic reconstructive procedures as 0.6%. This case represents the first report of *Actinomyces* as the infectious agent. *Actinomycosis* is a chronic disease characterized by abscess formation, tissue fibrosis, and draining sinuses. *Actinomyces* do not exist freely in nature, but are commensals and normal inhabitants of the oropharynx, gastrointestinal tract, and female genital tract in humans. They are generally of low pathogenicity and cause disease only in the setting of antecedent tissue injury. Debridement appears to be the cornerstone of treatment of *Actinomyces* osteomyelitis. *Actinomyces* species are usually sensitive to penicillin, ampicillin, clindamycin, and tetracycline. The minimal duration of antimicrobial therapy is not clear. The complication of osteomyelitis of the symphysis pubis should not be dismissed lightly. As demonstrated in this case, the symptoms of intractable pain can be debilitating. Furthermore, the morbidity associated with surgical resection and prolonged antibiotic treatment can be significant. Continued use of intraoperative fixation utilizing bone anchor devices in incontinence surgery is questionable following the development of TVT-like devices which require no further fixation after positioning.
MECKEL'S DIVERTICULUM: AN UNUSUAL CAUSE OF CHRONIC PELVIC PAIN

Jaime B. Long, MD, Wesley S. Hilger, MD, Javier F. Magrina, MD

Introduction: Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract, estimated to occur in 0.3-4% of the general population. It is a true diverticulum involving all layers of the normal intestinal wall resulting from a failure of the embryologic vitelline duct to completely obliterate. Complications may occur in up to 4% of patients with Meckel’s diverticulum, and are more common in children, males, and larger diverticula. Intestinal obstruction is the most common presenting symptom in the adult population, accounting for 40% of patients. Other possible complications include bleeding (from ileal ulceration secondary to acid secretion of ectopic gastric mucosa), diverticulitis, intussusception, and tumors. We describe an interesting presentation of Meckel’s diverticulum which demonstrates the importance of a thorough exploration at the time of surgical evaluation for chronic pelvic pain.

Case: A 34yo G3P1 female presented to our center with a six year history of chronic left lower quadrant pain unresolved after three prior laparoscopic evaluations and multiple treatments for endometriosis. Due to worsening of her pain, she was offered laparoscopic evaluation and correction of any abnormal findings. Intraoperatively, the abdomen and pelvis were noted to be normal without evidence of endometriosis. The small bowel was run, and approximately two feet from the ileocecal valve, an intussusception was noted. The intussusception was reduced and there was a puckering of the serosa towards the lumen of the bowel where a mass was palpable. A 4cm minilaparotomy was created below the umbilicus and the involved section of small bowel was delivered externally. The mass was noted to be the lead point of an inverted Meckel’s diverticulm creating a dimpling in the serosa. Approximately 3-4cm margins were taken on each side and the small bowel was resected and side to side reanastomosed in the standard fashion. Final pathology confirmed an intussuscepted Meckel’s diverticulum with pancreatic rests and gastric tissue present in the head. Patient recovered without incident and at her six week post-operative visit, she reported her pain to be completely resolved.

Discussion: Chronic pelvic pain (CPP) is defined as nonmenstrual pain of three or more months’ duration, localized to the pelvis, and severe enough to cause functional disability and require surgical or medical treatment. It is responsible for approximately 10% of all gynecologic office visits and 40% of all gynecologic laparoscopies. Laparoscopy plays a critical role in the diagnostic work-up of CPP, and should be fully utilized to thoroughly evaluate all possible causes in the abdomino-pelvic cavity. Although endometriosis accounts for a substantial proportion of the pathology associated with female CPP, other disorders of the bowel, ovaries, uterus, and bladder can also contribute.

Clinical diagnosis of Meckel’s diverticulum is rarely possible, with fewer than 10% diagnosed preoperatively. Therefore, it is critical for surgeons to rule out a Meckel’s diverticulum in patients undergoing surgical evaluation for chronic abdomino-pelvic pain. In our patient, chronic symptoms and multiple surgeries may have been prevented if the intussuscepted Meckel’s diverticulum had been identified and resected during her prior laparoscopies for pelvic pain. In patients with chronic pelvic pain in which no apparent cause is recognized or is refractory to multiple treatments, rare causes must be sought out, in particular those of intestinal and urologic etiology. This case illustrates the importance of inspection of the small bowel and colon in patients with chronic pelvic pain, especially when there were no abnormal findings at previous laparoscopy.
SNEDDONS SYNDROME PRESENTING AS A MOYAMOYA VARIANT: A CASE REPORT

Jonathan McKinnon MD, Byron Spencer MD, Rashmi Halker MD, Timothy Ingall MD, Bart Demaerschalk MD, David Dodick MD

Introduction: Sneddon’s syndrome is a rare disorder characterized by CNS vasculopathy, livedo reticularis, and antiphospholipid antibodies (aPL). The pathogenesis of Sneddon's syndrome remains elusive, however mounting evidence suggests it is primarily a non-inflammatory CNS vasculopathy affecting small perforating and leptomeningeal vessels. Moyamoya disease, on the contrary, is an inflammatory CNS angiopathy most commonly affecting young Japanese females in which occlusion of medium to large cerebral arteries occurs. We present a case of Sneddon’s syndrome presenting with angiographic characteristics of moyamoya, a relationship hitherto undescribed.

Case Report: A 29-year-old female with no known vascular risk factors and a recent history of Graves’ disease presented to the Emergency Department following a two-month course of intermittent episodes of confusion and left arm weakness. She was found to have evidence of mild cognitive dysfunction (mini-mental score 26/30), and a mild, 4+/5 left hemiparesis with exaggerated reflexes. A Brain MRI showed many areas of acute and chronic infarction of both cortical and subcortical tissue in multiple vascular and watershed territories. Angiography demonstrated near-complete occlusion of the distal internal carotid and anterior and posterior cerebral arteries. This appearance was felt to be consistent with moyamoya disease. Rheumatologic laboratory studies, including antiphospholipid (aPL) antibodies, were negative. Infectious disease and coagulation abnormalities were excluded. The patient was thought to have CNS vasculitis and was started on cyclophosphamide and high dose steroids. The hospital course was complicated by new onset seizures, and repeat imaging suggested new infarcts in spite of therapy, placing the diagnosis of vasculitis in question. The patient underwent brain biopsy, which showed evidence of remote ischemic injury, but without suggestion of vasculitis. The patient eventually stabilized and was discharged with a presumptive diagnosis of vasculitis, in spite of biopsy results, and was continued on dexamethasone and monthly cyclophosphamide injections.

The patient re-presented one month later with episodes of confusion. Physical examination showed a new, lacy, bluish-red mottling of the skin, primarily on the thighs and arms, consistent with livedo reticularis. Neurologic examination was remarkable only for mild worsening of short-term memory. A Repeat brain MRI showed two small acute infarctions. Laboratory testing showed a significantly elevated titer of aPL IgM at 49.1 MPL (40-79.9 MPL). A trans-esophageal echocardiogram demonstrated abnormal thickening of the non-coronary aortic cusp, suggestive of aPL syndrome. The patient was diagnosed with Sneddon’s syndrome and was started on warfarin, with an INR goal of 2-3.

Discussion: To our knowledge, this is the first case of Sneddon’s syndrome presenting with an angiographic moyamoya appearance. Because this pattern is nonspecific, aPL and Sneddon’s syndrome should be considered in cases where this angiographic pattern is detected.
DOES THE UNDERLYING ETIOLOGY OF CARDIOMYOPATHY EFFECT THE OUTCOME OF CARDIAC RESYNCHRONIZATION THERAPY (CRT) IN AN ELDERLY POPULATION?

Daniel Ng MD, Komandoor Srivathsan MD, Luis Scott MD, Gregory Altemose MD

Purpose
As people are living longer, the population of elderly patients with congestive heart failure continues to grow. Previously published reports showed a significantly better response to CRT with nonischemic cardiomyopathy (NICMP), but failed to adequately address how underlying etiology of cardiomyopathy impacts the outcome of CRT in an elderly patient population (age ≥ 75 years).

Methods
We reviewed 234 consecutive patients who received CRT or CRT-D from 11/2001 to 05/06, 83 (mean age 80.5 ± 4.3 years, range 75 to 90) were included. Echocardiographic parameters measured within 6 months prior to and 6 to 12 months after device implantation and selected clinical characteristics were analyzed.

Results
Of the 83 patients, 35 (mean age 80.1 ± 3.9 years) had NICMP; 48 (mean age 80.5 ± 4.5 years) had ischemic cardiomyopathy (ICMP). Mean follow-up was 8.6 ± 2.5 months. The ratio of male patients (81% vs 85%, p=0.63), age (80.1 years vs 80.5 years, p=0.83), BMI (27.1 vs 28.9, p=0.85), and use of beta blocker (62% vs 69%, p=0.43), ACE/ARB (90% vs 85%, p=0.36), aldactone (31% vs 35%, p=0.67) were similar in both groups. There were no statistical difference in changes of mitral regurgitation severity, LV diastolic function, LA volume index and RVSP with CRT. The comparisons of changes (Δ) in NYHA class and echocardiographic parameters between the cardiomyopathy groups are shown in tabular form.

Conclusions
Patients ≥ 75 years who receive CRT with underlying NICMP, show significant benefits regarding improvement in left ventricular geometry, function and NYHA functional class, when compared to those with ICMP. Age does not appear to impact response to CRT based on underlying etiology of cardiomyopathy.

<table>
<thead>
<tr>
<th>Δ (after and before CRT)</th>
<th>Nonischemic cardiomyopathy (n=35)</th>
<th>Ischemic cardiomyopathy (n=48)</th>
<th>P value</th>
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</thead>
<tbody>
<tr>
<td>NYHA class</td>
<td>- 0.8 ± 0.6</td>
<td>- 0.5 ± 0.5</td>
<td>P&lt;0.05</td>
</tr>
<tr>
<td>LVEDD mm</td>
<td>- 5.1 ± 6.6</td>
<td>- 2.6 ± 6.6</td>
<td>P&lt;0.05</td>
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<td>LVESD mm</td>
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<td>- 1.6 ± 6.1</td>
<td>P&lt;0.01</td>
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<td>LVEDV cc</td>
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<td>- 22.7 ± 36.6</td>
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</tr>
<tr>
<td>LVESV cc</td>
<td>- 47.0 ± 36.6</td>
<td>- 11.7 ± 45.8</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>LVEF %</td>
<td>12.4 ± 11.0</td>
<td>2.1 ± 7.5</td>
<td>P&lt;0.01</td>
</tr>
</tbody>
</table>
INTRODUCTION: West Nile Virus infection is an important cause of viral meningo-encephalitis. Neuroinvasive disease presenting with acute flaccid paralysis similar to poliomyelitis, is a very rare manifestation. It is usually seen in elderly patients and severely immunosuppressed patients, such as transplant recipients. The following case describes WNV encephalitis presenting with acute flaccid paralysis (AFP) resulting in quadriparesis and respiratory failure in a young male with ALL. Quadriparesis as a result of AFP is very rare in patients aged <50, who usually present with monoparesis.

CASE REPORT: A 23 year old male with ALL presented with a fever of 105°F of 1 day duration. He was diagnosed with Pre B-cell ALL 3 months prior to presentation. He received standard induction chemotherapy with good response and subsequently underwent consolidation chemotherapy 20 days prior to presentation. He also received 4 of 6 doses of prophylactic intrathecal Methotrexate, the last dose being 2 days prior to presentation. On the day of admission, he developed confusion, lethargy and gait unsteadiness. Physical exam was notable for tachycardia and tachypnea. Initial neurological exam was fairly normal except for the presence of myoclonus in upper extremities. The next day, his temperature increased to 106°F. He was agitated, combative and unable to follow commands. Neurological exam revealed nystagmus with deviation of eyes to the left. Laboratory data showed a normal CBC and metabolic panel. Lumbar puncture showed elevated protein, normal glucose and pleocytosis with 108 nucleated cells, 85% of which were lymphocytes. MRI of the brain revealed a small focus of increased signal in the pulvinar of the right thalamus and the anteromedial aspect of the left cerebral peduncle. West Nile Virus PCR was positive in blood and CSF. The patient deteriorated rapidly, developed acute flaccid paralysis and respiratory failure requiring intubation and mechanical ventilation. He was treated with two doses of IVIG without any significant response. He subsequently was also treated with 2 cycles of AVI 4020, an experimental drug being tested in a clinical trial, and Interferon alfa for five days. Unfortunately, he did not show any evidence of neurological improvement and was transferred to a long term care facility.

DISCUSSION: West Nile Virus is a single stranded RNA virus belonging to the family Flaviviridae. Mosquitoes are the vector for transmission. Birds are reservoir hosts and humans are incidental hosts. Most patients with WNV infection are asymptomatic and about 20% of patients present with symptoms. The usual presentation is a mild febrile illness with associated malaise, headache, myalgia, nausea, vomiting and maculopapular rash. Meningitis and encephalitis can occur, however neuroinvasive disease is uncommon and occurs in less than 1% of all patients. The risk factors for development of neuroinvasive disease are advanced age, diabetes mellitus and immunosuppression. Neuroinvasive disease may present with acute flaccid paralysis, with involvement of anterior horn cells, as seen in our patient. It occurs either by direct viral invasion, or as a reaction to an immunologic process triggered by WNV. The diagnosis is usually made by serology- IgM is detected in the blood and CSF and persists for about 6 months. WNV PCR is less sensitive, but is useful in immunocompromised patients, who may not mount an adequate antibody response. CSF findings show an increased protein, normal glucose and lymphocytic pleocytosis, which is consistent with the findings in our patient. Treatment for WNV infection is mainly supportive. There are currently three randomized, double-blind clinical trials in progress for the treatment of WNV infection. These trials are assessing the efficacy and safety of Intravenous Immunoglobulin G (Omr-IgG-am) containing high anti-West Nile Virus Antibody titers, alpha-Interferon (Alferon) and AVI-4020, which is an antisense oligomer that inhibits viral replication. Quadriparesis and respiratory failure are associated with high morbidity and mortality, and recovery is slow and usually incomplete.
Abstract 65
Mayo Clinic Arizona
Gastroenterology

DIAGNOSTIC YIELD AND THERAPEUTIC UTILITY OF DOUBLE-BALLOON ENTEROSCOPY (DBE) IN PATIENTS WITH OBSCURE GASTROINTESTINAL BLEEDING (OGIB): A SYSTEMATIC REVIEW

Pasha, Shabana F.¹; Leighton, Jonathan A.¹; Das, Ananya¹; Harrison, M Edwyn¹; Decker, G Anton¹; Fleischer, David E.¹; Sharma, Virender K.¹
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Background: DBE is a relatively new endoscopic modality that allows for a more extensive evaluation of the small bowel and treatment of lesions previously inaccessible by conventional enteroscopy. Complete enteroscopy is possible, usually with a combination of an antegrade and retrograde approach.

Aim: A systematic review of the literature on DBE was undertaken to determine its diagnostic and therapeutic yield in patients with OGIB.

Methods: A recursive literature search of studies evaluating the role of DBE in the diagnosis and treatment of patients with OGIB was performed. Data on DBE findings, treatment and patient outcomes were extracted, pooled and analyzed.

Results: Thirteen studies evaluated the role of DBE in patients with OGIB (8 manuscripts and 5 abstracts). The studies included 906 patients with 28.5% males (140/490); mean age 56.5 years (range 8-94 years). The number of DBEs performed per patient was 1.3 (range 1-2). DBE detected a potential bleeding source in 66% of patients (596/906; 95% CI 63-69). The findings included arteriovenous malformations in 25.6 % patients (206/804; 95% CI 22.6-28.7); inflammatory lesions (ulcers, erosions or strictures) in 16.1% (130/804; 95% CI 13.6-18.9) and small bowel neoplasms (polyps/tumors) in 13.9% (112/804; 95% CI 11.6-16.5). Subsequent management (medical, surgical or endoscopic) was influenced by DBE findings in 44% patients (355/818; 95% CI 40-47). Endoscopic treatment was performed in 26.6% patients (189/709; 95% CI 23.4-30), and included argon plasma coagulation (62%; 117/189), electrocoagulation (21.6%; 41/189) and polypectomy (3%; 6/189). Eight-four percent of patients (169/200; 95% CI 78.7-89.2) remained transfusion free over a mean follow-up period of 229 days (range 30-480).

Conclusion: DBE is an exciting new technology that plays an important role in the diagnosis and treatment of patients with OGIB. Its diagnostic yield is comparable to capsule endoscopy, as reported from prior studies, and superior to other small bowel imaging modalities. DBE results may lead to a new diagnosis, change in management or improve outcomes in a majority of patients with OGIB.
DOUBLE-BALLOON ENTEROSCOPY (DBE) AND CAPSULE ENDOSCOPY (CE) HAVE A COMPARABLE DIAGNOSTIC YIELD IN PATIENTS WITH SUSPECTED SMALL BOWEL DISEASE: A META-ANALYSIS

Pasha, Shabana F.1; Leighton, Jonathan A.1; Das, Ananya1; Harrison, M Edwyn1; Decker, G Anton1; Fleischer, David E.1; Sharma, Virender K.1

1. Mayo College of Medicine, Dept. of Gastroenterology & Hepatology, Scottsdale, AZ, USA

Background: Endoscopic small bowel imaging has been significantly advanced by the introduction of both CE and DBE. It is not known for certain which modality has the best diagnostic yield.

Aim: To compare the diagnostic yield of CE with that of DBE in patients with suspected small bowel disease using meta-analysis.

Methods: A recursive literature search of studies comparing the yield of CE to other modalities in patients with suspected small bowel disease was performed. Data on the diagnostic yield in CE and DBE were extracted, pooled and analyzed using RevMan 4.2.9 software; heterogeneity was tested by the chi2 method and a p-value of <0.1 was considered significant heterogeneity. Weighted incremental yield (IYW) (yield of CE – yield of DBE) of CE over DBE and 95% confidence intervals (CI) for the pooled data was calculated using a fixed effect model (FEM) for analyses without and a random effect model (REM) for analyses with significant heterogeneity.

Results: Eleven studies compared the diagnostic yield of CE with DBE. The pooled overall yield for CE and DBE was 60% (n=393) and 57% (n=356), respectively (IYW=3%; CI -3 – 10%; P=0.34; FEM). Eight studies reported the yield of vascular findings on CE and DBE. The pooled yield for CE and DBE for vascular findings was 24% (n=313) and 25% (n=306), respectively (IYW=-3%; CI -14 – 8%; P=0.62; REM). Seven studies reported the yield of inflammatory findings (erosions, ulcers and strictures) on CE and DBE. The pooled yield for CE and DBE was 18% (n=285) and 16% (n=278), respectively (IYW=0%; CI -6 – 6%; P=0.93; FEM). Seven studies reported the yield of polyps/tumors on CE and DBE. The pooled yield for CE and DBE was 7% (n=285) and 12% (n=278), respectively (IYW= -3%; CI -8 – 2%; P=0.25; FEM).

Conclusions: In patients with suspected small bowel disease, DBE had a comparable yield to CE for the diagnosis of small bowel pathology. Because the capsule is non-invasive, these results would suggest that CE is the initial diagnostic test of choice in most patients with suspected small bowel disease. In those patients with a positive finding on CE or a high suspicion of a small bowel lesion despite a negative CE, DBE would be indicated for further evaluation due to its diagnostic and therapeutic capabilities.
EDUCATORS IN ACTION; USING EVIDENCE-BASED PRACTICE TO PROMOTE CRITICAL THINKING

Jocelyn Pearson, MSN RN, Eva Caruso, MSN RN, Denise Betcher, MSN, RN, Bryn Corbett, BA, RN, Joanne Schultz, RN, Rosemary Moniz, BSN, RN

Introduction: The RN Unit Based Educator group at Mayo Clinic Hospital wanted to explore the evidence based practice process. The decision was made to search the literature related to critical thinking among nurses since this topic is universal to all practice areas. High patient acuity, complex technological innovations, and procedures are placing an increased demand on the nurse’s ability to process information using clinical reasoning, skill, and competence. Given the numerous educational programs offered within the organization, the Unit Based Educator group searched the literature in order to identify an educational approach to promote critical thinking among nurses participating in educational programs. The clinical question derived for this project was: What educational approach best promotes critical thinking among acute care nurses?

Case Report: Initially, the focus was on improving the educational approach when teaching activities related to code blue situations. Through discussion the group identified the importance of critical thinking skills when intervening in all medical emergencies. Using the assistance and expertise of the Director of Library services, Ovid and Medline Databases were searched using the keywords “critical thinking”, “patient outcomes”, and “failure to rescue”. The recommendations for best practice when promoting critical thinking in educational programs were found to include interactive, participatory, and cooperative learning strategies. This presentation will describe an innovative approach to creating an effective educational program including the development and implementation of interactive case scenarios.

Discussion: In the future the group will use the case scenarios in the upcoming simulation lab to be built on the hospital campus. The group will share the educational approach with fellow educators. A database containing examples of case scenarios and tools for facilitators will be developed. The database will be available to nurses and educators interested in strategies that promote critical thinking.
DERMAL MELANOMA: PRIMARY MELANOMA WITHOUT AN EPIDERMAL COMPONENT OR METASTATIC DISEASE?

Nagesh B Ravipati, Barbara A Pockaj, Richard J Gray, William J Casey III

**Background:** Primary dermal melanoma has been described as melanoma confined to the dermis without evidence of metastatic disease elsewhere. Optimal work-up and treatment of this clinical entity has yet to be determined.

**Methods:** A retrospective review of a prospective sentinel lymph node (SLN) database (412 patients) was performed to identify melanoma patients presenting with solitary dermal lesions without an epidermal component between 2/97-6/06.

**Results:** Eighteen (4.3%) patients were identified. Mean age was 68 years. 4 patients had a previous melanoma diagnosed at a remote site (a 6 mm melanoma 15 months prior, a 2.28mm melanoma 22 months prior, a 0.2 mm melanoma 6 years prior, and a 0.93 mm melanoma 10 years prior). One patient was diagnosed with a concurrent 0.3 mm melanoma. Mean Breslow thickness was 3.09 mm (range 0.67-7.0 mm). Trauma to the dermal melanoma site was documented in 6 patients (35%). All patients had a negative basic metastatic work-up (chest x-ray, liver function tests, and LDH). Additional imaging work-up was performed in 14/18 patients (77 %) and included brain MRI in 12 (63 %), chest CT in 11 (58 %), abdominal CT in 10 (56 %), and PET scan in 12 (63 %). This additional imaging work-up was negative for metastatic disease. SLN metastasis was present in 1 patient (5 %). This patient had a prior history of melanoma and another dermal melanoma was found at the time of surgery. He was ultimately diagnosed with metastatic disease soon after surgery. Distant metastases were diagnosed in another patient who did not have a history of prior melanoma. Both were diagnosed within 3 months of their original diagnosis. Neither of these patients had undergone more than a basic metastatic work-up pre-operatively. Median follow-up of the remaining 16 patients is 37 months (range 1-75 months). There has been no evidence of metastatic disease to date.

**Conclusion:** Dermal melanomas that present without evidence of metastatic disease behave as primary melanomas. Extensive radiographic metastatic work-up should be performed before a diagnosis of primary dermal melanoma can be made, especially in patients with a history of previous melanoma.
ANTERIOR MEDIASTINOTOMY FOR PARATHYROIDECTOMY

Nagesh Ravipati, MBBS, Elisabeth C. McLemore MD, Richard T. Schlinkert MD, Rodolfo Argueta, MD

Background: The vast majority of ectopic abnormal parathyroid glands can be removed through a cervical incision. However, approximately 2% of ectopic parathyroid glands reside within the mediastinum in a location that requires a thoracic approach. In 1991 we described the use of anterior mediastinotomy to remove such tumors. This is an update extending over 16 years with 10 cases.

Methods: All patients operated for hyperparathyroidism were retrospectively reviewed and patients with mediastinal parathyroid tumors who underwent anterior mediastinotomy (Chamberlain procedure) were included.

Results: Over the course of 16 years, approximately 1000 parathyroid operations were performed at our institution and of these 10 patients underwent anterior mediastinotomy. There were 6 males and 4 females with a median age of 65 ± 10 years. Seven patients had undergone at least one previous cervical exploration for hyperparathyroidism. Preoperative calcium levels were 11.3 ± 0.8 mg/dl, parathyroid hormone by immunochemiluminometric assay levels were 47 ± 44 pmol/L (n=8), and intact parathyroid hormone levels 189 ± 29 pmol/L (n=2). 9 patients had preoperative localization with radionuclide scans and 9 patients also had preoperative computerized tomography or MRI scans. Intraoperative parathyroid hormone monitoring was utilized in one case and radio-guidance was utilized in 2 cases. An abnormal gland was removed in all cases (n=8 parathyroid adenomas, n=2 patients parathyroid hyperplasia). There was one incidence of postoperative hypocalcaemia which resolved over time. Nine of 10 patients had normalization of their calcium levels. Hyperparathyroidism persisted in one. There were no perioperative complications. Mean length of stay was 2.7 ± 1.8 days.

Conclusions: Anterior mediastinotomy following pre-operative imaging has proven to be a technically feasible, safe, and effective method for the surgical management of patients with sporadic primary hyperparathyroidism and mediastinal parathyroid tumors.
THE OPTIMAL COLON CANCER SCREENING INTERVAL FOR LIVER TRANSPLANT PATIENTS

Madhavi Rudraraju MD, Elizabeth Carey MD, Vandana Singh MD. Mayo Clinic, Arizona

**Background:** Organ transplant recipients are at higher risk for developing malignancies which is thought to be due to the use of immunosuppression. The aim of our study was to determine the risk of development of colon polyps with advanced features and colon carcinoma in liver transplant (LT) patients when compared to individuals with chronic liver disease (CLD) and normal population.

**Methods:** Case-control analysis of 89 liver transplant recipients who underwent post-transplant colonoscopy; matched for age, gender, and year of colonoscopy to 89 patients with chronic liver disease and 89 patients with out liver disease undergoing screening colonoscopy.

One study group and 2 control groups were defined: Group1) Liver transplant recipients who underwent post-transplant colonoscopy (N = 89), Group 2) Patients with chronic liver disease matched for age, gender, and year of colonoscopy with the study group, Group 3) Patients without liver disease undergoing screening colonoscopy matched for the same factors. Data collected includes age, race, gender, date of transplant, immunosuppression used, etiology of liver disease, date and findings on colonoscopy and pathology reports. Incidence of advanced adenomas (polyps >1cm, high grade dysplasia, villous histology) and colon carcinoma is documented. Patients less than 45 years age, at high risk for colon cancer (Inflammatory Bowel Disease, strong family history of colon cancer, history of colon carcinoma on pre transplantation colonoscopy) and colonoscopy done at outside institution were excluded.

**Results:** The groups are similar in age and sex, but there are more Hispanic patients in the liver transplant group. The mean age is 57.8 (SD of 7.4) for LT group, 57.5 (SD of 7.9) for CLD group and 58 (SD of 7.7) for normal group. 7.9% (7/89) of liver transplant group, 3.4% (3/89) of chronic liver disease group and 1.1% (1/89) of normal population had the outcome of interest, but the p-value is not significant. The mean duration from transplant to the occurrence of event is 8.8 years. Immunosuppression used is Prograf and Cellcept in 4 patients, Prograf only in 1 patient and Cyclosporine in 2 patients. There is only one case of colon cancer which occurred in the liver transplant group.

<table>
<thead>
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<td>88</td>
</tr>
<tr>
<td>CLD</td>
<td>3 (3.4%)</td>
<td>86</td>
</tr>
<tr>
<td>LT</td>
<td>7 (7.9%)</td>
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<th>4- colon cancer</th>
<th>Villous histology</th>
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</tr>
<tr>
<td>LT</td>
<td>4</td>
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</table>

**Conclusions:** There is a trend towards increased incidence of advanced colon polyps and colon carcinoma in immunosuppressed patients after liver transplantation. Larger studies are needed to determine if, post transplant colon cancer surveillance should be more frequent than currently recommended for non-transplant patients.
UNEXPECTED VERTEBRAL COMPRESSION FRACTURES IN YOUNG MEN WITH EPILEPSY

Sara L.P. Schrader, Katherine H. Noe, Joseph F. Drazkowski, Joseph I. Sirven

Introduction: Osteopenia and osteoporosis are typically defined using bone mineral density T-scores of -1.0 and -2.5, respectively. Low bone density is an independent risk factor for fracture; however, there is no data to suggest at what T-score epilepsy patients are at risk. Enzyme-inducing anticonvulsants may result in bone demineralization that is not accurately predicted by traditional bone density measurements. We report a series of young male epilepsy patients with near-normal bone density scores who experienced seizure-related vertebral compression fractures.

Case Report: We reviewed medical records from male patients undergoing epilepsy surgery evaluation over the past two years for evidence of vertebral fractures. Five men, ages 25-41 years, with longstanding seizure disorder presented with acute severe back pain following well-documented seizures. Four had taken hepatic enzyme-inducing anticonvulsants for 17-28 years. One had taken oxcarbazepine for five years. Three developed symptoms after a seizure in the epilepsy monitoring unit. All had multiple radiographically-confirmed thoracic compression fractures. Lumbar spine T-scores ranged from 0 to -1.6, and left femoral neck T-scores ranged from +0.5 to -1.4; three patients had mild osteopenia. All required medical therapy for pain, and one required inpatient admission for pain control.

Discussion: Epilepsy patients have an increased fracture risk compared to the general population, and previous reports indicate that low bone mineral density is associated with increased fracture risk. Our case series demonstrates that even young epileptic males without osteopenia or osteoporosis as typically defined are at risk for symptomatic vertebral fractures resulting in significant morbidity. This suggests that T-scores as commonly used are not predictive of fracture risk in young male epilepsy patients, and that further study of bone health in this population is needed to define and manage bone disease.
**BREAST RECONSTRUCTION IN PROPERLY SELECTED ELDERLY CANCER PATIENTS**

Simpson DD, Pockaj BA, Gray RJ, Craft RO, Casey WJ, Rebecca AM

**Introduction** - Elderly women (≥65 years of age) account for approximately half of all cancer patients, yet a low proportion of them undergo breast reconstruction after mastectomy compared to their younger counterparts. Concern regarding the safety of the procedure in this age group by both the surgeon and the patient may limit breast reconstruction utilization. To address this issue we reviewed the surgical outcomes of all patients who underwent breast reconstruction at The Mayo Clinic in Scottsdale.

**Methods** - A retrospective review was performed of 348 patients who underwent breast reconstruction after mastectomy from 1995 to 2006. Types of reconstruction performed include a pedicled transverse rectus abdominus muscle flap (pTRAM) 98, a deep inferior epigastric perforator flap (DIEP) 140, and expander/implants 110. Patient demographics and post-operative outcomes were evaluated based on age.

**Results** – A total of 69 (19%) of patients were ≥65 years of age. Types of reconstruction performed in this group include 18 pTRAM (25%), 14 DIEP (20%), 37 implant (34%) Bilateral reconstruction was performed in the elderly group in 13 (19%) patients and in 68 (24%) of the younger group. The range of age in the elderly group was 65-80 years of age, and 20-64 years of age in the younger group. The majority of patients in all groups had immediate reconstruction (74%-89%). The number of patients with >1 co-morbidity was slightly higher in the elderly groups receiving DIEP (50% vs. 29%) and implant (41% vs. 16%) reconstruction. Stage at time of surgery is skewed toward stage 0-2 disease in all groups. Patient surgical outcomes are shown in the table below. Patients undergoing pTRAM reconstruction had the highest complication rates overall. The surgical complication rates were similar between the two age groups in each reconstruction group (pTRAM, DIEP, and implant). The only difference in outcomes was an increased rate of medical complications (extended ICU stay, pneumonia, pulmonary edema, pneumothorax, cardiac events, and PE) in patients 65 years of age or greater who underwent DIEP flap reconstruction. There were no perioperative deaths in either group. The majority of patients in all groups needed re-operation (75%-90%), but a portion of these were planned (e.g nipple reconstruction or expander/implant exchange). There was no increase in re-operation rates based on age.

**Conclusions** – Breast reconstruction can be safely performed in well-selected elderly patients with no major differences in surgical outcomes. Elderly patients who undergo DIEP flap reconstruction may be at higher risk for medical complications, therefore appropriate patient selection and reconstruction options should be carefully evaluated pre-operatively.
Introduction

Drug-induced liver injury (DILI) has increasingly become an area of concern for clinicians, regulatory agencies, and pharmaceutical companies. Over the counter (OTC) supplements are often adulterated and misrepresented. In this case series, we describe three cases of cholestatic hepatitis caused by Anabolic Xtreme Superdrol, a body building substance available OTC.

Case Report

Three patients taking a body building substance Anabolic Xtreme Superdrol presented with significant jaundice and marked elevation of Liver Injury Tests (LITs). A complete work-up for alternate causes of liver disease was negative. Liver biopsy on two of these patients revealed zone 3 cholestasis consistent with anabolic steroid use. Liver injury tests and bilirubin normalized after stopping the culprit medication.

Discussion

This case series highlights the fact that OTC medications and dietary supplements are freely available without any prescription or medical supervision despite possible adverse effects associated with their use. Although they are marketed as benign agents, serious hepatotoxicy can occur.
LIMITED VALUE OF BASELINE AND SHORTENING QRS DURING BIVENTRICULAR PACING IN PREDICTING RESPONSE TO CRT

Damrong Sukitpunyaroj, MD, Dan Ng, MD, Gregory T. Altemose, MD, Komandoor Srivathsan, MD, Luis Scott, MD, Mayo Clinic Hospital, Phoenix, AZ

Purpose: The aim of this study was to evaluate the ability of baseline and shortening of QRS duration to predict a response to CRT.

Methods: The study cohort consisted of 126 consecutive CRT patients (age 74.9±9.3; 81% male; mean LVEF 27.3±7.9%; mean QRS width 160.2±27.7 ms) with prospectively follow-up at our institution. Echocardiograms were performed at baseline and 6-12 months post-implant. Echocardiographic response was defined as ≥ absolute 5% increase in LVEF from baseline. QRS widths at baseline and during biventricular pacing were obtained from 12-lead surface ECG, using the maximum value. Mean baseline QRS width and mean QRS width changes were compared between responder and non-responder groups.

Results: Sixty-seven patients (53.2%) were identified as responders. No differences in demographic data such as age, sex and etiology of heart failure between these two groups were demonstrated. Between responder and non-responder groups mean baseline QRS width were 163.2±27.6 vs. 156.9±27.7 ms (p=0.21), mean QRS shortening were 27.6±3.2 vs. 19.6±3.8 ms (p=0.11) and percentage changes of QRS widths were -14.1% vs. -10.4% (p=0.24). There was significant correlation between baseline QRS width and improvement of LVEF (r = 0.14, p=0.25). Similarly, no relationship between LVEF improvement and relative QRS width changes during biventricular pacing was demonstrated (r=0.13, p=0.15)

Conclusions: QRS width from surface ECG at baseline and after biventricular pacing may not help in predicting the outcome of CHF patients undergoing CRT.
IMPACT OF MYOCARDIAL SCAR BURDEN ON LEFT VENTRICULAR IMPROVEMENT IN HEART FAILURE PATIENTS UNDERGOING CARDIAC RESYNCHRONIZATION THERAPY (CRT)

D. Sukitpunyaroj¹, GT. Altemose¹, K. Srivathsan¹, LR. Scott¹ - (1) Mayo Clinic Hospital, Arizona

Purpose: The presence of myocardial scar, especially at LV pacing site might have a negative impact on CRT response. The purpose of this study was to evaluate whether the extent and location of myocardial scar from nuclear imaging study could predict the LV function improvement of CHF patients undergoing CRT.

Methods: The cohort consisted of 248 patients who received CRT with or without defibrillator at Mayo Clinic Hospital, Arizona, from Nov 2001 to Dec 2005. Of this cohort, 70 patients (85.7% male, mean age 74.8±9.6, mean LVEF 28.1±7.2%, ischemic cardiomyopathy 64.3%) had nuclear imaging study before CRT and were prospectively followed up. Echocardiograms were performed before CRT and between 6-12 months post CRT. Patients were classified as CRT-responders if they had an absolute improvement in LVEF ≥ 5%. From nuclear imaging, scar burden was measured in percentage of total LV area and the presence of scar was identified in 8 LV segments (apex, anterior, anteroseptal, inferoseptal, inferior, inferolateral, lateral and anterolateral).

Results: Forty-four patients (62.8%) were classified as CRT-responders. Multiple linear regression analyses between CRT responders and non-responders revealed significant differences only in mean scar percentage (10.7% Vs 18.5%, p = 0.006), presence of scar in the lateral wall (10% Vs 34%, p = 0.012) and in the inferolateral wall (27.2% Vs 57.7%, p = 0.012). Significant inverse relation between scar area and changes in LVEF (r = 0.43, p = 0.002) was also demonstrated (figure 1). Apart from history of CABG which is higher in non-responder group (63.3% vs. 32.5%, p = 0.01), there were no any other differences in demographic or clinical parameters, including the etiology of cardiomyopathy.

Conclusions: In patients receiving CRT, the extent of myocardial scar tissue was inversely related to the improvement of LV function after implantation. The presence of scar at lateral and inferior lateral walls, which are the common sites of LV pacing lead, may have a negative impact on the response to CRT.
Background & Purpose: Gastic antral vascular ectasia (GAVE) is characterized by mucosal and submucosal vascular ectasia causing recurrent GI hemorrhage. Endoscopic thermal therapy (ETT) with electrocautery or argon plasma coagulation is currently the standard treatment for significant bleeding from GAVE; however, this requires multiple sessions of ETT for destruction of ectasia and control of bleeding. Endoscopic band ligation (EBL) has traditionally been used for treatment of esophageal varices but has been reported for control of bleeding from other GI vascular lesions. In patients with GAVE, EBL allows us to resect large areas of diseased mucosa and submucosa followed by complete healing with normal mucosa and eliminating recurrent hemorrhage. There are no published reports on the utility of EBL in the treatment of GAVE. Our aim was to compare EBL to ETT for the treatment of bleeding from GAVE.

Methods: Following approval from our institutional review board, demographics, clinical presentation and treatment outcomes in 6 GAVE patients treated with EBL were compared with 12 controls treated with ETT. All adverse events were recorded.

Results: There were no significant differences in demographics, pre-treatment clinical presentation, mean hemoglobin, number of transfusions or hospitalizations between the two groups. 33% of patients in each group had GAVE associated with portal hypertension; 2 patients in the EBL group had failed prior ETT.

<table>
<thead>
<tr>
<th></th>
<th>EBL (n=6)</th>
<th>ETT (n=12)</th>
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<tr>
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<tr>
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<tr>
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<td>Post Hospitalization</td>
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<tr>
<td>Cessation of bleeding</td>
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Paired sample t-test revealed improvement in hemoglobin (gm%) with treatment (mean pre=9.3, mean post 10.4; p=0.029). The improvement in hemoglobin (gm%) was numerically greater with EBL (mean pre=9.2, mean post 10.8; p=0.09) than ETT (mean pre=9.3, mean post 10.1; p=0.18).

One patient in the EBL group had pain and one patient in the ETT group had rebleeding immediately post–treatment. All patients in the EBL group had complete mucosal healing with minimal residual GAVE at 4-6 week follow-up endoscopy.

Conclusions: Our initial experience suggests that EBL is significantly superior to ETT for the management of GAVE. EBL requires significantly fewer treatment sessions for control of bleeding, produced significantly higher rates for cessation of bleeding, and produced a significant reduction in hospitalizations following treatment. Trends toward reduced transfusion requirements and greater improvement in hemoglobin level were also identified. Treatment with EBL demonstrated a favorable safety profile.
INTRODUCTION: Foreign body synovitis can occur with penetrating injuries to the joint. This can be a diagnostic challenge as often symptoms develop long after the initial trauma is forgotten. Cases of plant thorn/spine injury induced synovitis are infrequently reported (1) in part because retained organic materials are not seen with initial radiographic studies or can be readily missed with subsequent advanced imaging studies (2).

In the U.S. southwest where cacti are abundant and cowboy wisdom advises one to tread lightly around them, countless ER visits document injuries sustained from those prickly encounters. We present a case in which a penetrating injury, involving spines of the Cholla and Prickly Pear cactus, led to persistent arthralgias in a patient suspected to have underlying psoriasis.

CASE: 61 year old woman presented with a two year history of persistent swelling and stiffness involving the proximal interphalangeal joints of the left long and ring fingers. Symptoms developed after sustaining a penetrating injury from spines of a cholla cactus Cylindropuntia/Grusonia. Initial x-rays taken within 6 months were negative except for soft tissue swelling. Her condition remained non-painful but undiagnosed until she sustained a similar injury to the right index finger a year later involving the spine of a prickly pear cactus Optunia ficusindica. After the spine was removed, a similar but lesser inflammatory response ensued prompting further evaluation for her polyarthralgia.

Review of her medical history and family history was unrevealing for inflammatory conditions or connective tissue disorders. However, review of systems and physical examination did reveal a long standing history of scalp dermatitis. Physical exam confirmed warm, fusiform swelling of the affected joints with a residual superficial erythematous point marking point of entry. Also discovered were “sausage digits” of the bilateral 4th toes attributed to remote as well as recent stubbing injuries to the toes.

Laboratory studies including, ESR, RF, and ANA were negative. Dermatological evaluation determined her scalp condition to be sebopsoriasis with no evidence of psoriasis elsewhere on her body. MRI of the left hand demonstrated advanced synovitis at the proximal interphalangeal joint of the long finger with associated surrounding reactive osteitis as well as moderate tenosynovitis of the long finger flexor tendons suggestive of psoriatic arthritis.

DISCUSSION: Psoriatic arthritis is a chronic disease characterized by inflammation of the skin and joints. Psoriasis by itself is a common skin disorder affecting 2% of the Caucasian population. It is characterized by patchy, red, inflamed scaly skin found on elbows, knees, groin, abdomen, and scalp. Ten percent of those affected will go on to develop an associated inflammatory arthritis often years later. Our patient’s persistent synovitis assessed in isolation illustrates the possibility of a retained microscopic foreign body or delayed granulomatous reaction seen with cactus spine injuries (3). Confirmation would then necessitate examination of the synovial fluid with synovectomy for resolution in some cases (4,5). One case is notable for thorn synovitis occurring in a child with known psoriatic arthritis (6). Without a history of preceding thorn injury, joint changes could have easily been attributed to psoriatic arthritis. The child’s focal arthralgia was subsequently treated with surgery and removal of the offending retained thorn. We present essentially the opposite scenario in which foreign body synovitis may be presumed. But for a detailed history and examination revealing the presence of an underlying inflammatory process, focal invasive intervention could be postponed in favor instituting conservative measures.
INCREASED USE OF SELECTIVE SEROTONIN REUPTAKE INHIBITORS IN PATIENTS ADMITTED WITH GASTROINTESTINAL HAEMORRHAGE: A MULTICENTRE RETROSPECTIVE ANALYSIS


Background:
Selective serotonin reuptake inhibitors (SSRIs) can adversely affect platelet function and impair hemostasis. Various bleeding complications have been reported in persons taking SSRIs including an increased risk of gastrointestinal haemorrhage (GIH).

Aim:
To evaluate SSRI use in patients hospitalized with GIH compared with controls.

Methods:
A retrospective, multicentre case-control study determined use of SSRIs, non-steroidal anti-inflammatory drugs (NSAIDs), aspirin, clopidogrel, Coumadin and enoxaparin in patients admitted with GIH and age- and sex-matched controls. Exclusion criteria included liver disease, portal hypertension or bleeding diathesis.

Results:
A total of 579 cases were matched with 1000 controls. SSRI use was 19.2% in cases and 13.6% in controls [OR (95% CI) = 1.5 (1.2-2.0); p = 0.003]. NSAIDs were used by 7.3% of cases and 3.8% of controls [OR = 2.0 (1.3-3.1); p = 0.003]. SSRI use was more strongly associated with lower [1.8 (1.2-2.8)] rather than upper [1.3 (0.83-1.9)] GIH. Significant interactions existed for SSRI use with NSAIDs and aspirin.

Conclusions:
Patients admitted with gastrointestinal bleeding were more likely to be taking SSRIs than controls. This association exists for lower as well as upper GIH. Physicians should be aware of this risk particularly in patients already using medications that increase GIH risk.
AN UNUSUAL CAUSE OF INTRAOPERATIVE ACUTE MYOCARDIAL INFARCTION

Alexis Wiesenthal, MD, Mayo Clinic, Scottsdale, Arizona

A 49 year male with prostate cancer and no cardiac risk factors presented with an acute ST elevation MI during a robotic-assisted radical prostatectomy. ST elevations were noted intraoperatively, and an intraoperative TEE showed an akinetic apex. He has a history of essential thrombocytosis and was taken off aspirin two weeks prior to surgery. The day of surgery, he had a platelet count of 733.

The patient was transported to the Cardiac Catheterization Laboratory where a platelet thrombus was found in left anterior descending. The left anterior descending was free of significant stenosis, but was acutely occluded with a large amount of hazy thrombus in the proximal and mid left anterior descending artery. The distal apical portion of the left anterior descending artery was totally occluded.

The patient underwent percutaneous aspiration, rheolytic thrombectomy, and intracoronary administration of ReoPro. Post-percutaneous aspiration thrombectomy, there was residual thrombus, and intracoronary ReoPro was administered after the first percutaneous thrombectomy and a drip was maintained. Rheolytic thrombectomy resulted in a significant decrease in the amount of thrombus; however, there remained residual thrombus. Because of this, the patient underwent platelet pheresis. He was discharged on cytoreductive therapy of Hydrea therapy as well as aspirin. He had good recovery of his left ventricular function by discharge.

Essential thrombocytosis is an uncommon myeloproliferative disorder and a rare cause of myocardial infarction. This disease may have both occlusive thrombotic as well as hemorrhagic complications, and patients undergoing surgery are at increased risk for bleeding and thrombosis. There there are few case reports of essential thrombocytosis causing myocardial infarction, and there are no clear recommendations on peri-operative management of this disorder. This case may suggest that ongoing perioperative antiplatelet and/or cytoreductive therapy may prevent possibly fatal complications in patients with essential thrombocytosis undergoing surgery.
SUPERIOR VENA CAVA SYNDROME IN A PATIENT WITH AN ARTERIOVENOUS FISTULA

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Introduction: Superior Vena Cava (SVC) syndrome results when the blood flow in the SVC is obstructed. The common complaints in a patient with SVC obstruction are dyspnea, face and arm swelling. Neck vein distention and facial edema are often seen on examination. Malignancy accounts for about 80% of the cases of SVC syndrome. Venous stenosis and thrombosis represent a significant minority of cases, especially in patients with an AV fistula for hemodialysis.

Case Report: PM is a 52 year old male who presented with a one week history of right arm swelling. He had a history of renal failure and was on scheduled hemodialysis via an AV fistula. He noted associated erythema, but denied pain and fever. Examination showed non-pitting edema of the entire right upper extremity, neck, and face. Ulnar and radial pulses were decreased, but sensation and motor strength were intact. After a negative Doppler ultrasound of the right upper extremity, a fistulogram was performed and revealed extensive collateralization into the right neck, upper arm, and axilla due to proximal occlusion of the SVC. Balloon angioplasty was performed to dilate the SVC. A post-procedure venogram revealed minimal residual narrowing and markedly decreased collateral vein filling. A new thrill was appreciated on palpation of the AV fistula. The patient was advised to return in 45 days to repeat the fistulogram and ensure patency prior to impending occlusion. The fistula was accessed successfully for hemodialysis before discharge. He was discharged with the addition of clopidrogrel and aspirin to his medication regimen.

Discussion: Thrombosis is the most common complication of permanent vascular access and the costs of maintaining vascular access patency in the United States accounts for around 15% of the annual spending on hemodialysis. The fistulogram is the gold standard in detecting venous venous stenosis, but cost and difficulty of the procedure prevent it from being used as a screening exam. It does, however, remain the diagnostic exam of choice if intervention, such as percutaneous transluminal angioplasty (PTA), is being pursued. PTA can be successful in a majority of anastamotic and more proximal stenoses, but there is a very high rate of recurrence (55 to 70 percent at 12 months). The use of anti-platelet agents in the prevention of the recurrence of thrombosis at these stenosed sites is still being debated.
SPONTANEOUS REGRESSION OF TESTICULAR SEMINOMA IN A PATIENT WITH EXTENSIVE METASTASIS

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Introduction: Burned-out tumor of the testis is a rare clinical entity and a rare form of testicular germ cell neoplasia. It presents as metastases to retroperitoneum, mediastinum and lymph nodes such as supraclavicular, cervical and axillary, associated with spontaneous and complete regression of the primary testicular tumor. Immunologic and ischemic causes have been implicated in the pathogenesis. The case illustrated demonstrates this phenomenon.

Case Report: A 36 year old male presented with neck swelling, shortness of breath, dysphagia, hemoptysis, night sweats and fever for three weeks before he presented to the hospital. He however did not report any weight loss. Physical exam revealed cervical and supraclavicular lymphadenopathy. CT scan of chest and abdomen showed massive mediastinal adenopathy extending into the thoracic inlet, multiple supraclavicular and left hilar adenopathy with pleural effusion and extensive retroperitoneal adenopathy encasing aorta and inferior vena cava. Subsequently supraclavicular lymph node biopsy was done, which revealed seminoma. Scrotal ultrasound was done to determine if the testis was the primary source of the tumor; it showed bilateral microlithiasis, decreased blood flow to the right testicle and extreme heterogeneity but no definite mass. Indeterminate findings on the scrotal ultrasound mandated right radical orchiectomy. Histological examination of testis showed nodular scarring, lymphoplasmacytic infiltrate and testicular atrophy with microlithiasis, findings supportive of regressed germ cell tumor. Post surgery, he developed increased respiratory distress and was intubated. Repeat chest CT showed complete obstruction of the left pulmonary artery (worse than previous CT) and worsened pleural and pericardial effusions. Chemotherapy (bleomycin, etoposide and cisplatin) was started but had to be discontinued secondary to development of acute tubular necrosis and renal failure. The patient finally expired after the family decided to withdraw care.

Discussion: In patients presenting with manifestations of extragonadal germ cell tumor, it is important to rule out a primary in the testes even when they do not present with any symptoms such as testicular pain or mass since the prognosis and response to therapy is poor in primary extragonadal germ cell tumors. It is advisable to do ultrasound of testes to rule out primary in the testes as testis is a privileged site with respect to its ability to harbor viable tumor despite adequate systemic combination chemotherapy, and mandates radical orchiectomy. If ultrasound of testes shows nonspecific findings of inhomogeneity or microlithiasis without any obvious mass, it should raise suspicion for regressed tumor. Microscopically, most of the tumors showed extensive scarring, testicular atrophy shrunken seminiferous tubules with decreased or absent spermatogenesis, lymphoplasmacytic infiltrate or intratubular germ cell neoplasia. This patient had all the above microscopic findings, in addition to extensive metastases. Compared to nonseminomatous germ cell tumors, pure seminomas are more likely to be localized at presentation. Approximately 80 percent of men with seminomas present with stage I disease (limited to the testicle), while 15 percent have stage II disease (limited to retroperitoneal nodes). Seminomas rarely spread via the bloodstream to other areas (eg, liver, lung, bones, or brain) that are more commonly involved by NSGCT. Fewer than five percent of patients have spread beyond the retroperitoneal nodes at presentation. Spontaneous tumor regression remains a medical curiosity in terms of the disease process.
Abstract: Basal cell carcinoma (BCC) is the most common skin malignancy, but has very limited capacity to metastasize. The reason for this is the tumor’s growth dependency on its stroma. But they can be locally invasive and destructive. There are five clinical types and many more histologic variants. White males are the most affected population.

Case Report: Fifty-six year-old caucasian male presented with a large (11cm x 9cm x 2.5cm) cauliflower-like, granulomatous, ulcerated mass on his right forearm. The lesion had been present increasing in size over the last 5 years, with intermittent episodes of bleeding and infection which were treated empirically by patient’s family with local wound care.

In the Emergency Department the lesion was bleeding, with purulent discharge, superficial ulceration, and no neurovascular compromise was noted. The patient was treated for cellulitis / pyogenic granuloma and eventually underwent excisional biopsy, which showed a nodular BCC with clear margins.

The patient was discharged home on antibiotics and local wound care. Subsequent outpatient visits have shown good healing.

Discussion: This was an unusual presentation of a Basal Cell Carcinoma in terms of its size and natural course. Even though nodular BCC is one of the least aggressive types, a lesion as big as this patient’s usually presents with complications due to local mass effect, including decreased range of motion, muscular atrophy / necrosis, and neurovascular compromise. Untreated basal cell carcinomas have a tendency to locally infiltrate into the subcutaneous tissue and to recur after excision, locally or at distance. This patient was lucky that despite a delay in seeking care, he had no evidence of infiltration and a relatively less aggressive type.
AN UNUSUAL CASE OF PORTAL HYPERTENSION
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Introduction: We present a case of a 27 year old HIV infected male with portal hypertension secondary to Nodular Regenerative Hyperplasia, likely related to Nevarapine use.

Case report: A 27-year-old HIV positive white homosexual man presented to the HIV clinic and complained of generalized weakness, upper abdominal pain/distension, daily heart burn, non-bloody diarrhea and excessive flatulence for three days after starting Nevirapine, exacerbated further when the dose of Nevirapine was increased. He was doing well on triple nucleoside analogue regimen including Diadanosine (ddl) 250 mg and Emtricitabine 200 mg/ Tenofovir 300 mg daily with an undetectable HIV viral load and a CD4 count of 249 cells /μl, but Nevirapine was substituted for Diadanosine four weeks prior to his current presentation in order to give diversity to his antiretroviral (ARV) regimen. He used alcohol in moderate amount during the last 6 years and did not have any history of intravenous drug use. His physical examination revealed stable vital signs, moderate diffuse upper abdominal tenderness and no rashes.

His complete blood count, albumin and prothrombin time were normal. His liver function tests showed an Alkaline Phosphatase level of 165 (38-126 U/ml), AST level of 126 (14-36 U/ml), ALT level of 109 (9-52 U/ml) and total bilirubin level of 0.6 (0.2-1.3 mg/dl). Before starting Nevirapine, his Alkaline Phosphatase level was 110 IU/ml, AST level was 75 IU/ml, ALT level was 79 IU/ml and bilirubin level was 0.3 mg/dl. The hepatic viral serologies, HCV-RNA, HBV-DNA, ANA, anti mitochondrial antibody and anti LKM were negative. The F actin antibody was weakly positive while ceruloplasmin and iron saturation were within the normal limits.

He underwent a CT scan of abdomen after administration of oral and intravenous contrast that showed splenomegaly, peri-splenic varices and no ascites. An upper gastrointestinal endoscopy (EGD) showed grade two esophageal varices and minimal portal gastropathy. The biopsies of antrum and duodenum showed mild inflammation. A transvenous-liver biopsy performed a month after his initial presentation showed mild zone III sinusoidal dilatation, patchy hepatocellular necrosis and congestion. An echocardiogram showed normal heart function. An MRA of the abdomen showed no evidence of portal, splenic, superior mesenteric or hepatic venous obstruction.

Upon his initial presentation to the HIV clinic, Nevirapine was stopped for a week with some improvement of his symptoms and restarted again. Finally because of worsening abdominal pain all ARV including Nevirapine were stopped and a second liver biopsy was performed which showed progressive changes of sinusoidal dilatation, hepatocellular congestion, patchy hepatocyte atrophy and reticulin compression as well as hepatocellular necrosis without fibrosis compared to his previous biopsy (Figure 1 A and B). Four months after his initial presentation and two months after being off ARV, his abdominal pain had improved significantly.

Discussion: Nodular Regenerative Hyperplasia (NRH) appears to be a new cause of portal hypertension in HIV infected patients. We found 7 cases of NRH reported by Mallet et al in AIDS, Jan 2007. While all cases By Mallet et al, were exposed to ddl, our patient developed symptoms and manifestation of portal hypertension after stopping ddl and starting Nevarapine. Nonetheless, five patients in Mallet’s series were not exposed to Nevirapine raising other possibilities for portal hypertension. In addition, it is possible that NRH in the present case was present for a long time and gastrointestinal symptoms produced by Nevirapine uncovered it. Because of the risk of inducing hepatic encephalopathy after portosystemic shunting procedures, liver transplantation should be considered for those who have refractory ascites and its associated complications. However medical therapy and portosystemic shunting should be considered before liver transplantation, which should be reserved for a subset of patients with severe symptoms and no hope of reversibility of NRH.
OBJECTIVES: American Indians (AI's) have the lowest rate of seatbelt use nationally, putting them at significant risk for motor vehicle crash (MVC) morbidity and mortality. This study compares seat belt use in victims of level one trauma crashes presenting from on and off AI reservations. Predictors of seatbelt use were evaluated as well. We hypothesized that AI’s in crashes on a reservation would have lower rates of seatbelt use, even compared to AI’s in crashes from off the reservation.

METHODS: This is a retrospective cohort study of MVC victims presenting to level one trauma facility in Phoenix, Arizona from July 2003 to June 2005 consecutively. Inclusion criteria were age >11 and if transported directly from the crash, patients were excluded if a pedestrian. Inter-facility transports were excluded, as these patients would likely represent a sicker proportion, less likely wearing a seatbelt. Characteristics of those patients (sex, race, location of crash, alcohol and seatbelt use) were analyzed in univariate and multivariate logistic regression.

RESULTS: Data were collected on 2339 patients. 392 were excluded, leaving 1947 (83%) available for analysis. Al’s had lower rates of seatbelt use compared to all other races. Additionally, AI’s on a reservation were less likely to wear seatbelts than those off a reservation (25.9% vs. 42.7%). However, when tested in a multivariate analysis with alcohol as a covariate, race and location became insignificant. Low seatbelt use by AI’s on the reservation was primarily associated with alcohol use.

CONCLUSION: In this analysis, alcohol, rather than race or location, is the overriding predictor of seatbelt use. This study compared patients that were in crashes, and only those triaged to a level one trauma facility. If we assume unbelted passengers are more severely injured, this would bias our results. The application of this data may help direct future public service efforts to increase seatbelt use in target populations.
CENTRAL LINE EMERGENCY ACCESS REGISTRY (CLEAR): A MULTI-CENTER STUDY TO DETERMINE RESIDENT COMPETENCY WITH CENTRAL VENOUS CATHETER INSERTION

Adam Balls MD, Frank Lovechio Do MPH, Stephan Stapczynski MD, Mary Mulrow RN, Danielle Hatch

Purpose: The objective of CLEAR is to analyze the experience of emergency medicine physicians with the placement of central venous catheters (CVC). Central venous catheters are placed in the ED and ICU settings in order to resuscitate critical patients, assist in lab draws and hemodynamic monitoring, and obtain central IV access in patients with poor peripheral IV access. The purpose of CLEAR is to analyze various variables related to CVC insertion by collecting these variables in an on-line data base at multiple centers in the United States.

Methods: A prospective, cohort single center study began at Maricopa Medical Center in November 2005 after generous funding from a Maricopa Medical Foundation Research grant. The multi-center phase of CLEAR began in November 2006. There are currently 5 centers including Christiana Care Health Systems (Delaware), Hennepin County Medical Center (Minneapolis Minnesota), University of Nebraska Medical Center (Omaha Nebraska), University of Southern Nevada (Las Vegas) and Washington Hospital Center/Georgetown Medical Center (Washington DC) entering data variables into the on-line registry located at www.clearsite.org. Five other centers have received IRB approval and should begin data collection in April 2007.

Patients greater than 18 years of age requiring a CVC placement by EM resident physician in the ED or ICU setting are included in the study. Resident physicians placing the catheter are required to enter research variables including number of attempts, site of placement, complications, etc into the on-line database.

Results: EM residents inserted 324 central venous catheters as of February 1, 2007 at the five participating centers. Catheters were successfully placed in 97% of the patients. Most of CVC were placed in male patients (62%) and a mean age of 52 years. Overall success rates by all levels of training and at all anatomic sites was 80%.

Most frequent hospital areas of CVC insertion were: ED (62%), ICU (36%), OR (1%), and Floor/Telemetry (1%). Most common reasons for CVC placement were: ICU patients requiring lab draws/multiple medications (31%), poor peripheral IV access (29%), and need for rapid resuscitation (20%). Sterile technique was used for 85% of central line placements. Ultrasound was used for 30% of attempts with the right internal jugular vein being the most frequent use of ultrasound (54%).

Conclusion: In summary, central venous catheters are important in the care of the critically ill patient. Most CVC placed by EM residents are placed in the emergency department setting. When practitioners inserted > 10-30 central lines, the odds ratio of success increased to 1.7 (95% CI 0.9-3.1). After 30 central line placements no difference in success rates was noted. PGY-2 residents had the highest success rates in comparison to PGY-1 and PGY-3 residents, and the odds ratio of success was 2.2 (95% CI 1.1-4.4). Other groups had too few attempts to accurately compare. Compliance with national patient safety standards in regards to sterile technique and ultrasound guided attempts needs improvement.
YOUNG MAN WITH HEART FAILURE

Ankur Bant (MD), Na Li (MD), Steven Nguyen (DO), Lisa Emmans (MD),
Edgardo Zavala-Alarcon (MD)

Introduction: Sinus of Valsalva aneurysm (SVA) was first described by John Thurnasm in 1840. Most of the aneurysms originate in the right coronary sinus or non-coronary sinus. SVA ruptures by the third decade of life. The rupture may lead to intracardiac shunting into the atria, ventricles, or interventricular septum. Hence, young patients may present with heart failure.

Case Report: A 34 year old Hispanic male with a “heart murmur” diagnosed in childhood was sent by his PCP to our medical center for transthoracic echocardiogram. Two months prior, the patient consulted his primary care physician (PCP) for progressive worsening of his bilateral lower extremity edema, fatigue, and dyspnea on exertion. Despite these symptoms he was still working as a landscaper. The PCP prescribed diuretics and referred the patient to us.

The patient arrived to our hospital with stable symptoms and while undergoing a transthoracic echocardiogram, he developed acute respiratory distress with pulmonary edema and severe hypotension. He was diagnosed with cardiogenic shock with possible acute rupture of a SVA and required immediate intubation; a trans-esophageal echocardiogram was done with immediate confirmation of the diagnosis of a large right sinus of Valsalva aneurysm ruptured into the right ventricle. A confirmatory right and left cardiac catheterization showed severe pulmonary hypertension with equalized right ventricular and aortic pressures and clear passage of a pigtail catheter from the aorta into the right ventricle through the ruptured sinus of Valsalva aneurysm. Patient was transferred to another hospital for the surgical repair. After the surgery, the patient has been followed in our cardiology clinic with complete recovery and is now asymptomatic and back to work as a landscaper. His follow-up echocardiogram has shown normal mechanical aortic valve function with good left ventricular function and the right ventricle has regained normal size and function.

Discussion: This is a unique case of a young patient with a ruptured sinus of Valsalva aneurysm resulting in cardiogenic shock. Sinus of Valsalva is a rare congenital disease that can occur with or without other congenital heart defects. Rupture of aneurysm occurs mostly in 3rd decade. Young patients usually present with symptoms of heart failure. Therefore, physicians should always keep sinus of Valsalva aneurysm and other congenital heart defects in differential diagnosis.
OUTCOMES FOLLOWING BRONCHIOLITIS TREATED IN EMERGENCY DEPARTMENT

Paul Berman, MD, Brian Shippert, Frank LoVecchio, DO, Vonnie Fuentes, Mary Mulrow, RN

Purpose: Bronchiolitis is a common condition seen in the pediatric emergency department, but predicting outcomes in bronchiolitis is poorly described. There is a severity assessment tool for bronchiolitis which previous studies indicate an accurate inter-rater reliability. This tool was used to prospectively enroll patients to predict outcomes.

Methods: We prospectively enrolled all patients younger <2 yrs old with a primary diagnosis of bronchiolitis from 1/30/06-2/15-06 for 16 hours per day. Following IRB approval, data collection was performed by trained research staff (RN research associates) interviewing patients’ parent/guardian and obtaining objective data from patient charts. Patients’ parent/guardian were contacted, 10-14 days after presentation and interviewed regarding subsequent course of illness, repeat ED visits and hospitalizations. Data included demographic descriptors, medical history, physical examination findings, details of current illness; ED treatment, outcomes, and discharge plan. Follow-up data included acute relapse and recent symptoms. Cases missed during the study period (the other 8 hours per day) were the control group. Descriptive statistics were utilized using EXCEL™ and STATA™ software.

Results: RSV virology was defined as a positive result prior to (<96 hours) or at ER presentation and noted in Table 1. No patients were lost to follow-up. Self-reported race were 94.1% Hispanic, Black 2.9%, and Mixed race 2.9% (CM: Hispanic 72.2%, Unknown 27.7%). Of the enrollees discharged, one patient was hospitalized two days later. Of the patients who were RSV positive, tachypnea and febrile were more likely to be present (p<.005). All patients had RSV culture and direct fluorescent antibody (DFA) testing. DFA was as accurate as culture in our study and available sooner. No statistical differences were noted with controls vs. enrolled patients.

<table>
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<tr>
<th>Table 1.</th>
<th>Gender</th>
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<td>Female</td>
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<td></td>
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<td>35.3%</td>
<td>85.3%</td>
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<td>Total Eligible</td>
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Conclusion: Patients with presumed bronchiolitis who were RSV positive were found to have more severe objective signs of illness, were sicker and more likely to be admitted.
ADENOID CYSTIC CARCINOMA OF THE SALIVARY GLAND WITH DISTANT METASTASES TO LUNG, BONE AND LIVER.

Karan Bhasin (associate), Boo Ghee Low (member).

Introduction: Adenoid Cystic Carcinoma (ACC) is a rare malignant tumor of the salivary gland. The classic features are slow growth and diffuse invasion with a high incidence of distant metastases. The use of radiation therapy in cases of ACC is controversial, with proven effectiveness either alone or along with surgery. However, our patient did develop new metastases after receiving surgery and radiation therapy. The site of metastases included lungs, bone and liver, which is a rare presentation.

Case Presentation: Mr. R is a 45 year old Middle Eastern male who initially presented with a left neck mass. His history was significant for a 3-4 pack of cigarettes per day X 25 years and asthma. The mass was resected and found to be adenoid cystic carcinoma with perineural invasion. Three months later the mass reappeared without any associated pain, weight loss or shortness of breath. At that time, he went through a left modified neck dissection. This revealed a well differentiated adenoid cystic carcinoma with solid basaloid features, involving 2 out of 7 lymph nodes. After the resection of the recurrent mass he underwent adjuvant radiation therapy. Mr R presented with abnormal findings of the chest CT, 7 years after the initial presentation. During these years patient had multiple chest CTs and was completely asymptomatic. Mr. R had multiple bilateral lung masses, and enlargement of the periaortic lymph nodes in the upper abdomen. A CT guided biopsy of the lungs confirmed metastatic carcinoma, with pankeratin positive and TTF1 negative. After finding this Mr. R received one cycle of Carboplatin and Taxol. Mr. R returned with complaints of back pain and rectal bleeding. At this time, he was found to have multiple lesions of the spinal column and liver. A CT guided liver biopsy at the time revealed metastatic carcinoma. He continues to receive palliative chemotherapy.

Discussion: Mr. R’s case provides an excellent learning opportunity regarding the treatment and management of adenoid cystic carcinoma. Radiation therapy (RT) along with surgical resection should be strongly considered in cases of ACC. In addition, this case provides a time frame when distant metastases appear in this unique, highly metastatic carcinoma. The prognostic factors in ACC include surgical margins and perineural invasion. In spite of the recommended RT and surgical resection, Mr. R developed distant metastases to bone, lung and liver.

References:
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Internal Medicine

GASTROINTESTINAL STROMAL TUMOR WITH RESECTION AND CHEMOTHERAPY WITH IMATINIB

Karan Bhasin, MD (Associate); Ana Aragon, MD (Associate);
Yaminikrishna Sabesan, MD.

Introduction: Gastrointestinal stromal tumors (GIST) are well-demarcated spherical masses that appear to arise from the muscularis propria layer of the GI wall. Intramural in origin, they often project exophytically and/or intraluminally, and they may have overlying mucosal ulceration. Cytologically, GISTs can be classified into two broad categories: spindle cell GISTs and epitheloid GISTs. The diagnosis must be made immunochemically; most GISTs express the CD34 antigen (70-78%) and the CD117 (72-94%) antigen. CD117 also is known as the c-kit protein; it is a membrane receptor with a tyrosine kinase component. The use of KIT (proto-oncogene mutation) tyrosine kinase inhibitor in treatment of GIST makes this very unique and its use in adjuvant or neoadjuvant chemotherapy in management of these tumors is a very important new development.

Case Presentation: Mr. S is a 42-year-old Caucasian male who presented with persistent diarrhea and vague abdominal pain for 1.5 years. Patient had 10-12 bowel movements per day with no gross blood loss, some sporadic instances of fatty stool which was dependent on the diet. He had 90 lbs of unintentional weight loss during this time. His abdominal pain was rated 3-4/10 which was not relieved by any changes in diet or bowel movements. He had some subjective fever, chills and night sweats 2-3 times per week. Family history was significant for lung cancer in his father. He was tachycardic at time of admission; he appeared pale, cachectic with a massive abdominal mass. This mass was a solid mixed attenuation mass extending from the midcostal margin to the umbilicus, spanning 12 cm in its largest diameter. CBC showed Hb/Hct to be 7.7/23.6, PT, INR was elevated to 13.7 and 1.3. He had microcytic anemia with Fe deficiency. Stool studies were negative for infection, parasites, and also guaiac negative. CT of abdomen revealed a mass 17x21 cm in the maximal cross-sectional area on the CT. Fine Needle Biopsy revealed a stromal carcinoma with extensive necrosis and spindle cells. Resection of the tumor showed a 14x16x21 cm tumor with 3 fungating lesions extending to the mucosa of the small bowel. The tumor also surrounded the large bowel. The tumor is still pending official pathology report but is thought to be a GIST leiomyosarcoma.

Discussion: The patient in this case presented with an abdominal mass, chronic diarrhea, signs of malabsorption syndrome with Fe and Vitamin K deficiency. Differential diagnosis should include: gastrointestinal carcinoid, abdominal lymphoma, adenocarcinoma of the colon, gastrointestinal stromal tumor, etc. In this patient histopatological diagnosis indicated a GIST; which have a frequency of less than 3% of all the malignant GI neoplasias. If tumor Immunohistochemical stains are positive for KIT it would be a good prognostic indicator for treatment with Imatinib. Prognostic factor which indicates this tumor to be malignant are size > 5 cm, cellularity, and presence of necrosis. All these criteria added to the immunohistochemical staining positive for KIT would make this patient perfect to start adjuvant chemotherapy.
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**MELIOIDOSIS: A CASE REPORT**

Jerilyn S Champagne RN, Marc Matthews MD, Daniel Caruso MD, and Charles Merbs PhD

**Introduction:** *Burkholderia pseudomallei* is the gram negative bacillus causing “melioidosis,” a subtropical/tropical disease of humans resulting in a protean manifestation that can affect a wide variety of body organs and tissues. The bacillus is a widely distributed environmental saprophyte found in water and soil of Southeast Asia and Northern Australia. It is considered to be endemic in South and Central America although documented cases of disease are lacking. However, recent case reports of *Burkholderia pseudomallei* infections originating in patients with recent travel to Honduras and presenting clinically in Florida lend credence to this consideration as does this case report.

**Case Report:** A 37 year-old El Salvadoran female presented to an emergency room with sudden onset of seizures which had been witnessed by a co-worker. She complained of a left sided headache. It was shortly after the onset of headaches that she began experiencing seizures. Her physical examination, including neurological status, was unremarkable. Past medical history revealed a five year history of diabetes poorly controlled by oral hypoglycemics. Shortly after arrival to the emergency room the patient suffered a second seizure which was noted to be a right-sided focal seizure. Laboratory studies were significant for serum glucose of 551 mg/dl. Once admitted to the floor, a spinal tap revealed that the cerebrospinal fluid had a white blood cell count of 39 (normal: 0 -10 mm$^3$) and red blood cells of 454 (normal of 0 mm$^3$). Computed tomography of the head with and without contrast demonstrated no obvious intracranial abnormalities. Electroencephalogram was abnormal. Magnetic resonance imaging of the head with and without gadolinium revealed cortical enhancement over the left frontal and parietal region convexity, involvement of the brain parenchyma and meninges, and increased brain edema suggestive of an infectious etiology pattern of activity in the left parietal region. A left fronto-parietal craniotomy was performed. The gross pathology demonstrated “necrosis, granulation tissue and fibrosis consistent with brain abscess.” The microbiological studies showed "aerobic gram negative rods" which were identified as *Burkholderia pseudomallei*, confirmed by the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia. The patient was started on ceftazidime and after a two week hospital stay the patient was discharged to home to complete a total of eight weeks course of antibiotic therapy. The patient’s clinical follow-up was unremarkable at six months.

**Discussion:** It has been estimated as many as 300,000 North Americans (i.e. immigrants and Vietnam veterans) are infected with undiagnosed melioidosis and should be considered as part of the differential diagnosis when evaluating patients from areas of endemicity as well as those individuals with travel histories to endemic areas. This should include South and Central America in addition to Southeast Asia and Australia.
SINGLE STAGE MUSCLE FLAP CLOSURE IN CHRONIC EMPYEMA PATIENT

Shiliang Chang MD, Michael J. Moulton MD, and Birger E. Rhenman MD

**Introduction:** Organized or chronic stage empyema is a late presentation of parapneumonic effusion. Thick visceral peel in this stage prevents the lung from expanding and results in a space with potential for infection. A single stage muscle flap closure with rib resection provides obliteration of the space and helps control the infection.

**Case Report:** A 73-year-old male was admitted with community acquired pneumonia and right upper lung mass. Associated symptoms included fever, hypoxia, and weight loss. His chest CT showed bilateral emphysematous changes, a right apical nodule, right pleural effusion, and several non-specific anterior tracheal nodes. After intravenous antibiotic treatment, his clinical condition improved with resolution of fever and hypoxia. One week follow-up in cardiothoracic clinic revealed persistent failure to thrive, poor appetite, and residual large effusion.

Subsequently, he underwent a right muscle-sparing thoracotomy with attempted decortication. After entering into right pleural cavity, a liter of purulent drainage was removed. The right pleural drainage was negative for malignancy and grew out 1+ non-hemolytic Streptococcus species. A small necrotic cavity was identified in the right upper lobe. This was consistent with the lung mass identified on chest CT. Resection of this cavity was not feasible due to thick visceral peel that entrapped his lung parenchyma. Tedious dissection of the 1-2 cm thick visceral peel failed to alleviate the trapped lung. At this time, it was decided to obliterate the pleural space with a muscle flap and partial rib resection of the sixth rib to give access to the pedicled muscle bundles. Latissimus dorsi, serratus anterior and lateral aspect of the right pectoralis muscles were used as muscle flaps to fill the right pleural space. Two large bore chest tubes were placed for drainage of the remaining pleural fluid. The incision was then closed in layer fashion. He tolerated the procedure well and post-operative chest x-ray showed expected right residual space filled with muscles. Patient was discharged home on post-operative day 2 with the chest tube drainage collected in a foley bag. On his six-week postoperative visit, he felt good, had more energy, weight gain and no requirement of oxygen supplement. He denied any pleuritic chest pain, fever, or chills. Chest tube drainage was serous in nature with radiological improvement on serial chest x-ray.

**Discussion:** The most common cause of empyema is secondary to pneumonia and parapneumonic effusion. Most patients present in the late stage of empyema due to its indolent course. Common symptoms are fever, coughing, chest pain, malaise, and failure to thrive. The stage of empyema often dictates the treatment of choice. The exudative stage develops within 48-72 hours. It usually resolves as pneumonia improves with antibiotics. As effusion become loculated with fibrin deposition, empyema develops into the fibrinopurulent stage. This can be effectively treated with video-assisted thoracic surgery (VATS). As empyema stage progresses, the lung becomes entrapped by a thick pleural peel. This stage is associated with ingrowth of capillaries and fibroblasts resulting in entrapment of lung parenchyma. Treatments included rib resection with large bore chest tube drainage, open thoracotomy, and decortication.

Decortication has a high success rate of 95%. Occasionally, the lung parenchyma is totally entrapped and decortication is not feasible. A single-stage muscle flap closure with rib resection can be utilized to obliterate the empty pleural space. The pedicle muscle flaps also bring blood supply to help fight infection. Muscle flap closure has been described for persistent post-pneumonectomy empyema space and for treatment of bronchopleural fistula. It can also be used to close empyema space due to late stage of parapneumonic effusion as presented in this case report.
ST ELEVATION IN IMMEDIATE POST-OPERATIVE PERIOD AFTER CORONARY ARTERY BYPASS GRAFT

Shiliang Chang MD, Michael J. Moulton MD, and Birger E. Rhenman MD

Introduction: Myocardial bridging is an angiographic description of coronary artery narrowing during systole with normal caliber during diastole. It has been documented to cause myocardial ischemia due to systolic narrowing of the coronary arteries. We are presenting a case of a symptomatic myocardial bridge causing ST elevation on EKG in the immediate post-operative period of CABG. Angiographic study in this case is a useful adjuvant to differentiate myocardial ischemia from an atherosclerotic plaque dislodge during surgery versus myocardial bridge of LAD.

Case Report: A 59-year-old male with hyperlipidemia presented with substernal chest pain. He awoke with substernal chest tightness and pressure radiating to the left arm, diaphoresis, nausea, and shortness of breath, which lasted around 15-20 minutes. He underwent angiogram that showed three-vessel coronary artery disease not amendable to stenting with normal left ventricular systolic function. His troponin I was elevated to 1.64. On hospital day 2, he underwent coronary artery bypass grafting (CABG) x 2 with left internal mammary artery (LIMA) to left anterior descending (LAD) and left saphenous vein to the first obtuse marginal (OM) coronary artery. His coronary arteries were small and very diseased. The distal circumflex and the posterior descending arteries were less than 1 mm. The LAD was a small target artery. He tolerated the surgery well without any complications. On postoperative day (POD) 1, his morning EKG showed new ST elevations on lead V1, V2, and V3. He complained of chest pain that was unchanged in nature since surgery, however, it was difficult to differentiate incisional pain from cardiac pain. An echocardiogram revealed only mild inferior-lateral hypokinesis of the left ventricle. He underwent emergent cardiac catheterization that revealed patent LIMA to LAD and a patent saphenous vein graft to the OM, but a significant bridging muscle segment distal to the touchdown of the LIMA graft. The ST elevation on EKG subsequently improved over the next few days. He was placed on beta blocker. He was discharged home on POD 4 in stable condition. One month after discharge, he was seen in clinic without any chest pain and appeared to be doing well.

Discussion: Myocardial bridge is defined as a myocardial muscle that overlies the epicardial arteries. It is usually identified on angiography with systolic narrowing of the coronary artery and normal artery diameter during diastole. The incidence of myocardial bridge identified on angiography ranges from 0.5-16%. The LAD is the most common artery involved in myocardial bridging. Since coronary arteries are perfused during diastole, the narrowing of the myocardial bridge during systole, which causes ischemia, was explained by a postulated mechanism called systolic kinking. According to this theory, the systolic narrowing of the artery causes endothelial damage leading to thrombus formation and ischemia. Other studies showed a reduction in myocardial blood flow during both systole and portions of diastole, thus leading to ischemia. Beta blockers have been shown to attenuate the systolic luminal reduction and ischemia in patients with myocardial bridge. The usual markers for myocardial infarction do not apply to a patient status post CABG. CK-MB can be elevated after any cardiac damage from ischemia or surgery. Alter et al studied one thousand patients over a two year period and concluded that a combined diagnostic criteria of elevated WBC greater than 14,000 G/L and either ST elevation or CK-MB concentrations greater that 35 U/L can be helpful in detecting myocardial infarction after bypass grafting surgery. This case demonstrated that cardiac catheterization after coronary artery bypass grafting is a great adjuvant to differentiate myocardial ischemia from an atherosclerotic plaque dislodge during surgery versus myocardial bridge of LAD.
EXOSTOSES, ITS VARIANTS AND IMITATORS: A CASE SERIES

Christopher Delbridge, DO; Joshua Yellin, MD; Randy Richardson, MD

Introduction: Solitary osteochondromas (exostosis) are common lesions and may account for up to half of benign bone tumors. An osteochondroma is an outgrowth of benign cartilage from the growth plate that undergoes endochondral bone formation. The etiology of osteochondroma is not clear. Whatever the etiology, there is a typical presentation for osteochondromas. Osteochondromas tend to grow away from the physis, have medullary and cortical continuity, have an associated cartilaginous cap, and tend to be slow growing. They are most commonly found in the lower extremity in the metaphysis or metadiaphysis.

Case Report: A case series of 25 patients with radiographs demonstrating an exostosis or exostosis-like lesion were evaluated. Some lesions were typical for an exostosis. Other lesions showed multiple imaging findings similar to an exostosis, but further imaging characteristics resulted in an alternative diagnosis.

Conclusion: Exostosis of the bone is a common benign radiologic finding in children. The appearance of a solitary exostosis of the bone can be characteristic and the diagnosis of an osteochondroma is often made without further imaging. Multiple osteochondromas are seen in multiple hereditary exostoses. Osteochondromas can be in specific locations such as the epiphysis in Trevors disease. There are also several osteochondroma-like lesions that can occur as normal variants or as the result of trauma, congenital anomalies, systemic disorders, or various causes of periosteal reaction. Understanding the imaging findings is imperative in making the final diagnosis.
NONTRAUMATIC PEDIATRIC PSEUDOANEURYSM OF THE UPPER EXTREMITY: A CASE REPORT

Christopher Delbridge, D.O., Jim Matz, M.D., Dave Shelley, M.D., Walter Schell, M.D.

Introduction: An aneurysm is a focal dilatation of a blood vessel to more than 1.5 times its normal diameter. It is usually caused by a diseased or weakened vessel wall. Aneurysms are usually arterial, though venous aneurysms do occur. Aneurysms are categorized into two groups: true aneurysms and false aneurysms. True aneurysms involve all three layers of the vessel wall. The most common type is degenerative. The contours of a true aneurysm are usually smooth and fusiform in shape, intimal calcification are usually present, and risk of rupture increases with aneurysm size. Pseudoaneurysms are usually iatrogenic in nature. Trauma, penetrating injuries, and crush injuries have also been associated with pseudoaneurysms. In contrast to true aneurysms, pseudoaneurysms involve less than three layers of the vessels wall, calcification is usually absent, are usually more saccular in appearance and have a higher rate of rupture.

Case Report: A 10 year old female patient presented to Maricopa Medical Center (MIHS) with a referral to the interventional radiology service to biopsy a mass in her right shoulder. The patient had prior x-rays at MIHS and were reviewed. The right shoulder demonstrated anterior humeral subluxation. Follow-up MRI after a referral to an orthopaedic surgeon demonstrated a mass within the right shoulder with hemorrhagic properties. Before a biopsy was performed on the right shoulder mass, a thorough history was taken with the patient and her family. Following the consultation, the patient was taken to the ultrasound department for evaluation. The ultrasound of the right shoulder demonstrated a classic to-and-fro appearance, diagnostic of a pseudoaneurysm. Follow-up CTA confirmed the findings of a pseudoaneuryism arising from the wall of the posterior humeral circumflex artery, a branch of the axillary artery. The vascular surgery team was then consulted and the patient was scheduled for elective repair involving coiled embolization by the interventional team and f/u surgical intervention with vascular surgery. Prior to her appointment, the patient presented to the MIHS emergency center with acute right shoulder pain, associated with rupture of the psuedoaneurysm. The prior plan of coil emoboization with follow-up surgical intervention was then completed.

Discussion: There are a multiplicity of ways to treat pseudoaneurysms. Treatment depends on location, size, initial cause, and clinical presentation. Many pseudoaneurysms will resolve spontaneously, typically those that are small in size. For those that do not regress, there are four available approaches to treatment. These include ultrasound guided compression, direct percutaneous thrombin injection, coil embolization, and surgical removal. Sometimes a combined approach is needed resulting in utilizing the skills and techniques of both interventional radiology and vascular surgery.
UNILATERAL KYPHOPLASTY, AN EFFECTIVE ALTERNATIVE: A CASE REPORT

Christopher Delbridge, DO; Mike Switzer, MD; Ayad Agah, DO; Dave Shelley, MD

Introduction: Symptomatic vertebral compression fractures (VCF) commonly cause severe pain and debilitation. The leading cause of VCFs is osteoporosis which affects between 28 and 50 million Americans. Other causes include but are not limited to trauma, metastatic disease, and multiple myeloma. Untreated, VCFs can interfere with or prevent patients from conducting even the most basic activities of daily living. Several effective treatment options are available. An option that has grown in popularity is the fixation of VCFs with bone cement through minimally invasive techniques. Vertebroplasty and kyphoplasty are two such techniques. Access to the vertebral body, in kyphoplasty is through the pedicles of the vertebral body. Sometimes access to one of the two pedicles is compromised secondary to an acute/subacute fracture, comminuted bone fragments, or by complete vertebral body collapse. In these cases, unilateral kyphoplasty is an available alternative.

Case Report: We present one patient with two vertebral compression fractures (VCF). One was noted to be chronic, while the other was acute to subacute in nature. There was limited access to one of the two pedicles of the acute/subacute VCF level. This was secondary to posterior comminution and canal compromise at the level of the right pedicle. The patient underwent unilateral kyphoplasty, completed in a similar manner to kyphoplasty with bi-pedicular access. Post procedural imaging demonstrated significant cross filling of the methylmethacrolate for stabilization of the vertebral fracture. No movement of the comminuted bone fragment, at the contralateral pedicle, occurred with inflation of the kyphoplasty balloon. Patient was pain free post procedure.

Conclusion: Unilateral kyphoplasty is a safe and effective alternative treatment in patients with limited access through one of the two pedicles of a vertebral body. We still believe that bipedicular access is the best approach for treatment of vertebral compression fractures, but this is not always possible. Unilateral kyphoplasty is proposed by some authors to show no greater risk in lateral wedging and results in decreased operative time, radiation exposure, and cost. We continue to reserve unilateral kyphoplasty for vertebral compression fractures with complicated access through one of the two vertebral pedicles.
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**BILATERAL POSTERIOR SHOULDER DISLOCATION: A CASE REPORT**  
C. Delbridge, D.O.; M. Switzer, M.D., C. Carr, Ph.D; C. Bay, Ph.D

**Introduction:** Posterior shoulder dislocations are rare, accounting for only 2% of all shoulder dislocations. When bilateral posterior shoulder dislocations do occur they are usually associated with seizures or electrocution. In this type of dislocation, the humeral head lies posterior to the glenoid fossa and a resultant humeral head impression fracture from the posterior glenoid rim usually occurs. Making a correct diagnosis can be problematic if the physical exam is not correlated with the correct radiographic films. We report a case of a bilateral posterior shoulder dislocations.

**Case Report:** A forty-nine year old male presented to our hospital with a decreased level of consciousness. The patient was found lying in the middle of the street by paramedics. Initially he was combative, but his awareness and orientation improved upon transport to the hospital. On arrival, the patient was alert and oriented to person and place, but when questioned about the incident, he could not recall the preceding events that caused his fall. The patient’s chief complaints were headache, blurry vision, and right shoulder pain. The patient's medical history noted no history of seizure, but a chronic history of alcoholism. Physical exam noted a left occipital contusion and a probable right shoulder dislocation. A CT scan of the head noted a left intracranial occipital hemorrhage. X-rays of the right shoulder noted a posterior right shoulder dislocation, with a reverse Hill-Sach's lesion. The patient was admitted to the medical intensive care unit and an orthopaedic consultation was obtained for the evaluation of the right posterior shoulder dislocation. During the orthopaedic physical exam, the patient was also noted to have a limitation in elevation and external rotation of the left shoulder. X-ray evaluation noted a left posterior shoulder dislocation, with a similar reverse Hill-Sachs lesion in the humeral head. Successful closed reduction of each posterior shoulder dislocation was completed.

**Discussion:** In a case such as this, awareness of the possibility of a posterior shoulder dislocation is essential for arriving at the proper diagnosis. To avoid missing this diagnosis, the physician must be attentive to the history, physical exam, and radiographic evaluations. Seizure and electrocution have repeatedly been found to cause bilateral posterior shoulder dislocations. Since the nature of this incident was not witnessed, we can only speculate that a seizure may have led to this patient's fall and subsequent bilateral posterior shoulder dislocations. In the absence of a seizure history, this patient's suspected seizure might have resulted from either his intracranial hemorrhage or alcohol withdrawal. His improved awareness, without intervention, probably represented a resolving post ictal state. Important diagnostic aids to identify during the physical exam, when a posterior shoulder dislocation is suspected, include a posterior shoulder prominence, flattening of the anterior shoulder, a prominent coracoid process and a limitation of glenohumeral elevation and external rotation.

During the radiographic evaluation of a posterior shoulder dislocation, the axillary view is key to the diagnosis. If the axillary view can not be obtained, a CT scan is indicated.

Many factors must be taken into consideration before a manipulative reduction of the posterior shoulder dislocation is attempted. They include, the duration from injury, the patient's bone quality, and the size of the humeral head depression. With humeral head impression fractures of less than 20%, a closed reduction technique can be attempted. The reduction maneuver involves forward shoulder flexion, internal rotation and adduction to disengage the impacted fracture site. The reduction is then completed by longitudinal traction and anterior pressure on the humeral head. For posterior shoulder dislocations that show impression fractures of 20 to 40%, a closed reduction can be attempted, but there is a greater chance of redislocation and a probable need for surgical intervention.
RENAL AMYLOIDOSIS IN A 57 YEAR-OLD FEMALE: A CASE REPORT

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Introduction: Amyloidosis is the formation of ß-pleated sheets by a variety of proteins. These ß-pleated sheets deposit in glomeruli, tubules, even vessels in the kidney. Clinically evident renal involvement usually occurs only in primary (AL/AH) or secondary (AA) amyloidosis. Proteinuria and nephrotic syndrome, as well as renal insufficiency, are common in primary and secondary amyloidosis. Here we report a case of amyloidosis with renal insufficiency but without significant proteinuria/nephrotic syndrome.

Case Report: A 57-year old hispanic female patient with past medical history of anemia, hypertension, and hyperlipidemia presented to the hospital because of increased serum potassium level, nausea, vomiting, and fatigue. The patient denied chest pain, short of breath, hematuria, dysuria. Labs on admission showed BUN 53, creatinine 3.6, potassium 5.9 and bicarbonate 15. Very mild protein was found in urine. HbA1C was found in the normal range. Renal ultrasound showed renal cortex was increased in echogenicity with the size of right kidney 9.0 × 4.7 × 3.4 cm and left kidney 8.4 × 3.7 × 3.6 cm. Since the cause of renal failure was not clear, renal biopsy was performed and showed renal amyloidosis with involvement of all three compartments, namely glomeruli, tubulointerstitium, and vessels. No IgA, IgG, IgM, C3, C4, C1q, fibrinogen, albumin, kappa, or lambda deposits were noted under immunofluorescence microscopy. At the same time, serum protein electrophoresis (SPE) and urine protein electrophoresis (UPE) were ordered. SPE was normal; while UPE detected increased albumin and immunoglobulin heavy chain alpha, beta, and gamma, but normal kappa and lambda. No monoclonal bands were found. The final diagnosis is chronic kidney disease secondary to amyloidosis. The patient was treated with hemodialysis and other supportive treatment, and she was discharged home with regular hemodialysis as an outpatient.

Discussion: Clinically evident renal involvement in amyloidosis usually occurs only in AL/AH or AA, and very rarely heritable renal amyloidosis. In this case, pathology of renal biopsy showed amyloidosis in kidney. SPE was normal and no AL/AH was found by immunofluorescence (IF) microscopy. The patient neither has clear history of chronic inflammatory disease, nor has family history of amyloidosis. Usually IF findings are variable in AL/AH. To distinguish AL/AH from AA, immunostaining with specific antibodies directed against AA fibril protein should be performed. It has been suggested that fibrillar amyloid deposits are more likely to be AA, while granular amyloid deposits are more likely to be AL/AH under electron microscopy (EM). Unfortunately, in this case, neither anti-AA antibody nor EM was performed. Patients who progress to end-stage renal disease can be treated with either dialysis or renal transplantation. The experience with renal transplantation in renal amyloidosis is mostly limited to AA, since patient survival is often relatively short in AL/AH.
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PROLAPSED PATENT OMPHALOMESENTERIC DUCT: A CASE REPORT

Andrew Green, MD and Michael Dimler, MD

Introduction: The omphalomesenteric duct or vitelline duct is a remnant of the embryonic yolk sac. It connects the yolk sac to the gut in the developing embryo. Normally the duct involutes. Partial or complete failure of involution results in numerous anomalies and residual structures. We present a case of a newborn with complete patency of the omphalomesenteric duct with prolapse, requiring prompt surgical treatment.

Case Report: A newborn, full-term male weighing 3600 grams, presented with a shiny red mass protruding from the umbilicus in the shape of an 'inverted T'. The mass showed two openings on each end which were seen passing meconium. The newborn also passed meconium from the anus. Complete physical examination revealed no other external anomalies. The newborn was taken to the operating room where initially the prolapsed bowel was reduced back into the umbilical cord. The umbilical cord was then circumferentially transected allowing prolapse of the affected segment of ileum. A clamp was then placed across the patent omphalomesenteric duct. Saline was infused into both proximal and distal segments to rule out associated atresias. The omphalomesenteric duct was then transected and the segment of ileum was closed primarily. The bowel was then placed back into the abdomen and the umbilical skin was closed. The newborn tolerated the procedure well and had normal bowel function within 3 days.

Discussion: The omphalomesenteric duct or vitelline duct is a connection between the developing midgut and the yolk sac. It provides nutrition to the embryo until the placenta develops and assumes that role. The duct attenuates and separates from the bowel normally between the 5th and 7th weeks of gestation with complete involution by the 9th week. Partial or complete failure of this involution results in various residual structures. Meckel’s diverticulum is the most common remnant and is seen in 2% of the population. The patent omphalomesenteric duct is a fistulous connection between the ileum and the umbilicus. It presents with a passage of enteric contents from the umbilicus. The duct and adjacent ileum occasionally intussuscept creating a mucosa covered “inverted T” shaped mass with proximal and distal openings of the ileum opposing each other. The anomaly requires prompt surgical correction due to the risk of gangrene of the prolapsed segment, which is potentially fatal. This occurs as a result of increasing venous congestion and eventual vascular compromise of the prolapsed segment by the umbilical ring. This case describes successful recognition and treatment of this rare condition and the prevention of potential complications.
ALTERED MENTAL STATUS IN A 11 MONTH OLD BOY AFTER MISTAKEN INGESTION OF CLONIDINE: A CASE REPORT

Brian Hoff MD, Emergency Medicine and David Telles MD, Pediatric Intensive Care

**Introduction:** Clonidine is a central sympatholytic which has its mechanism of action via stimulation of central alpha receptors resulting in reduced sympathetic outflow. Indications for its use include hypertension and cancer pain. Off label use includes: alcohol withdrawal, ADHD, Atrial fibrillation, Tourette’s, hot flashes, opiate detoxification and restless leg syndrome. Adverse reactions include: drowsiness, dry mouth, impotence, rash, and rebound hypertension. Overdose may result in: transient hypertension followed by hypotension, hypothermia, respiratory depression responsive to stimulation, delirium, coma, seizures, syncope and hypotonia. Treatment of overdose includes: airway management and hemodynamic resuscitation as indicated, cardiac monitoring, gastric lavage if presentation is within 1 hour from ingestion, activated charcoal, whole bowel irrigation if patch ingestion and Nalaxone as a possible agonist. Risk factors in the pediatric population include an increased use for ADHD, family members using Clonidine patches and use of liquid preparations requiring pharmacy compounding.

**Case Report:** A 10 mo boy presented to an emergency department with lethargy. He was recently prescribed clindamycin for a lower extremity pustule. Soon after the first dose he became lethargic. His heart rate was 90 with a blood pressure of 121/100 a respiratory rate of 17 and oxygen saturation of 100% on 3 liters of O2. His temperature was 36.9 and blood glucose was 90. He was lethargic although arousable and his respirations were declining. His head was normal cephalic and atraumatic. His pupils were equal, round and reactive. He had moist mucous membranes and his neck was supple. His lungs were clear and heart sounds normal. His extremities were warm and well perfused with good capillary refill. His abdomen was benign. His skin was notable for the aforementioned pustule with no rashes or other lesions. Stabilization included intubation and a fluid bolus. He was diagnosed with allergic reaction and given epinephrine, benadryl and solumedrol. Results of studies done included: a WBC of 12.8, bicarbonate of 20, BUN of 38, Creatinine of 0.3, Ca2+ 11.2 and AST 55. The patient was transferred to the PICU where supportive treatment continued and a lumbar puncture, CT Head, and blood cultures were performed with unremarkable findings. Despite the diagnosis his presentation was not indicative of a reaction to the clindamycin. The medication was sent to the lab and identified as clonidine. Investigation revealed that the pharmacy mistakenly compounded clonidine instead of clindamycin. Supportive treatment was continued. The patient recovered and was discharged home.

**Discussion:** The differential diagnosis for altered mental status includes: toxin exposure, trauma, hypo or hyperthermia, infection, intussusception, medication reaction, hypoglycemia, intracranial lesion, electrolyte or endocrine abnormalities, intoxicants, acidosis, hypoxemia, and organ failure. In the majority of cases the etiology can be elicited in the history and physical. Ancillary studies are used to confirm a diagnosis and at times to rule out other possibilities. When the etiology is less apparent, it is most appropriate, after stabilization has been achieved, to investigate the most dangerous possibilities followed by the most likely and then proceed to less common diagnoses. If the clinician follows this pattern in a meticulous fashion she or he is more likely to preserve the patients well being and uncover the diagnosis, allowing for specific therapy. In the case of clonidine overdose that may include airway management and hemodynamic resuscitation, gastric lavage, activated charcoal, whole bowel irrigation and Nalaxone.
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SOFT TISSUE COVERAGE FOR LIMB SALVAGE: BEDSIDE TRANSPOSITION OF TIBIALIS ANTERIOR MUSCLE FOR NECROTIZING FASCIITIS

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Introduction: Necrotizing fasciitis is an aggressive, soft-tissue infection that requires rapid diagnosis, early surgical intervention frequent operative debridements and soft-tissue reconstruction. The purpose of this case report is to present our experience with bedside transposition of tibialis anterior muscle flap (TAMF) in a critically ill patient that saved his limb.

Case Report: A 62-year old diabetic male, a former marathon runner, slipped and fell from a street curb, sustaining a skin abrasion of his right lateral ankle malleolus. The right ankle subsequently became cellulitic with erythema ascending to the knee. After being treated at another local medical center, he was transferred to the Arizona Burn Center with necrotizing fasciitis and associated multi-system organ dysfunction. Despite multiple debridements of the right lower extremity his clinical course continued to decline. Plastic surgery was consulted for soft tissue coverage and reconstruction of the right lower extremity. Due to his comorbid conditions he was deemed unstable for further general anesthesia and transportation to the operating room. On examination, there was an absence of soft tissue from knee to ankle with desiccated fascia overlying the anterior tibia. The superficial fascia overlying the anterior and medial compartments was debrided at the bedside using a sterile technique. The tibialis anterior muscle was noted to be viable, which was elevated, unfurled and the TAMF was laid over the tibia covering the proximal two-thirds of exposed bone. The tibialis anterior muscle was anchored to the medial edge of the fascia invested over the tibial bone. A negative pressure dressing was applied to the open right leg wound containing the muscle flap. Once adequate granulation tissue had developed, a split thickness skin graft was used for cutaneous coverage. Eventually the patient recovered from his multi-system organ dysfunction. At his one year follow-up clinic visit his normal limb function was found to be fully restored with complete wound closure.

Conclusion: Our experience shows that TAMF provides excellent coverage for bone with dessicated periosteum, where skin grafts alone are unsuccessful. The limb can be saved from amputation by reconstructing the tibialis anterior flap.
THE RELATIONSHIP OF PLASMA GLUCOSE AND HbA1c LEVELS AMONG NON-DIABETIC TRAUMA

Shalini Kanneganti MD, Karole Davis MD, Tammy Kopelman MD, Patrick J O’Neill PhD., MD

Purpose: Hyperglycemia in trauma patients without a history of diabetes mellitus (DM) has been thought to represent the metabolic stress response to injury. We studied whether this hyperglycemia actually indicated the presence of occult DM (ODM) in presumably non-diabetic patients as demonstrated by glycosylated hemoglobin A1C (gHbA1C) elevation.

Methods: IRB approval was obtained. A case series of adult non-diabetic patients presenting to a Level I Trauma Center from 9/06- 2/07 was reviewed. Patients having an initial plasma glucose values of >110 mg/dL had a gHbA1C measured. ODM was diagnosed when gHbA1C > 6 %. Significance was p<0.05 with Chi Square.

Results: 1039 trauma patients were screened and an elevated plasma glucose value was evident in 192 non-diabetic patients (18%). Overall, 23% of hyperglycemic patients were found to have an elevated HbA1C. Of note, 22% of patients with only a mild elevation of glucose (110-120 mg/dL) were found to have an elevated HbA1C.

Conclusions: Almost a quarter of trauma patients presenting with elevated glucose levels were found to have elevated HbA1C levels. The hyperglycemia seen in this patient population should not be solely attributed to the metabolic response to injury and DM testing for both acute management strategies and long-term health benefits is warranted.
Introduction: Adult-onset Still’s disease can present as fever of unknown origin (FUO). We are presenting a case of a patient who presented with FUO and was diagnosed with Still’s disease after exclusion of common etiologies of FUO.

Case Report: 56-year-old Hispanic woman presented with a 2-month-history of fever associated with weakness, headache, and bilateral knee pain. Prior to admission, the patient had been diagnosed with both an upper respiratory infection and viral syndrome due to persistent sore throat. On admission, the patient was found to have a temperature of 39.4°C. Physical exam revealed a maculopapular, blanching, rash on both upper extremities and upper thighs, lymphadenopathy in left axilla and groin, bilateral knee swelling and tenderness. Initial labs revealed leukocytosis with elevated segmented neutrophils and thrombocytosis. She had blood cultures, urinalysis, urine culture, lumbar puncture, and arthrocentesis done as part of her initial evaluation. All cultures were negative. ESR, CRP, and LDH levels were elevated. ANA, rheumatoid factor (RF), and liver enzymes were normal. The patient was started on empiric antibiotics that were discontinued after cultures were negative. During her hospital stay, she remained febrile (as high as 39.8°C) and further laboratory studies were done, including, Quantiferon®, coccidiomycosis serology, monospot, HIV, histoplasma antigen in urine, and peripheral blood smear. All of these tests were normal or negative. Rheumatology recommended repeat arthrocentesis, bilateral knee radiographs, and serum ANCA and ferritin levels. Arthrocentesis revealed an elevated WBC count, no crystals, no organisms, and culture was negative. Serum ANCA was normal, but ferritin was highly elevated. Knee series revealed arthritic changes with mild-moderate effusions in both knees. After 2 weeks in the hospital, the patient defervesced, the rash disappeared, lymph nodes regressed and the patient was discharged.

Discussion: Fever of unknown origin (FUO) is a challenging presentation to physicians. Our patient met many criteria for adult-onset Still’s disease: sore throat 2 weeks prior to admission, quotidian fever, maculopapular rash emerging with fever, lymphadenopathy, arthralgia for more than 2 weeks, elevated WBC with segmented neutrophils, high ferritin level, elevated ESR and CRP, thrombocytosis, normal RF and ANA, and normal ANCA. Still’s disease has a bimodal age distribution: 15-25 and 36-46. This was unusual in our patient’s case as she was diagnosed with Still’s disease a decade later than second age distribution.
INTERFERON THERAPY INDUCED THYROID DISEASE IN HEPATITIS C PATIENTS

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Introduction: Interferon alpha therapy has been widely used to treat hepatitis C. Thyroid autoantibodies may form (more commonly in patients with hepatitis C than hepatitis B). Thyroid abnormalities associated to IFN-alpha have varied from destructive thyroiditis with hypothyroidism to transient thyrotoxicosis followed by hypothyroidism and rarely hyperthyroidism. Studies have suggested that hypothyroidism may develop in 2-20% of the patients, while hyperthyroidism may develop in 2-3%. The case illustrates the above findings.

Case Report: This is a 31-year-old Hispanic gentleman who presented to GI clinic with complaints of abdominal pain and heartburn. Patient has no significant past medical history except for history of blood transfusion in Mexico for an unknown abdominal surgery as a child. The patient denied alcohol, tobacco, or any illicit drug use. Physical examination was unremarkable. Laboratory findings showed alkaline phosphatase of 104, AST 90, ALT 156, which prompted investigation for hepatitis. Patient found to have Hepatitis C 1B with viral load of 98,000. Imaging with CT Abdomen showed no evidence of acute intra-abdominal or intrapelvic pathology. Liver biopsy was performed showing findings consistent with hepatitis C viral infection. Patient was started on interferon-alpha in May 2005. Due to patient’s complaints of insomnia, TSH was tested in August 2005, which was found to be normal at 1.6 IU/ML. Recurrent symptoms prompted reevaluation of TSH in December 2005, which was found to be low at a value of 0.012 IU/ML. The TSH levels were monitored as the interferon-alpha therapy continued. The subsequent TSH levels were found to be 87.6 IU/ML (free T4 of 0.7 ng/dl) in March 2006, 220 in April 2006, and 189 (free T4 0.6 ng/dl) in May 2006. Despite elevated TSH patient had minimal clinical symptoms. Patient was started on a minimal dose of 25 mcg levothyroxine. Patient completed forty-eight weeks of interferon-alpha in March 2006. With hormone replacement and completion of interferon therapy there was improvement in TSH levels with the most recent being 0.588 IU/ML in October 2006. The patient’s TSH levels in February warranted continued therapy with levothyroxine.

Discussion: In previous studies it was found that the incidence of patients with negative thyroid antibodies converting to positive is significantly higher after interferon treatment. The mechanism by which interferon-alpha induces autoimmune reactions is unclear. Potential mechanisms include enhanced class I MHC antigens on thyrocyte, activation of cytotoxic T cells, B-cell stimulation, and cytokine-induced decrease in iodine organification. Interferon-alpha acts an immunomodulator and can induce the formation of anti-thyroid antibodies. Risk factors for development of hypothyroidism include Hepatitis C infection, female gender, older age, and prolonged Interferon-alpha therapy at higher doses. The presence of anti-thyroidperoxidase antibodies (TPOAb) is the most important risk factor. In this particular case patient’s baseline TPOAb was not checked prior to initiating therapy. It is strongly recommended that systematic screening of thyroid gland function with baseline anti-thyroidperoxidase levels along with thyroid function studies prior to initiating interferon-alpha therapy are performed. In addition these patients should monitor monthly TSH levels during therapy, especially if the baseline TPOAb is positive. It is unclear whether the hypothyroidism associated with interferon therapy is temporary or permanent. Some studies have found that hypothyroidism can persist despite cessation of therapy.
METHAMPHETAMINE USE IN TRAUMA PATIENTS AT AN URBAN LEVEL I TRAUMA CENTER

Mary F Lumpkin, MD; Kevin N Foster, MD; Daniel M Caruso, MD; Michael Archambault, MD; Christa Hannasch, LPN; and Marc Matthews, MD.

Purpose: Methamphetamine use has increased over the past decade and complicates the care of trauma patients. We conducted a retrospective chart review to establish trends in its use and the impact on care for patients admitted to our urban level I trauma center.

Methods: Following IRB approval, medical records and trauma registry data were queried for trauma admissions from January 2001 to December 2005. All patients with positive urine drug screen (UDS) results for amphetamines were included. Data were entered onto a spreadsheet for analysis.

Results: Of 13,647 trauma patients identified during the study period, 1821 (13%) had UDS results and 707 (39% of those tested) of these were positive for amphetamines. Results by year are shown in Table 1. Patient demographics by race were as follows: Caucasian 38%; Hispanic 36%; Native American 15%; Asian 4%; Black 3%; other 1.5%; and unknown 3%. Seventy-four percent of patients who tested positive for amphetamines were male. The mean age was 31 years (median 29 years, mode 23 years) with a range of 3 – 85 years. Injury severity score ranged from 1-75 (mean 8.7, median 5 and mode 1). The total number of intensive care unit days ranged from 0 – 454 (mean 8.23, median 2 and mode 1). Length of stay in days averaged 6.59 (median 2, mode 1) with a range of 1 – 547. Forty-five per cent of patients were insured, while 19% were self-pay, 10% were covered by Indian Health Services, 6% by legal fees and 18% were unknown. Disposition was most commonly to home (69.6%) and to a lesser extent local correctional facilities (3.9%), rehabilitation or skilled nursing facilities (3.6%), psychiatric facilities (1.9%). Two percent of patients left the hospital against medical advice and less than one percent expired (0.7%). Sixty-five per cent of patients who were positive for amphetamines also tested positive for at least one other drug.

Table 1

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<tr>
<th>YEAR</th>
<th>TRAUMA PATIENTS AMPHETAMINE POSITIVE</th>
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<td>2001</td>
<td>72</td>
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<td>2002</td>
<td>113</td>
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<td>2003</td>
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<td>2005</td>
<td>183</td>
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Conclusions: Despite a low percentage of patients with available UDS results, methamphetamine use has been a significantly increasing problem in trauma patients over the five-year study period. The slight decrease in detected cases in 2005 could be the result of lack of compliance with standard written orders of a UDS on every trauma patient, or perhaps could have been influenced by state legislation restricting access to precursor materials (i.e., pseudoephedrine) used in the methamphetamine manufacturing process. While most (74%) patients who tested positive for amphetamines were Caucasian or Hispanic, Native Americans are over-represented in our study. Patients who use methamphetamines are often involved in polysubstance abuse. Limitations of our study include the inability of the UDS to differentiate between amphetamines and methamphetamines, and the low percentage of patients for whom drug screen testing was performed. We plan to combine data from all level one trauma centers in our area for retrospective review, and to initiate prospective studies for standardized protocols to improve urine drug screen collection rates.
Purpose: Documentation of the extent and depth of burn injury and wounds have generally been accomplished in the form of written progress notes, standardized forms such as the Lund & Browder chart, or two-dimensional visual representation. Electronic documentation incorporating digital imagery and/or internet accessibility have been successful but lack three-dimensional (3D) capabilities and the ability to stand alone on basic computer platforms. Development of a 3D interactive tool that would allow for sophisticated burn and wound documentation would be ideal.

Methods: The preliminary design and layout for Thermal Man, a 3D computer model was initially created using hand-sketches and existing two-dimensional information. Using Adobe Illustrator® and 3D StudioMax®, a generic 3D human form was generated and its outer surface area transformed into 3D bit-map. DX-Studio®, VS.net compiler-C++ and Java Script programming was utilized to develop a user-friendly interface culminating in a final version with the ability to stand alone as a Microsoft® Windows based application.

Results: Both male and female 3D computer generated models have been developed along with computer calculations that account for age variation in total body surface area. Using either a standard computer mouse or tablet PC pen, areas of on the Thermal Man can be selected and then highlighted to represent superficial, partial or full-thickness burns or wounds, areas of debridement and/or excision, skin grafting with various options for coverage, donor sites, different wound dressings, areas of wound infection, or amputation sites. Each electronic image is linked to the patient, date, time, and specific examiner. Unique features include the ability to zoom in and out of any area of interest and rotate either specific areas of interest (i.e. single finger) versus an extremity versus the entire patient along 360 degrees in multiple axial planes.

Conclusions: Thermal Man, is a significant advancement in burn and wound care. This 3D model achieves the goal of advanced electronic documentation of the temporal changes occurring with burns and wounds, from initial injury through all aspects of care. The ability to produce and then reproduce the Thermal Man, within minutes, in a simplistic, realistic and user-friendly fashion, allows for the provider to record and share vital information to the entire burn care team. Treatment and operative planning, medical record documentation, billing, quality assurance and research are all significantly enhanced.
LENGTH OF STAY FOLLOWING TRAUMA IS NOT AFFECTED BY ETHNICITY WHEN CONTROLLED FOR ETHANOL INTOXICATION.

Craig A. Mangum MD, Frank LoVecchio DO, Kathleen Mathieson PhD

Purpose: Studies have demonstrated that, from prehospital mortality rates to ED evaluation to post injury recovery, trauma care is fraught with examples of the health care race gap. Many of these studies have not properly controlled for ethanol and drug intoxication. We completed a study to address race differences on length of stay and mortality in traumatized patients controlling for ethanol intoxication.

Methods: Data were entered prospectively in the Trauma One by Lancet database by research assistants (RN's, etc.) following any level one trauma patient seen in the ED from January 1, 2001 to October 31, 2005. Data were analyzed using SPSS 15.0 (SPSS, Inc, Chicago, Il.). Descriptive statistics as well as logistic regression predicting odds of > 2 days length of stay (LOS) were conducted. Ethanol use was defined as blood alcohol level greater than 10 mg/DL. Race was self-described by patients or families.

Results: A total of 6,102 patients were analyzed. Mean age was 29.8 [SD 17.5] years, and 3,364 (55.1%) of patients were male. Univariate odds ratios with regard to length of stay (95% Confidence Interval) were: Native American 1.08 (.903, 1.30), Asian .681 (.390, 1.19), Black .786 (.594, 1.04), Hispanic .731 (.640, .836) and White was used as the reference. In multivariate analysis adjusting for age, sex, alcohol and drug status, and injury severity, however, race was no longer a significant predictor of LOS.

A total of 156 (2.6) died. Age, alcohol and drug use, and injury severity were associated with risk of mortality. No statistically significant differences were noted among different ethnicity with regard to risk of death.

Conclusions: There is not a significant difference between Native American and White patients following trauma. Although a slight trend was noted in increased LOS in Native Americans in comparison to Whites this trend was eliminated when ethanol use was controlled.
OUTCOMES FOLLOWING EXERCISE-INDUCED RHABDOMYOLYSIS

Maryrose Miller, DO; Craig Norquist, MD and Frank LoVecchio, DO, MPH

Introduction: Rhabdomyolysis is a clinical syndrome caused by injury to skeletal muscle resulting in the release of cellular contents, including myoglobin, into the extracellular fluid and circulation. Common causes of rhabdomyolysis include trauma, compression injury, excessive exertion, envenomation, infections, electrical shock and exposure to temperature extremes. Two of the major complications of rhabdomyolysis include acute intrinsic renal failure and compartment syndrome. Outcomes of exercise-induced rhabdomyolysis are poorly described in the literature. This study describes the outcomes of 19 patients with exercise-induced rhabdomyolysis.

Methods: A retrospective chart review was performed for a 16-month period of time [7/99-11/01]. We (research assistants, physicians, etc.) searched ICD-9 codes (compartment syndrome, rhabdomyolysis) and our laboratory database (CK levels >5000 U/L) including only charts of inmates during the period. Finally charts were individually reviewed and recorded data included: age, race, number of squats, peak CK, time to peak CK, creatinine levels, LFTs, total IV fluids, other treatments and length of stay. Statistics were analyzed using EXCEL™ and STATA™ software. The study was IRB approved.

Results: A total of ~64,600 charts were reviewed with 19 patients meeting criteria to be included in the study. All of the patients were inmates who presented after playing a game that required them to do a large number of squats. They performed a mean of 243 [78-600] squats within the prior 48 hours. The patients averaged 23.1 [19-32] years old. The median CK was 125,200 [>32,000-12,296,640], however this result is limited by the fact that several specimens were not further diluted past 32,000 U/L. Of the 19 patients, three developed anterior thigh compartment syndrome with pressures ranging from 35-65 mmHg. Average length of stay was six days and mean fluid resuscitation was approximately 38.5 [3- >100] Liters. Average time to peak CK was 3.19 days. Treatments included NS, ½ NS, sodium bicarbonate, mannitol and lasix. All of the patients did well and none developed acute renal failure (creatinine > 2.5 µmol/L). None of the patients with compartment syndrome required fasciotomy and none had neurovascular complications upon discharge. No statistical differences were noted among treatment (p=0.1).

Conclusion: Conservative treatment in our patients with exercise-induced rhabdomyolysis and compartment syndrome resulted in good outcomes. All our patients were incarcerated. The small number and retrospective design limited the findings. No specific treatment was more favorable.
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Maricopa Integrated Health System
Internal Medicine

**DIABETIC LUMBOSACRAL PLEXOPATHY: CASE REPORT**

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Richard Carlson M.D, James Richards M.D

**Introduction:** Diabetic lumbosacral plexopathy, a.k.a Diabetic femoral neuropathy or diabetic lumbosacral plexopathy, is a condition characterized by back and thigh pain and asymmetric proximal muscle weakness. Significant weight loss is another hallmark of this disease. It occurs in both types 1 and 2 of diabetes and its pathophysiology is not well understood; most likely it is caused by either inflammatory or ischemic insults to the affected nerves. Other diagnoses like ALS, GBS, hypothyroid myopathy, and lumbar radiculopathy should be ruled out by proper testing.

**Case Report:** A 68-year-old Native American male presented with 3-4 months low back pain and progressive bilateral lower extremity weakness, worse on the right side. He had been wheelchair bound for the last 3 months. In addition he complained of tingling and numbness of both lower extremities. He had no urinary or bowel complaints and no preceding viral infection. Patient reported 60-pound weight loss over the last six months. He also developed a peripheral right facial weakness four months ago with incomplete recovery. Six weeks ago he developed diplopia with left lid ptosis, which had been persistent. Past medical history was significant for type two diabetes mellitus for two years with good glycemic control, hypertension, and pulmonary TB treated fifteen years ago. Patient was a non-smoker and consumed moderate amount of alcohol. He had no allergies and was taking HCTZ, glyburide, Ibuprofen and multivitamin. Physical exam showed left ptosis and complete third nerve palsy with pupillary sparing and a right peripheral seventh nerve palsy. There was primarily proximal muscle weakness in both lower extremities, with near normal distal strength. DTR's were normal in the upper extremities but both patellar and Achilles reflexes were absent bilaterally. There was some sensory loss in the right L-3 dermatome and more spotty loss in the left L-5 pattern. Complete work up for infectious and metabolic causes was negative. B12, Folate, CPK, ESR, RPR and TSH were normal. MRI of the head and complete spine with and without contrast were unremarkable except for mild degenerative joint disease. CSF showed mild pleocytosis and mild elevated protein, normal glucose and negative gram stain and culture. EMG study revealed acute axonal changes in both lower extremities with intact conduction velocities.

**Discussion:** Our patient was diagnosed with cranial mononeuritis including typical cranial nerve III involvement and a diabetic Lumbosacral Radiculoneuropathy. Treatment consists mainly of rehabilitation and physical therapy and preventive measures for the complications of prolonged immobility. Steroid and intravenous immunoglobulin had been used but they have not been proved effective in controlled studies and their use is controversial. Good functional recovery is expected in 60% of patients in one to two years. Mild weakness, stiffness and discomfort often remain for years. Occasional relapses can occur.
MURIATIC ACID BURN RESULTING IN UPPER EXTREMITY AMPUTATION AND DEATH: A CASE REPORT FROM THE ARIZONA BURN CENTER

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Introduction: Acids are defined in chemical terms as Proton donors (H+), and by definition are caustic agents. When an acid comes in contact with the dermis it generally causes injury by producing a coagulation necrosis. The coagulum is formed from the denatured proteins, which often times limits the amount and depth of penetration. However, there are other independent variables involved with the severity of a burn caused by an acid, which include, but are not limited to: pH, concentration, length of time the agent is in contact with the skin, the amount, and the physical form of the agent. We report a case of a 50-year-old male who during the construction of a pond was found to be covered in a combination of Muriatic acid and Blue chlorinated rubber pool paint that resulted in severe burns and eventually death.

Case Report: A 50 year old male was brought to the Arizona burn center by EMS at 1710 hours after being found in a 2-3 foot pond covered in blue paint and Muriatic acid. Report from the EMS crew was that the patient was likely in the pond for at least 3 hours if not longer. Initial vitals were GCS 15, BP 156/54, HR 72, RR 20 and SAO2 100%. Initial assessment revealed the patient to have approximately 40% TBSA burns, which were a combination of third and forth degree. Following successful endotracheal intubation, an arterial line was placed as well as a MAC central venous line. Labs were sent and aggressive fluid resuscitation was started per the Parkland formula. To remove the paint, both bacitracin and baby oil were applied and it was discovered that the bacitracin was superior for removing the paint. While all efforts were being made to remove the paint the ABG results were obtained, which showed the patient to have a profound acidosis with a pH of 6.9 and a HCO3 of -24. In the operating room, the patient was initially placed in the supine position at which time his bilateral flank excisions were completed down to the fascial layer, which was required to remove all of the tissue that had undergone liquefactive necrosis. The patient’s arms were also tangentially debrided to the level of the fascia and it was noted that his entire right arm from the elbow down was non viable and subsequently we performed a mid humorous amputation. The patient was then placed in the prone position to excise the necrotic tissue that resulted from third and fourth degree burns over the entire area of the back, buttocks and thighs and had exposed bone over the patients sacrum. During the fascial excisions of the patients back he became progressively unstable, in an effort to expedite the excision electrocautery was replaced by sharp debridement with a scalpel blade. Following excision of the tissue haemostasis was obtained using a combination of electrocautery, epinephrine soaked telfa, and suture ligation. The patient was taken to the Burn ICU in critical condition where he deteriorated despite ACLS, Pressors, and Cardioversion. Even with our best efforts, we were unable to convert his rhythm and the patient went into asystole and was pronounced dead at 2145, 4 hours and 35 minutes after arrival to the Arizona Burn Center.

Discussion: As with thermal burns, time is of the essence with chemical burns. Treatment although slightly different still revolves around immediate removal of the offending agent. This case demonstrates the need to neutralize and remove hazardous chemicals from the skin to prevent damage to skin and skin structures but to also prevent systemic absorption. The American Association of Poison Control Centers reported 2,971 cases of hydrochloric acid exposure that resulted in only 3 deaths. This case is an example of the worst outcome possible and provides a valuable lesson for all those that work around hazardous materials.
AWARENESS OF HUMAN PAPILLOMAVIRUS IN ADOLESCENT FEMALES

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Purpose: Human Papillomavirus (HPV) is the most prevalent sexually transmitted disease in the United States and an immense public health problem because of its role in causing cervical cancer and pre-cancerous dysplasia of the cervix, as well as benign genital warts. Adolescent females, for biologic, emotional and social reasons, are particularly at risk for infection with HPV. The purpose of this study was to assess the level of awareness of HPV in a teen pregnancy clinic – by definition, addressing females who are at risk for sexually transmitted diseases. In addition to determining awareness of the disease, this study attempted to ascertain the accuracy of these teenagers’ knowledge regarding HPV.

Methods: Between May 2006 and February 2007, twenty-nine adolescents were surveyed at the Teen Pregnancy Clinic at the Maricopa Medical Center. An anonymous survey with a demographic portion as well as questions regarding details of HPV transmission and effects was administered, using a Spanish translator if necessary. Statistical analyses were performed using 2-tailed T-tests and Chi-square tests.

Results: The 29 patients were predominantly Hispanic (76%) and 62% spoke only Spanish. All patients were between the ages of 15 and 18, with 14.8 being the average age of first intercourse. 35% were currently enrolled in school. 10% reported having had a previously abnormal pap smear, although an additional 7% were unsure. 65% of survey respondents reported having heard of HPV. Those who had heard about HPV had a statistically significantly higher score on yes/no questions testing HPV knowledge (p=0.003). 100% of girls who reported prior knowledge of HPV knew that HPV can cause cancer, whereas only 50% of girls who had never heard of HPV answered this question correctly. Similarly, girls who had heard of HPV were able to answer correctly questions about HPV transmission, risk factors and effects at a much higher rate than girls with no prior knowledge of the virus.

Conclusion: Teenage females who had heard of the Human Papillomavirus, whether through their parents, friends, or the media were able to answer correctly many questions regarding the health effects of HPV, its modes of transmission and risk factors for infection. This suggests that increasing our efforts to educate our patients about HPV and its consequences may empower these adolescents to make more informed decisions about their sexual health.
COMMUNITY STANDARDS FOR TREATING SKIN AND SOFT TISSUE INFECTIONS IN THE METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS ERA: A SURVEY OF EMERGENCY PHYSICIANS

Nicholas M. Perera, MD, Lora Casanova, BS, Frank Lovecchio, DO, Angel Pohl, BS

**Purpose:** Community Acquired Methicillin Resistant Staphylococcus Aureus (CA-MRSA) has become the prominent etiologic agent of skin and soft tissue infections. We aim to identify how this has changed emergency medicine physician (EMP) prescribing and treatment practices of community acquired skin and soft tissue infections.

**Methods:** A survey was sent to EMPs nationwide between June and December of 2006. The survey had questions asking the providers location, practice setting, specialty and board certification and number of years in practice. Two cases of skin/soft tissue infection were presented and questions asked about management (obtaining cultures and antibiotic treatment). The first case presents an IV drug user with an abscess on his arm, he is otherwise well. No mention is made of whether this may or may not be MRSA. The second case presents a diabetic male with cellulitis who has several past episodes of soft tissue infections that cultured MRSA. The provider is asked about management for this latter patient, both for discharge versus admission.

**Results:** 275 surveys were returned from geographically varied emergency providers. 190 providers (69%) specialized in EM, the remainder were primarily from family practice or internal medicine. 64 (23%) of the respondents stated that their practice location was rural, 55 (20%) were suburban and 150 (55%) were urban.

In the first case, 154 (56%) providers stated they would always send wound cultures, 66 (24%) would sometimes send wound cultures and 53 (19%) would never send wound cultures. 137 (49%) would always treat with antibiotics, 85 (31%) would treat sometimes and 53 (19%) would never treat for case one. Of those that gave antibiotics 139 (60%) used trimethoprim/ sulfamethoxazole (TMP/SMX) either alone or in combination with another drug. 75 (32%) used cephalexin either alone or in combination. 41 (18%) used clindamycin either alone or in combination. 35 (15%) used rifampin alone or in combination. 26 (11%) used a tetracycline class drug either alone or in a combination. 22 (7%) used a beta-lactam (with or without beta lactamase inhibitor) either alone or in combination. 8 (3%) used a fluoroquinolone alone or in combination.

For the second case, MRSA is suspected. For a patient felt well enough to be discharged: 1 provider would give no antibiotics. 48 (18%) would give vancomycin either alone or in combination. 151 (55%) would give TMP/SMX either alone or in combination. 59 (22%) would use clindamycin either alone or in combination. 38 (14%) would use rifampin either alone or in combination. 38 (14%) would use cephalexin either alone or in combination. When presented with a similar patient requiring admission, 179 (65%) would use IV vancomycin either alone or in combination. 41 (15%) would use TMP/SMX either alone or in combination. 10 (4%) would use linezolid either alone or in combination.

**Conclusion:** EMPs evaluating patients with skin and soft tissue infections must be cognizant of the likelihood that CA-MRSA is the offending organism. Many clinicians have changed their practice patterns to include antibiotics that usually display activity against CA-MRSA such as trimethoprim/sulfamethoxazole, tetracyclines, clindamycin and rifampin. However there does not seem to be an established standard or care for antibiotic treatment of skin and soft tissue infections, except perhaps in the case of an admitted patient with a history of infections with CA-MRSA, in that case most clinicians use vancomycin alone or in combination with another drug.
A NEW PATIENT SIGN-OUT SYSTEM

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Introduction: This paper presents a new web-based patient sign-out system (SOS) to maintain real-time patient census and assist in the transfer of patient care information between service teams. Such systems are typically prohibitive for some institutions to develop due to cost or technical requirements. We present a standardized web-based SOS that can be downloaded, installed on a personal computer and utilized locally or over a hospital network.

Methods: A new SOS currently under trial (Kolkin SOS, http://www.kolkin.org) was installed to maintain the patient census for the Department of Surgery. The SOS centralizes the patient admission log, service team and sign-out list. The software allows residents to access a unified patient database from any secure terminal or wireless device in the hospital as well as generate a printed sign-out list. The system also features progress note templates which can include images and video. The SOS sign-out list feature highlights pending patient issues marked for discussion during formal sign-out between physicians. To assist junior residents on-call and during cross-coverage, the database includes institution specific clinical protocols, articles, and pharmacopoeia authored by faculty.

Results: A total of 9 Department of Surgery teams totaling 30 residents currently utilize the SOS. A national analysis of closed malpractice claims has identified miscommunication as a significant source of peri-operative error (24% of all claims). Previously published data suggests a computerized sign-out system reduces resident rounding times up to 3 hours per week, decreases the number of missed patients on rounds by 50% and improves continuity of care. At our institution, admissions are logged and pending patient issues are immediately identified across the entire in-patient census and addressed by team members. The improvement in response time to patient care, elimination of missed pending issues at sign-out, and time saved using the system is promising and currently being quantified.

Conclusions: A web-based SOS is a significant enhancement to ensure accurate and complete transfer of patient care data between physician teams. This solution is practical, saves time and updates the traditional sign-out process by utilizing much of the present technology infrastructure in hospitals.
TELEMEDICINE: THREE MODELS FOR CONSIDERATION IN IMPLEMENTATION

Dave Robertson, DO

**Purpose:** Telemedicine may be defined as the use of telecommunications and information technology to support the delivery of health care at a distance. Recent advancements in telecommunications have consistently been followed by a steady decline in associated healthcare delivery cost and allowed for greater patient access.

**Methods:** Currently, three models are being evaluated for implementation of a Telemedicine service: Access to Care, Cost Savings, and Access to Markets.

**Discussion:** The Access to Care model addresses those problems faced by our rural patient populations. Through the use of Telemedicine, rural populations have access to specialty care and resources not present in their communities. The Cost Savings model is usually thought of as going hand in hand with the Access to Care model with regard to transportation issues for rural patient populations. Other examples of the Cost Savings model involve reducing unnecessary admissions, diabetes management, wound care, and educational opportunities. The Access to Markets model reflects the fiscal responsibilities of a health care delivery system to its stakeholders and providers.

**Conclusion:** Telemedicine is a paradigm shifting tool in the deliver of health care services that continues to gain recognition and application. By using the above three models to address specifically defined problems in a health care system, Telemedicine may be used as an effective solution. However, many initiatives have had less than acceptable performance because of support deficiencies, unclear vision, and improper marketing. Consistent application of good management principles is critical for any program success.
Introduction: Skin or subcutaneous infection with the fungus *Aspergillus flavus* is uncommon. It is a known opportunistic infection of the immunocompromised host including trauma and burn patients. The fungus is ubiquitous in the environment and commonly found in soil, household dust, decomposing plant material, building materials, ornamental plants, some food items, and water.

Case Report: A 54-year-old diabetic male suffered 40% total body surface area full thickness burns to his bilateral upper extremities, flanks and back following a campfire accident. Two weeks following admission on post-operative day number six following initial tangential excision, debridement, and placement of meshed allograft, the patient developed high fevers, a significant leukocytosis, and a change in the superficial character of his burn wounds. The patient was initiated on systemic Antifungals therapy and taken urgently to the operating room for allograft removal, tissue biopsy, and surgical debridement of involved wounds. The tissue biopsy demonstrated *Aspergillus flavus* and the patient’s clinical condition failed to improve. The patient was taken back to the operating room for radical fascial debridement and excision of his infected burn wounds. Following aggressive surgical intervention, the patient stabilized, and continues his convalescence in the Arizona Burn Center in satisfactory condition.

Discussion: Cutaneous aspergillosis is a well described but rarely encountered opportunistic infection where mortality approaches 80%. Radical surgical debridement and intravenous antifungal therapy represent the most successful treatment option. The predisposition for burn victims to develop cutaneous aspergillosis likely involves physical cutaneous barrier disruption and depression of several host defense mechanisms such as impaired or decreased phagocytosis, and bacterial skin flora disturbances. *Aspergillus* infection usually involves those patients with burns that average greater than 30% of the total body surface area and usually occurs 10 to 35 days after the initial burn injury. Understanding the pathogenicity, epidemiology, prognosis, and clinical signs and symptoms that allow an early diagnosis are critical to patient survival and are discussed in this poster presentation.
OBJECTIVE/PURPOSE: The American College of Cardiology (ACC) and the American Heart Association (AHA) publish guidelines for the treatment of specific conditions within the spectrum of acute coronary syndromes (ACS). We hypothesized that, when available, implementation of a standardized chest pain order sheet for treatment of patients with ACS in our emergency department would improve adherence to the ACC/AHA guidelines.

METHODS: This was an IRB approved prospective observational study in an urban emergency department with 46,000 visits per year and an affiliated emergency medicine residency training program. The study involved three phases. During the first phase (3/04-9/04), charts of patients with the complaint of chest pain were reviewed for compliance with ACC/AHA guidelines. Two persons reviewed charts during a brief training session. To improve agreement between reviewers, five charts were reviewed in a trial run and again weekly. A third reviewer acted in cases of disagreement. In the second phase (9/04-12/04), a chest pain order sheet based on ACC/AHA guidelines was made available for physicians to use in evaluation and treatment of patients presenting with chest pain. The third phase (5/06-12/06) the chest pain order sheet was not available for physician use due to technical and logistical misadventures. In a similar fashion, charts were reviewed for compliance with guidelines. A kappa score for inter-observer agreement, Fisher’s exact and Chi-Square tests were used to compare groups. In a retrospective review, charts were evaluated for continued compliance with guidelines in an analogous fashion.

RESULTS: The results are summarized in the table below. The kappa for inter-observer agreement was 0.91 (95% CI: 0.883 to 0.990)

<table>
<thead>
<tr>
<th>Phase</th>
<th>Patients Administered Medication / Patients Eligible to Receive Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>ASA: 213/221 (96%) Beta-Blocker: 166/221 (75%) Heparin: 155/221 (70%) 2B, 3A GP-inhibitor: 4/10 (40%)</td>
</tr>
<tr>
<td>Phase 2</td>
<td>ASA: 117/117 (100%) Beta-Blocker: 112/117 (96%)* Heparin: 110/117 (94%)* 2B, 3A GP-inhibitor: 4/6 (67%)</td>
</tr>
<tr>
<td>Phase 3</td>
<td>ASA: 205/214 (96%) Beta-Blocker: 163/214 (76%) Heparin: 135/214 (63%) 2B, 3A GP-inhibitor: 3/7 (43%)</td>
</tr>
</tbody>
</table>

Conclusions: The use of a standardized chest pain order sheet was associated with improved adherence to the ACC/AHA guidelines for administration of beta-blockers and heparin in ACS but returned to baseline when the guideline was no longer available. Limitations of this study include, but are not limited to, non-randomization and selection bias.
Abstract 116
Maricopa Integrated Health System
Internal Medicine

PLASMACYTOMA OF BONE IN A 54 YR MALE: A CASE REPORT

Amar Sharma, MD; Anu Mariyappa, MD; Chander Jha, MD; Jaya Raj MD

Introduction: Plasmacytomas are tumors composed of plasma cells, histologically identical to those seen in multiple myeloma (MM). If they occur in bone, they are designated solitary plasmacytoma of bone in the absence of multiple osteolytic lesions but if outside the bone in soft tissues, they are called extramedullary plasmacytoma. Nearly one-half of patients with an apparent solitary plasmacytoma of bone will develop into MM within 10 years.

Case Report: A 54 yr Hispanic male, truck driver, accustomed to lifting heavy weight was sent to Maricopa Medical Center with upper back pain and mild weakness of lower extremity for 2 weeks when MRI at outside facility showed compression fracture of T3 vertebral body. Patient had some point tenderness at upper back with rest of exam negative. CT and MRI thoracic spine showed lytic destruction of T3 vertebral body c/w metastatic/neoplastic/inflammatory process. Post decompression of T3 vertebral body with spinal fixation was done; Biopsy of T3 vertebra showed sheet like proliferation of lambda light chain restricted plasma cells. Skeletal survey did not show any lytic lesions. Marrow Biopsy showed no plasmacytoma or sheets of plasmacytes but scattered plasma cells were up to 8% at places. Flow cytometry showed IgA lambda restricted plasma cells at least 2%, c/w plasma cell dyscrasia. Free light chain assay showed increased kappa: lambda ratio of 1.80. Post op course was uneventful with no sensory motor deficit.

Discussion: This case exemplifies the limitation of a single bone marrow study in ruling out multiple myeloma in certain cases. Since this patient has a clear evidence of monoclonal plasma cells in the marrow and the free kappa lambda ratio is abnormal, he should receive a repeat bone marrow study in 2-4 months depending on clinical course. Free light chain assay is showing promise in selecting out patients who need more intensive follow up. Treatment of plasmacytoma is localized radiotherapy whereas multiple myeloma is treated with chemotherapy. Prompt intervention relieves pain and worsening of symptoms followed by localized radiotherapy to suppress further progression to multiple myeloma.
Purpose: To determine the existing patterns of sign-out processes prevalent in emergency departments (ED) nationwide. Also, to assess if training programs provide specific guidance to their trainees regarding sign-outs, and attitudes of Emergency Medicine (EM) residency and Pediatric Emergency Medicine (PEM) fellowship program directors towards need for development of standardized guidelines relating to sign-outs.

Methods: A web-based survey of training program directors of each Accreditation Council for Graduate Medical Education (ACGME) accredited EM residency and PEM fellowship program was conducted in March 2006.

Results: Overall 185 (61.1%) program directors responded to the survey. One-hundred thirty six (73.5%) program directors reported that “sign-outs” at change of shift occurred in a common area within the ED and 79 (42.7%) respondents indicated combined sign-outs in presence of both attending and resident physicians. Majority of the programs, 119 (89.5%), stated that there was no uniform written policy regarding patient sign-out in their ED. Half (50.3%) of all those surveyed reported that physicians “sign-out” patient details “verbally only” and 79 (42.9%) noted that transfer of attending responsibility was “rarely documented”. Only 34 (25.6%), programs affirmed that they had formal didactic sessions focused on sign-outs. A majority (71.6%) of program directors surveyed agreed that specific practice parameters regarding transfer of care in the ED would improve patient care; eighty (72.3%), agreed that standardized sign-out system in the ED would improve communication and reduce medical error.

Conclusion: There is wide variation in the sign-out processes followed by the different EDs. A majority of those surveyed expressed the need for standardized sign-out systems.
SEVERE EMERGENCE REACTION TO KETOFOL: PATIENTS STILL “KETO-FALL” INTO A “K-HOLE”
Jesse Shriki, DO, Gary Sanderson, DO, Patricia Bayless, MD, Frank LoVecchio, DO, MPH

Introduction: Ketofol is a new sedative combination of ketamine and propofol mixed 1:1 in the same syringe. It has been recently cited as safe and effective for procedural sedation in the emergency department (ED) with minimal side effects. Ketamine alone is well known to be associated with emergence reactions in adults and, colloquially, referred to as a “K-hole” by street users. When ketamine is combined with propofol this reaction, however, is reportedly infrequent and mild. Typically this reaction will also respond to midazolam. We report a severe emergence reaction to the ketamine component of “ketofol” that did not respond to midazolam.

Case Report: Patient DR is a 21 y/o previously healthy male inmate, who complained of left shoulder pain after a fall from the top bunk in prison on to the shoulder. He was sent in by prison physicians for evaluation of pain. The patient also complained of the shoulder being “out of place”. His past medical history was significant only for shoulder surgery on the left for rotator cuff repair. Patient’s vitals were: blood pressure 103/54, pulse 61, respiratory rate 16, and oxygen saturation 100%. On initial examination, the patient was holding his arm against his body. He was unable to passively move the shoulder and had loss of the normal anatomic curvature of shoulder with loss of sensation in the regimental band area of the deltoid. Distal pulses and sensation were intact. An x-ray was obtained which showed misalignment of the humeral head in the glenoid fossa, although limited due to body habitus. The patient was diagnosed with an anterior-inferior shoulder dislocation. Initial management consisted of morphine 8 mg IV and 1% lidocaine intra-articularly with good pain control. An initial manual attempt at reduction using external rotation and scapular manipulation was performed which was unsuccessful. Subsequently, it was decided that procedural sedation with “Ketofol” would be the next best step in management. After appropriate setup and staffing availability, the reduction was initiated with a traction-counter traction method. For sedation, a mixture of 20 ml of propofol (10mg/ml) and 2 ml of ketamine (50mg/ml) were drawn into the same syringe producing a 10mg/ml solution of propofol and a 5 mg/ml solution of ketamine (0.5:1 “Ketofol” solution). The patient weight was approximately 120 kg and a typical dose administered is 0.75-1 mg/kg of each anesthetic. Approximately 10 ml of the mixture (100 mg propofol and 50 mg of ketamine) was administered to the patient; a lower than recommended dose. The shoulder was felt to be sufficiently reduced without complication. Approximately 5-10 min later the patient began to awake from sedation. He immediately opened his eyes and began to shake. He was responsive to voice, however, and seizure was rapidly ruled out. He then began crying about loss of a prior football scholarship, screaming, having rapid body movements and required at least 4 security guards to hold him down while maintaining the shoulder in place. The patient’s vital signs remained hemodynamically stable and it was determined that he was having an emergence reaction to the ketamine component. He stated he was very scared and didn’t know why with repetitive comments about football. He was given a total dose of 12 mg of versed (0.1mg/kg) over the next 45 minutes to no avail. The emergence reaction lasted approximately 1.5 hours at which time the patient fully recovered but recalled only being scared for an unknown reason. The patient was observed and no further complications were observed.

Discussion: Although “Ketofol” does have a good effect profile emergence reactions to ketamine may still occur. Severe emergence reactions such as the one experienced here are common to ketamine alone but rarely seen when combined with other sedatives such as propofol and versed. This complication had a short-term untoward effect on the patient and occupied multiple resources of the emergency department. Severe emergence reactions to “Ketofol” should be expected and explained to patients prior to its use.
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Maricopa Integrated Health System
Emergency Medicine

TOXICOLOGICAL DEATHS REPORTED TO A POISON CONTROL CENTER OVER A TWO-YEAR PERIOD

Jesse Shriki, DO, MS, Frank Lovecchio, DO, T. Nielse, MS IV

Purpose: Death from poisoning is common. We investigated deaths thought to be related to poisonings reported to our poison center over a two-year period.

Methods: All poison center charts from January 2004-December 2005 were reviewed for an outcome of death. Death charts were extracted by trained reviewers who were blinded to the study purpose and then completed a structured data collection sheet. Reviewers were given a concise training session and thereafter a brief trial practice sampling was discussed by the other investigators. Randomly, 10% of their charts were reviewed by a third reviewer who was blinded to their results. A total of 222,103 charts were reviewed for an outcome of death. Data were collected regarding demographics such as age, sex, alleged poisons, route of and reason for exposure. The presence of prehospital cardiorespiratory arrest and frequency of post-mortem examinations were documented. The likelihood the agent caused death was documented. Chart queries were conducted using CrystalReports™. Data were analyzed using Excel™ and STATA™ software.

Results: A total of 56 death reports were compiled. The mean age was 39.8 [2-71] years. A total of 24 or 43% were male. The patients with a prehospital cardiorespiratory arrest were 27 or 48%. The most common substance reported were opioids (8), sedatives (5), antipsychotics (5), antidepressants (4), amphetamine (5) and acetaminophen (10). The number of those in which the agent was thought to be undoubtedly responsible was 16 [28.6%], probably responsible was 28 [51%], probably not responsible was 2 [3.6%], not likely responsible was 6 [11%] and clearly not responsible was 3 [5%]. Route of exposures were ingestion in 85.5%, inhalational 7.2%, dermal 1.8%, envenomation 1.8%, unknown 1.8% or parenteral 1.8%. A post-mortem examination was performed on only one patient. Limitations: Previous reports have shown that poison control centers grossly underestimate the total number of toxicological deaths in the community. The retrospective nature, lack of gold standard and self-reporting methods are further limitations.

Conclusions: About ½ of patients who eventually die of a poisoning that is subsequently reported to a poison control center present in cardiorespiratory arrest. Ingestions of acetaminophen, opioids and amphetamines are the most common causes of death in this population.
TRAUMATIC AORTIC TRANSECTION IN A CHILD: A CASE REPORT
Jesse Shriki, DO, MS, Jennifer Casaletto, MD

Introduction: In patients aged 1-38, trauma is the most common cause of morbidity and mortality. In one study approximately 20,000 children die per year from trauma. Although blunt trauma is the most common mechanism of injury, traumatic aortic transection (TAT) is uncommon in this mechanism. Furthermore, TAT is associated with a high morbidity and mortality and the approach to caring for these patients is controversial with regard to diagnostic and surgical intervention.

Case Report: A 10 y/o male was a restrained passenger in a driver-side lateral impact collision between two vehicles. The collision occurred on a rural freeway and the on-scene EMS noted neither deployment of front airbags nor a death at the scene, however, there was major vehicular deformity of the impacted vehicle. On scene there was no loss of consciousness, the patient was hemodynamically stable, and EMS noted a GCS of 15. The patient was subsequently air-lifted to a Level 1 Trauma Center. En route to the hospital EMS noted the patient to complain of chest pain, back pain and noted a small forehead laceration. Upon arrival to the trauma center, the airway was intact, hemodynamic stability continued and the GCS was 15. The patient continued to complain of chest pain and back pain and began to complain of left upper quadrant abdominal pain. On physical exam the patient was afebrile and vitals were: heart rate of 95, blood pressure of 126/85 respiratory rate of 19 and SaO2 to be 100% on 2L nasal cannula. There was a 5 cm frontal scalp laceration, no periorbital or mastoid ecchymosis and several broken front teeth were seen suggestive of considerable force. Full c-spine precautions were taken in the field and were maintained in the trauma bay. The remainder of the physical exam was normal with the exception of right sided chest pain with palpation and left sided upper quadrant pain without peritoneal signs. A chest x-ray showed a right lung pulmonary contusion and a right tenth rib fracture. No evidence of pneumothorax was seen. An AP pelvis film was obtained and within normal limits. Trauma labs were obtained and most were within expected norms including a hemoglobin of 12.8 and hematocrit of 38.5. The out-lying labs were an alk phos that was 247 and an AST and ALT that were 809 and 509, respectively. CT scans of the head, cervical spine, and maxillo-face all without contrast were obtained. In addition CT of the chest, abdomen and pelvis with IV contrast were also obtained. CT of the head, c-spine, maxillo-face were all within normal limits. The CT of the abdomen and pelvis showed heterogenous low density regions within the left lobe of the liver suggestive of a laceration/contusion, a possible splenic laceration and a possible left renal contusion. The CT of the chest showed fractures of the third, ninth and tenth ribs on the right and a defect within the anterior aspect of the proximal descending thoracic aorta at the level of the pulmonary artery with contrast extravasation and fluid surround the aorta and arch. This was indicative of transaction of the descending thoracic aorta at the level of the pulmonary artery. An in house cardiothoracic surgeon was unavailable and the patient was subsequently transferred to a second tertiary center for aortic repair by method of endovascular repair.

Discussion: Blunt traumatic aortic transection is a surgical emergency that portends a poor prognosis for the few that survive initial transection. The fear with those who survive to make it to the ED is mostly concerned with preventing subsequent aortic rupture. The mainstay of treatment remains, ABC’s, volume resuscitation, and correction of hypoxi. The caveat to volume resuscitation in the setting of TAT is permissive hypovolemia. Medical management should begin with beta-blockers and then adding vasodilators and patients should not be allowed to develop a systolic blood pressure over 120 mm Hg. A high index of suspicion should be maintained and liberal use of CT scans with IV contrast should be considered in mechanisms suspicious for TAT. A careful history and physical exam should always be performed.
A NOT SO SIMPLE CASE OF LOW BACK PAIN

Deetu Simh MD(Associate), Pedro Quiroga MD(Associate), Jaya Raj MD(Member), Maricopa Integrated Health System, Phoenix, AZ

Introduction: Infection with Coccidioides immitis is one of the most frequent fungal infections encountered in the southwestern United States. Of the patients that are diagnosed with coccidiomycosis, it has been reported that approximately 4.7 percent develop disseminated infection. The most common sites of dissemination include the skin, the meninges, and the skeletal system. Patients often present with vague and nonspecific symptoms. Constitutional symptoms such as fever, night sweats, and weight loss are especially important to document. We report on a case of a 20 year old male who presented with low back pain and constitutional symptoms.

Case Report: A 20 year old African American male inmate with no significant past medical history presented to Maricopa Medical Center with a chief complaint of low back pain, weight loss, chronic cough and night sweats for the last 2 to 3 months. He had also been having intermittent fevers for the last month, as well as worsening back pain in the supine position. A recent PPD and HIV test were both negative, and the patient denied use of intravenous drugs. His only medication was acetaminophen for pain. On initial exam, he appeared mildly toxic with a temperature of 39.5, pulse of 120, blood pressure of 126/67 and his oxygen saturation was 96 percent on room air. The remainder of his exam was unremarkable except for point tenderness to palpation at T10 and L1-S1 vertebrae and a positive straight leg raise on the right side. There were no focal neurological deficits. Initial labs showed an ESR of 140 and anemia with a hemoglobin of 10.1. CT of the lumbar spine revealed extensive lytic defects at S1 and T10. A chest x-ray showed micronodular opacities and paraspinal swelling at T11. Blood cultures, sputum AFB analysis, and Coccidioides immitis titers were sent. The patient was started empirically on piperacillin/tazobactam and fluconazole. Despite this, his clinical condition worsened and he began to show signs of respiratory distress. Mechanical ventilation was started and the patient was transferred to the intensive care unit. Amphotericin B was added to his regimen. The patient’s hospital course was complicated by the development of a right sided pleural effusion requiring chest tube placement, renal failure likely due to amphotericin B, sepsis, and adrenal insufficiency. The patient’s clinical condition improved and he was eventually discharged back to the jail infirmary. Biopsy of the paraspinal swelling revealed the presence of Coccidioides immitis. He was given a final diagnosis of disseminated coccidiomycosis and was discharged on lifelong fluconazole therapy and a tapering dose of steroids.

Discussion: In any patient presenting with persistent back pain and constitutional symptoms it is extremely important to include infectious causes in the differential diagnosis. Vertebrae infection with cocci is a rare but potentially fatal or disabling disease that needs to be recognized and treated immediately.
PRIAPISM ASSOCIATED WITH ATYPICAL ANTIPSYCHOTIC MEDICATIONS: A SYSTEMIC REVIEW

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Dept of Psychiatry,
Maricopa Integrated Health System

Purpose: Priapism, persistent, painful and prolonged penile erection, was once thought to be associated with the use of the older conventional antipsychotic medications as well as other medications, notably, trazodone. Atypical antipsychotics, also known as second generation antipsychotics, due to their favorable side effect profile, are being prescribed with increasing frequency and are not as frequently considered to cause priapism. However, there have been some case reports reporting this side effect with their use. A systemic review of all the literature was done to look for reported cases of priapism associated with their use.

Method: Pubmed and Ovid databases were searched to obtain all articles and case reports of antipsychotic drug-induced priapism. Key search words included “priapism”, “atypical antipsychotics” and “drug-induced priapism”. References of all identified studies were also reviewed. A total of thirty-three publications were obtained.

Results: The mechanism of priapism associated with antipsychotics is not clear but is thought to be related to α-adrenergic blockade that is mediated through the α receptors in the corpora cavernosa of the penis. Most of the atypical antipsychotics have been reported to cause priapism. These cases have occurred in patients who have been on the antipsychotic medications for an extended period of time without modification in dosage, and have also occurred sometimes, with the addition of another antipsychotic, lithium or SSRI.

Conclusion: Priapism has been documented with nearly all the second generation antipsychotic medications. However, it is a rarely reported side effect and therefore, under-appreciated. Priapism can cause irreversible erectile dysfunction and is a urologic emergency. Clinicians should monitor for this rare, yet significant, side effect for patients on these medications. Also caution must be used when adding new drugs to the regimen and patients should be closely monitored for this side effect.
ASSOCIATION OF NEPHROTIC SYNDROME WITH ERYTHEMA MULTIFORME FOLLOWING AN INSECT BITE

Nivedita Srivatsav, MD, Lee Baker, MD, Karan Bhasin, MD, Jan Mangalat, MD

Introduction: Insect stings have been associated with multiple clinical syndromes. Renal manifestation while rare, have been reported. They have included a spectrum from nephrotic syndrome to acute renal failure. Glomerulonephritis is delayed hypersensitivity reaction affecting glomerular vasculature. It is a syndrome initiated by different stimuli involving many complex immunological mechanisms. In this communication we present the case of Mrs. A, who was initially diagnosed with erythema multiforme following an insect bite, she progressed to develop severe nephrotic syndrome, with renal biopsy evidence of diffuse proliferative glomerulonephritis.

Case Report: Mrs. A is a 47 year old morbidly obese Hispanic female with a past medical history significant for Asthma and obstructive sleep apnea presented to hospital with an erythematous rash and pruritis following a mosquito bite. The rash began at the foot and spread within hours to abdomen and arms. The rash was a diffuse maculopapular in nature with an area of central clearing that were consistent with target lesions. She also denied any ingestion of shellfish, which she has a know allergy to. Patient also denied any recent history of sore throat, or Herpes Simplex infection or any use of prescription medication. On initial presentation patient was thought to be having a herpetic exacerbation and was treated empirically with acyclovir. Patient returned to the clinic for followup in 2 weeks and was noted to have massive generalized edema. The physical exam was remarkable for 4+ edema and skin lesions in varying stages of healing, with no evidence of cellulites or infection. Laboratory investigation revealed serum creatinine of 1.1mg/dl, blood urea nitrogen of 18mg/dl. Normal serum complement, negative anti-nuclear anti-body, ASO titers within normal limits, serum albumin1.5g/dl, serum cholesterol of 316. Her 24hour urine collection revealed a creatinine clearance of 85ml/min and proteinuria of 6851mg/dl. HIV and hepatitis serology were negative. Her urine analysis revealed ph 7.5, specific gravity of1.025, moderate amount of blood, 4+ protein urea, red blood cells 37/HPF, WBC 10/HPF, Hyaline cast of 6-10/HPF, negative leukestrase and nitrates. She underwent a CT guided renal biopsy 4 weeks after the initial presentation the diagnosis of idiopathic glomerulonepritis was made based on the findings of diffuse proliferative glomerular changes on light microscopy, absence of immune and compliment deposit on immunofloresence. She was treated with loop diuretics and oral prednisone 60 mg/day over a period of three months.

Discussion: The present case demonstrates how glomerulonephritis may accompany benign skin lesion erythema multiforme following an insect bite. To our knowledge there has been only one report in 1964 of development of nephrotic syndrome following erythema multiforme. Patients with a history of atopy have known to have higher susceptibility to minimal change disisee and exhibit excellent response to corticosteroid. Mrs. A has been seen in follow up and remains in good health however, the follow up period is rather brief in terms of gauging a response to the therapy.
SYNCHRONOUS BILATERAL DUCTAL BREAST CANCER WITH STAGE IV COLON CANCER
Arpita Surkunte, M.D. (Associate); David Kamrava, M.D. (Associate); Jyotsana Ravi, M.D.(Member); Chandra Jha, M.D.(Member); Boo Ghee Low, M.D.(Member)
Maricopa Integrated Health System, Phoenix, Arizona

Introduction: Synchronous bilateral infiltrating ductal breast cancer with a simultaneous stage IV colon cancer is a rare presentation.

Case Report: A 52 year old Caucasian postmenopausal female with no significant PMH presented to the emergency department complaining of fever, weakness, nausea and headache for approximately one week. Patient had lumps in both her breasts for 1 year. Patient denied hematochezia, melena, weight loss and abdominal pain. Family history was unremarkable for cancers. Physical exam remarkable for a Temp of 104.4 F, blood pressure was 115/53 and pulse was 136. The patient was AxO x 3, was pale, had bilateral lumps in her breast with inverted nipples and no cervical or axillary lymphadenopathy, no nipple discharge, and a negative fecal occult test. The rest of the physical exam was normal. Blood work revealed a severe microcytic hypochromic anemia, leucocytosis, and thrombocytosis, and alkaline phosphatase was high. Patient was admitted to the MICU, transfused with 5 units of PRBC and started on broad spectrum antibiotics. At this point patient was stable and was transferred to the floor. CT Scan of chest and abdomen revealed: bilateral pleural fluid; multiple small nodules identified in the lung fields bilaterally; multiple masses identified within the liver, consistent with metastatic disease; and sclerotic areas identified within the bones of the chest, likely metastatic. CT scan of head was unremarkable for any intracranial metastases. Mammogram showed diffuse skin thickening and reticular thickening of the subcutaneous tissue, worrisome for lymphatic invasion of breast cancer. Biopsies of breast, liver, a fungating cecal mass and a polyp in the sigmoid colon were performed. A diagnosis of adenocarcinoma of the cecum with metastases to the liver and a subsequent bilateral infiltrating ductal carcinoma was established. Immunochemistry showed that the lesions were (HercepTest: Positive (2-3 +), ER: Positive (+1), PR: Negative) FISH: Negative for deletion of chromosome 17 including P53.MASH: Pending. Lung biopsy, PET scan, BRCA testing and follow up with the oncologist was recommended on discharge.

Discussion: One study indicated that the average risk for a patient with breast cancer to have a subsequent primary cancer in the colorectum is two times normal, suggesting a possible genetic link. Whereas it is already known that genetic analysis of p53 mutation, such as Li-Fraumeni, is characterized by multiple simultaneous malignancies. Subsequent studies which included concomitant breast and colon cancer indicated that this possible genetic link may be related to CHEK2 or CHEK2 variants. The case presentation above demonstrating the rarity of bilateral breast cancer with a stage IV colon cancer offers intriguing possibilities for molecular genetic investigations; however it is disproportionally less studied. p53 mutation was negative in our patient and CHEK2 and CHEK2 variants were not completed but the patient was to follow-up as an outpatient for further genetic testing and management. Management was further dictated by the stage IV colon cancer. Although treatment of concomitant breast and colon cancer is controversial and there is no set guideline, our oncologists decided to begin FOLFOX-6 chemotherapy in efforts of treating the metastatic colon cancer prior to treating the bilateral infiltrating ductal breast cancer. The patient has since moved out of state and has been lost to follow-up.
DO FAMILIES BELONG AT THE BEDSIDE DURING CARDIOPULMONARY RESUSCITATION? A SURVEY OF HEALTHCARE PROVIDERS

T. Urbas, MD, K.J. Richey, RN, K.N. Foster, MD, R.B. Rimmer, PhD, D.M. Caruso, MD, FACS, K.M. Mathieson, PhD

Introduction: Throughout history, families have attended the death of loved ones. With advances in medicine allowing for cardiopulmonary resuscitation (CPR), what once was a family matter evolved into a ‘closed door’ practice. Families and healthcare professionals have challenged this practice resulting in controversy.

Methods: A 17-item survey was administered to burn team members. Categorical variables were analyzed using chi-square tests, continuous variables using t tests. The alpha criterion was set at .05. Univariate logistic regression was used to predict policy preferences using several professional, demographic, and experience-related variables. Predictors significant at the .05 level in univariate analyses were entered into a multivariate logistic regression model.

Results: One hundred one burn team members were surveyed, 49.5% medical (n=50), 47.5% nursing (n=48), 3% psychosocial (n=3). 88% of respondents were involved with direct patient care ≥ 50% of the time. Overall, 87% of nurses favored families having the option of being at bedside during CPR vs. 62% of physicians (p=.005). Moreover, 72% of nurses preferred a written policy allowing families to be present during a code vs. 40% of physicians (p=.002). Forty-one respondents had been asked by a family member to be present in the event of a code of which 35 had actual experience with families being present during CPR; 97% favored the families option to be at bedside (p<.001). When physicians experienced families being present during CPR, they were twice as likely to prefer that option (p<.001). The most frequently noted benefits of having the family present during a code were family assurance of quality effort, a greater understanding of injury severity, closure and the family concept of ‘being there’. Commonly reported barriers were emotional trauma to the family, physical interference and negative impact on code team performance.

Conclusions: Popular media depicts a 75% success rate for CPR, however, literature states that approximately 15% of hospitalized patients survive CPR. Increasing evidence shows there are benefits to family members being present during codes. Attitudes of healthcare providers who have participated in these events are overwhelmingly positive. Results suggest that a system should be developed to identify appropriate participants in order to make the option of family presence during CPR a realistic, beneficial practice for families and healthcare professionals.
HEELYS™: AN UNDERAPPRECIATED INJURY THREAT

D. Andrew White, MD, MPH and Patricia Bayless, MD, MBA
Emergency Medicine

**Introduction:** Heelys™ are a brand name shoe product with wheels that are built into the sole. They are popular with children as they can be worn as regular shoes and the wheels can be deployed by the wearer for use much like roller-skates or rollerblades. Other companies manufacture similar products as well. Many parents and physicians are unaware of the risks associated with the use of these shoes and due to the fact that they are typically worn as everyday attire, most users do not wear proper protective equipment while “heeling.” Worse yet, if significant injury does occur while using these wheeled shoes, many physicians may not recognize the injury mechanism due to lack of awareness of their widespread use and availability. This could lead to failure to recognize other potential concurrent injuries that may be sustained by the users and potentially worse outcomes.

**Case Report:** An 11 year old male presented as a Level I trauma patient to the emergency department after being found unconscious lying by the side of the road. No apparent mechanism was noted. However, the patient had sustained a number of contusions and abrasions to the head and limbs. A cephalohematoma was noted on examination in the trauma bay. By the time the patient presented to the emergency department, he was GCS 14 and rapidly improved to 15, but remained amnestic to the injury itself. CT of the head was read negative for traumatic brain injury.

Close inspection of the patient’s shoes which had quickly been removed during the trauma survey revealed the presence of wheels imbedded in the soles. Further questioning of the paramedics responding to the patient noted that the patient had been found at the bottom of a hill at the base of a tree. Once family arrived, it was apparent that the patient had borrowed the shoes from a friend and was inexperienced in using them. No protective equipment was worn by the patient. It appears that he lost control of his speed and rolled down the hill and into the tree, sustaining the injuries noted above. The patient was discharged to home with closed head injury precautions and usual abrasion care after a period of observation in the emergency department. An injury prevention discussion with the family and patient was undertaken prior to discharge.

**Discussion:** Clearly, there are risks involved in “heeling,” which could be minimized by using personal protective equipment (PPE). The head injury described above would likely have been prevented by the use of a helmet. There is one article published on Heelys™ that describes a preponderance of orthopaedic injuries of types similar to those seen with rollerblading that again could be minimized by wearing PPE. The Heelys™ manufacturer also stresses these risks and in fact has its own line of PPE to sell with the shoes. However, due to the fact that these shoes spend much of their time as everyday wear, users appear less likely to have their PPE when “heeling.” More awareness on the part of physicians and parents, and perhaps educational facilities could go a long way towards injury prevention.
Abstract 127  
Maricopa Integrated Health System
Emergency Medicine

PEDIATRIC INJURIES BY LARGE ANIMALS: A FIVE YEAR REVIEW

David Wilson, MD, Frank LoVecio, DO, Mita Sinha, MD, Vonnie Fuentes

Introduction: Children are occasionally hurt by large animals. The purpose of this study is to describe the nature and mechanism of such injuries.

Methods: We carried out a retrospective chart review of the trauma registry at an urban level I trauma center/teaching hospital that serves patients with a wide diversity of geographic, demographic and socioeconomic backgrounds. Over a five year period, charts were pulled from the trauma registry on patients who identified their age as 19 or younger and had a mechanism of injury other than motor vehicle collision. The charts were then manually reviewed. These charts were then examined and those with a mechanism of injury involving a large animal were entered into our study. Variables such as age, sex, type of animal involved, mechanism of injury, injury sustained and outcome were collected and analyzed. This study was IRB approved.

Results: The 57 patients entered into our study had an age range of 1 year to 19 years, a mean age of 11.3 years (std 5.466 yrs), and a mode of 13 years. Sixty percent were male, and average ages of male and female trauma victims were similar (male 11.47 yrs, std 5.97; female 11.22, std 4.738). Of the 57 enrolled, 47 (82%) were injured by horse, 9 (16%) by steer/bull, and 1 (2%) by sheep. Mechanistically, 47 patients (77%) were injured while riding, while 13 patients (23%) were struck by the animal. These injuries resulted in 34 admissions. The injuries included (some patients had more than one injury) 42 (74%) closed head injury/concussion, 10 (18%) Facial lacerations, 5 (9%) skull or serious facial fractures, 4 (7%) intracranial hemorrhages (all types), 1 (2%) resulted in a permanent neurologic deficit, 7 (12%) blunt chest or abdominal trauma, 20 (35%) musculoskeletal injuries (9 (16%) of which were fractures).

Conclusion: Over the period of our study, children who were injured by large animals and brought to Maricopa Medical Center suffered injuries to a variety of organ systems. The preponderance of head and CNS injuries suggest the need for a further study to examine the effect of helmet use on the severity and frequency of these types of injuries. Further studies are needed to make recommendations on other safety practices that might reduce the frequency and severity of these injuries.
THE “VIPER” MANAGEMENT OF FOOT ULCERS IN PATIENTS WITH CHARCOT FOOT: A CASE REPORT

Silvio Azzolini, MD - Family Medicine Residency Program, Phoenix Baptist Hospital, Phoenix, AZ

Introduction: The hallmarks of Charcot’s foot neuroarthropathy are: 1) lack of pain sensation; 2) development of bony prominences due to foot deformity. Peripheral neuropathy, regardless of etiology, often renders the feet “blind and deaf” to painful stimuli. Sustained pressure on deformed areas of the foot unable to detect pain incurs in the formation of foot ulcers, which can lead to catastrophic consequences including foot amputation. Because pressure ulcers are the most common complications of the neuropathic foot, the primary goal of treatment of foot ulcers should be prevention of infection and complications. Early detection and appropriate treatment of foot ulcers can prevent up to 85 percent of the common complications, and “timing” is a critical factor to determine prognosis. Despite a physician’s best effort to heal an ulcer, if patients do not seek early treatment the prognosis will invariably be poor.

Case Report: Our patient was a 72 years old female, non-diabetic, with multiple health issues including Charcot’s foot and two mal perforans ulcers due to longstanding high plantar pressure. She had failed treatment at two other health care facilities, and since the ulcers were rapidly deteriorating the approach to treatment had to be immediate, aggressive and systematic. We predicted that using the approach to treat diabetic foot ulcers on this non-diabetic patient would lead to complete healing. The primary goal was prevention of infection to avoid severe complications, and the final goal was wound closure and prevention of recurrence. Initial assessment was done following the guidelines of the International Working Group for the Diabetic Foot using “PEDIS”, the mnemonic for Perfusion, Extent, Depth, Infection and Sensation. Debridement of surrounding tissue was performed and there was a negative probe-to-bone test, which decreased the likelihood of osteomyelitis. There was no clinical evidence of infection and X-rays revealed sub-luxations and bone deformity, but no evidence of osteomyelitis. The patient was evaluated for vascular compromise, infection and pressure relief (VIP). Education on foot ulcers, proper foot care, compliance with treatment and possible complications was provided. Raport to enhance physician-patient communication and motivate patient participation in the treatment was essential to good outcome. “VIPER” (vascular, infection, pressure, education, raport) proved to be a more efficient strategy for treatment of foot ulcers than VIP alone, and the patient’s foot ulcers healed completely after a few weeks of treatment.

Discussion: Historically, the “VIP” (Vascular evaluation, Infection control and Pressure relief) approach has been used for the treatment of diabetic foot ulcers. However, despite the physician’s best efforts to heal an ulcer, wound closure and avoidance of recurrence rarely is accomplished without patient compliance. Education and Raport are vital components of successful treatment, and “VIPER”, rather than “VIP”, is a more comprehensive and effective approach to the treatment of foot ulcers, regardless of the etiology. The successful treatment of this patient's foot ulcers was the result of timely management, a consistent and systematic approach, and using “VIPER” as the main guideline to treatment. We feel comfortable recommending the “VIPER” approach as a valuable additional tool for the treatment of foot ulcers, regardless of the etiology.
Purpose: Parkinson Disease (PD) is a progressive, chronic, neurologic disorder typified by resting tremor, bradykinesia and rigidity. Nearly one million people are affected in the United States with approximately 50,000 new cases diagnosed annually. Despite availability of medication, the disease continues to have a significant impact on patient quality of life and ability to perform activities of daily living. Osteopathic Manipulative Treatment (OMT) has been shown to improve balance and gait in patients with mild to moderate Parkinson Disease. Little is known, however, on the effectiveness of OMT on overall functioning in PD.

Methods: The present study is investigating the effectiveness of OMT on symptoms of PD in a randomized, double-blind, placebo-controlled study using a parallel-group design. Patients have been randomized into either the study or control group to receive a 6-week osteopathic treatment. The treatment protocol for the experimental group is standard of care soft-tissue articulatory and muscle energy OMT techniques. The control group is receiving a sham treatment consisting of standard integrated OMT diagnostic techniques alone. Both OMT and control subjects are being given appointments with the same clinic rooms, on the same days of the week and processed for their therapy appointment with the same reception staff to minimize confounding variables.

Results: All patients have been given the same pretest measures of symptoms (Unified Parkinson Disease Rating Scale) and quality of life (Quality of Life Inventory). The effect of OMT on both outcomes is being investigated and reported. At the completion of the study, all patients will be re-administered the Unified Parkinson Disease Rating Scale and Quality of Life Inventory.

Conclusion: As the results of the study are processed, it is our goal to clearly define and elucidate the role of OMT in the treatment of the symptoms of PD. This study will also contribute to the literature base on OMT. Implications for the management of other chronic degenerative diseases will also be explored.
Abstract 130
Phoenix Baptist Hospital
Family Medicine

HIRSCHSPRUNG DISEASE: CASE PRESENTATION

Dr. Timothy Owolobi

Introduction: Hirschsprung disease has a prevalence (incidence per total births) of one per 5,000. The untreated mortality rate is as high as 80%, even with treatment mortality is up to nearly 30% due to enterocolitis. There are three theories postulating the cause of this disease: 1) failed craniocaudal migration of neuroblasts; 2) failed differentiation of neuroblasts into ganglion cells; 3) accelerated ganglion cell destruction within the intestine. Plain abdominal radiographs, contrast enema radiographs and full thickness rectal suction biopsy are all diagnostic tests for Hirschsprung disease with full thickness suction biopsy being the gold standard. Although several genes have been implicated in the pathogenesis of this condition, research has focused on the Ret proto-oncogene which may lead to genetic tests that assist in screening and/or diagnosis.

Case Report: Mrs. M is a 24 year old G1 who had no significant medical or surgical history, does not smoke, drink or use drugs. Her prenatal labs were within normal limits. Day 1 of life: the infant was noted to have difficulty feeding. Day 2 of life: marked by a decrease in 58 grams from birth weight and worsening feeding problems including gagging and emesis of partially digested formula and mucous. The abdomen was soft, distended, and tympanitic without palpable bowel loops. The infant had 6 stools in this 24 hour period. Day 3 of life: brought an additional 122 gram weight loss from the previous day totaling 180 gram weight loss from birth. Feeding difficulties persisted and the abdomen became more distended. The infant was made NPO, and a #8 french nasogastric tube was inserted with return of 60 cc of air and mucous.

Discussion: As with most rare conditions in infancy, there are documented cases of Hirschsprung disease in adulthood. Based on a frequency of 1:5000, recognition of this disease by non-specialists is a challenge. Although most cases are successfully diagnosed, it would take some primary care physicians seeing 125 newborns per year for 40 years to have one case of Hirschsprung disease. In conclusion, there should be a high level of clinical suspicion when an infant presents with poor feeding and the failure to pass meconium in the first twenty-four (24) hours after birth since a definitive cure is available, early diagnosis is invaluable.
LETHARGY IN A 4 MONTH BOY RESULTING FROM BOTULISM:
A CASE REPORT

Carlos Barajas MD, Sauner Bernes MD - Pediatric Neurology

Abstract 131
Phoenix Children's Hospital/Maricopa Integrated Health System
Pediatrics

Introduction: Botulism is a neuroparalytic disorder caused by Clostridium botulinum. There are three naturally occurring forms of botulism and include food borne, wound, and infant botulism. Infant botulism typically affects infants less than 6 months of age. These infants are usually afebrile and the symptoms appear acutely. A symmetric, descending, flaccid paralysis is seen typically starting with the cranial nerves and extending to the somatic musculature. Common findings include constipation, loss of facial expression, poor feeding, a weak cry, loss of a gag reflex, generalized weakness, poor tone and ocular palsies. Ingested spores germinate in the intestine and produce a neurotoxin that blocks acetylcholine at the voluntary motor and neuromuscular junction. Incubation period can be anywhere from 3-30 days after exposure.

Case Report: A 4 month old boy with a past medical history significant only for gastroesophageal reflux who presented to the emergency room with a 2 day history of worsening oral intake and increased lethargy. There were no reports of any recent viral symptoms, fever, vomiting, diarrhea, rashes, or seizures. The rest of the review of systems was negative. He was fully vaccinated and no recent travel. In the ER he was noted to be listless and did not fight the lab draws or lumbar puncture. The rest of his physical exam was normal except for a persistent moaning cry. His initial glucose was 46mg/dl, but increased to 82mg/dl after a fluid bolus of D10 solution. He was given two fluid boluses with no significant clinical response. Initial labs were essentially normal including a CBC, urinalysis, electrolytes, and cerebral spinal fluid analysis. A Chest X-ray was negative. Concern arose for possible intussusceptions due to paucity of air seen on a KUB, but air enema was negative. He was admitted to the pediatrics ward for observation. There was concern for a possible metabolic disorder since the baby had recently started eating rice cereal prior to presentation. However, as complete metabolic panel and ammonia level were normal. A urine drug screen, ESR, CRP, and head CT were also normal. A repeat CBC was drawn and demonstrated only a very mild leukocytosis with a predominance of neutrophils, but no bandemia. He was subsequently given a dose of ceftriaxone to cover for a possible infectious etiology. Through the night, he began demonstrating respiratory insufficiency and increased lethargy. He required transfer to the pediatric intensive care unit where he was intubated. Botulism was suspected, but there was no report of honey ingestion. An electromyogram (EMG) with nerve conduction study was done and results were consistent with infant botulism. He was treated with Botulism Immune Globulin Intravenous (BIGIV) and ultimately had a good recovery after a few weeks of rehabilitation.

Discussion: Infantile botulism is classically thought to result from ingestion of spores found in honey. In this particular case, the family lived in an area that was still being developed. It was believed that the ingestion of the spores resulted from disruption of the spore filled dirt from the nearby construction. There were approximately four such cases in AZ in 2006, none of which resulted from honey ingestion.
EVERYBODY NEEDS IT, NOBODY WANTS IT, FEW PEOPLE GET IT: PROMOTING EFFECTIVE FEEDBACK IN A RESIDENCY PROGRAM

Matthew Barcellona, MD, Micah Olson, MD, Ryan Bode, MD

Purpose: Interpersonal and communication skills have been identified as ACGME core competencies and are essential to providing quality patient care and medical education. The ability to give and receive feedback is an important aspect of this competency and is a learned skill that can be taught, modeled, and practiced. The purpose of this study was to improve the quality, efficacy, and comfort level of giving and receiving feedback between residents in a pediatric residency program. Additional goals were to design a curriculum to improve resident feedback skills, improve resident productivity, enhance job satisfaction, and change the existing residency culture to one that expects residents to openly discuss expectations, performance, and progress.

Methods: For a six-month period, the Phoenix Children’s Hospital/Maricopa Medical Center Pediatric Residency Program (PCH/MMC PRP) incorporated a program-wide feedback curriculum that involved didactic teaching sessions of feedback techniques, role play, and scheduled time to give feedback in real-life settings. The system pivoted on the institution of “Feedback Friday,” in which senior residents and interns would formally meet three times during a month-long rotation. During these meetings, the seniors and interns set expectations at the beginning of the month, and discussed both positive and constructive areas of feedback as the month continued. The content of the feedback was based on the five core competencies endorsed by the ACGME. A thirteen-question survey was distributed to the residents at the beginning and end of the six-month period to assess the effectiveness of the curriculum in affecting resident attitude towards feedback, comfort level with giving and receiving feedback, and resident satisfaction with the program’s feedback curriculum. Resident responses were given on a rating scale from 1 to 5, with ‘1’ being “poor” and ‘5’ being “excellent.”

Results: 49 and 43 of the 90 residents in the PCH/MMC PRP completed the initial and follow up surveys, respectively. The average rating score of eleven questions increased from the initial survey to the follow up survey. The remaining two responses, both regarding the importance of feedback in residency, scored the exact same between surveys and were the highest average score (4.51 and 4.44). The lowest average scores (2.33 – 3.0) involved the comfort level and ability to give feedback to those considered to be superiors.

Conclusion: The results indicate that residents of all training levels were positively affected by the proposed feedback system. More specifically, our residents feel more comfortable giving and receiving feedback from colleagues, are better equipped to give feedback, and believe our program has improved addressing this area of interpersonal skills. While the overall scores improved, the pattern of responses did not change; residents consistently feel least comfortable and least equipped to give upward feedback (feedback to someone considered their superior). Residents consistently realized the importance of feedback in a collaborative work environment and in professional development. Overall, the PCH/MMC PRP “Feedback Friday” model has provided an improved framework for residents to learn, develop, and practice their skills on a regular basis.
A CASE REPORT: A PRESENTATION OF CROHN’S DISEASE MASQUERADING AS ACUTE APPENDICITIS

Toby Bond MD, Sarjita Shukla MD, David Brodkin MD

Introduction: Crohn’s disease is an idiopathic chronic immune mediated inflammatory disease of the GI tract. The pathologic hallmark of Crohn’s disease is discontinuous transmural inflammation of the bowel mucosa with granulomas. While most commonly affecting the small bowel, it can involve the entire GI tract from the mouth to the anus, as well as exhibit extra-intestinal manifestations. Given its wide array of clinical symptoms, Crohn’s disease can mimic a number of emergent conditions including acute appendicitis. In the case of an acute abdomen, it is important to differentiate between these two clinical entities as there are significant differences in their management. While an acute appendicitis is managed surgically, the initial management of Crohn’s disease includes bowel rest, immunomodulators, and antibiotics. Patients with Crohn’s disease are also predisposed to abscesses, fistula formation, and further exacerbation of their disease with any surgical intervention. When presented with an acute abdomen, a thorough history and close attention to imaging, and lab findings will help differentiate between an acute appendicitis and Crohn’s disease.

Case Report: A 17-year-old female presented to the emergency department with a 1 month history of sharp, intermittent periumbilical and right lower quadrant, abdominal pain. There was significant worsening over the week prior to admission. It was occasionally associated with episodes of vomiting. Other associated symptoms included a week history of diarrhea and tactile fevers, vomiting for 4 days, and anorexia for 24 hours. In the ED, the patient was afebrile and tachycardic but with otherwise stable vital signs. Physical exam was notable for periumbilical and RLQ abdominal pain with significant guarding and rebound tenderness. Lab evaluation showed mild microcytic anemia and elevated platelets without leukocytosis. Electrolytes, renal function, and urine analysis were all within normal limits, and a urine pregnancy test was negative. CT scan of the abdomen was read as a ruptured appendicitis with a thickened appendix, thickened adjacent bowel wall, and RLQ stranding. Acute appendicitis was suspected, however given the unusual history of chronic abdominal pain and lack of leukocytosis, surgery was deferred. The patient was admitted to the general pediatric service for observation and further evaluation. On further evaluation, the patient was found to have laboratory findings commonly associated with Crohn’s, including decreased albumin and an elevated ESR, and low cholesterol suggest a chronic process such as Crohn’s rather than an acute appendicitis. She was discharged home on prednisone, asacol, and flagyl with plans for an outpatient colonoscopy. Two weeks after discharge, the patient’s inflammatory bowel disease serologies were resulted and were consistent with Crohn’s Disease.

Discussion: Crohn’s Disease has the ability to imitate appendicitis. The above case illustrates this phenomenon as the patient presented with acute right lower quadrant pain and a CT scan showing inflammation localized to the peri-appendiceal region. When differentiating Crohn’s Disease from an acute appendicitis, it is essential to obtain a detailed history. One must elicit whether the patient exhibited any of the chronic symptoms associated with Crohn’s disease. Laboratory findings can also hold important clues. Lack of leukocytosis, anemia, hypoproteinemia, elevated ESR, and low cholesterol suggest a chronic process such as Crohn’s rather than an acute appendicitis. Accurate diagnosis is critical, especially since surgery can predispose a patient with Crohn’s disease to significant complications such as fistula or abscess.
EXERCISE-INDUCED ANAPHYLAXIS: A CASE REPORT
PAUL CLUFI MD, RADHA RISHI MD - ALLERGY/IMMUNOLOGY

Introduction: Exercise-induced anaphylaxis is an uncommon disorder in which occasional sessions of exercise result in various combinations of angioedema, urticaria, pruritis, wheezing, and hypotension. Urticarial eruptions associated with this condition are typically large, 1-1.5 cm lesions. While anyone can be affected, accomplished athletes with a history of atopy are most commonly affected. The disorder is not precipitated by increased body temperature such as that experienced while in a hot tub or with sweating alone as is seen with cholinergic urticaria. The disorder has two basic presentations, although other variations of the two exist. The first occurs while exercising after the ingestion of certain medicines or foods (such as NSAIDS, antibiotics, cold medicines, wheat, eggs, seafood, celery, peaches, grapes, pears, or poppy seeds). Ingesting the medicines or foods while not exercising has no adverse effects. The second form of the disorder occurs with exercise only, independent of food consumption. The pathophysiology is thought to be due to a lowered mast cell degranulation threshold caused by exercise through an unknown mechanism. The degranulation leads to a release of histamine, leukotrienes, and other mast cell mediators resulting in the characteristic allergic and anaphylactic symptoms. The prevalence is unknown, but is thought to be between 10-20% of all childhood anaphylactic reactions.

Case Report: J.V. is a 21 year-old female student who presented to the allergy/immunology clinic to establish care after moving from out-of-state. Her past history was significant for an episode of anaphylactic shock that occurred while jogging in 2003. While jogging, she became pruritic, developed large urticarial lesions over her entire body, and became short of breath. She was rushed to the emergency room and given epinephrine. In addition to this episode, she was hospitalized that year for two other similar episodes of anaphylaxis that took place during exercise. For the next two years, she had no problems other than severe anxiety from worries that the events would recur. In the summer of 2006, while playing soccer in a park in Austria, she experienced pruritis and subsequently broke out in an urticarial rash. She took prednisone immediately and the episode ceased. Her past medical history was positive for milk allergy as a child, as well as food allergies to peaches and pistachios. Both foods caused her mouth to feel itchy. She also suffered from allergic rhinitis. Her medications included loratadine for allergic rhinitis and escitalopram for anxiety. She also used clonazepam and quetiapine as needed for more severe anxiety attacks. Her physical exam was within normal limits with the exception of pale, boggy nasal turbinates. Allergy skin testing performed at the clinic revealed additional allergies to other tree nuts and peanuts. She was diagnosed with exercise-induced anaphylaxis.

Discussion: While rare, a significant portion of all childhood anaphylaxis is exercise-induced. Pediatricians should be able to recognize the disorder and begin appropriate initial preventative therapy prior to referral to an allergist. Treatment is primarily prophylactic with daily oral H1 and H2 antihistamines although their effectiveness in the prevention of exercise-induced anaphylaxis has not been well established. Prevention is the most effective treatment to date and can be attempted by avoiding the suspected food or drug 4–5 hours prior to exercise. If no food or drug is suspected to be involved, it has been suggested to avoid eating anything 4-5 hours prior to exercise. Patients should always wear a medical alert bracelet and carry 1-2 doses of injectable epinephrine with them. Patients with the disorder should always exercise with another person knowledgeable of their disorder and of the use of injectable epinephrine. The earliest signs are often pruritis or urticaria and exercise should be stopped at the first signs of a problem in order to avoid progression of the episode.
WHEN LUPUS ANTICOAGULANTS ANTICOAGULATE: SEVERE BLEEDING CAUSED BY HYPOPROTHROMBINEMIA-LUPUS ANTICOAGULANT SYNDROME IN AN ELEVEN-YEAR-OLD HISPANIC FEMALE WITH SYSTEMIC LUPUS ERYTHEMATOSUS

Jennifer Cox MD, Michael Henry MD, Paul Howard MD

Introduction: The antiphospholipid antibody syndrome (APS) is characterized by antibodies directed against plasma proteins bound to anionic phospholipids. These antibodies include anticardiolipin antibodies, anti-β2-glycoprotein I antibodies, and lupus anticoagulants. The syndrome may be primary or secondary, associated with autoimmune disease such as systemic lupus erythematosus (SLE). Clinical manifestations include thrombotic events (arterial or venous), thrombocytopenia, hemolytic anemia, livedo reticularis, and recurrent fetal loss. A rare complication occurs when a lupus anticoagulant directed against prothrombin is present in sufficient titers to cause hypoprothrombinemia, which may lead to severe bleeding.

Case Report: An 11-year-old Hispanic female with SLE presented to a pediatric emergency department (ED) with a one week history of worsening epistaxis, gum bleeding and bruising as well as headache, malaise, and refusal to bear weight. She had been diagnosed with SLE in Mexico about 10 months prior to presentation and started on prednisone, which was slowly tapered and discontinued after 5 months of treatment. About 1 week prior to presentation she was seen by a rheumatologist and started on acetylsalicylic acid (aspirin) secondary to concern for APS. Upon arrival to the ED, she was afebrile and tachycardic but normotensive. Physical exam was significant for pallor, palpable hepatosplenomegaly, and extensive bruising of the extremities, particularly her left posterior thigh. Initial laboratory evaluation was significant for 1) Coombs-positive Hemolytic Anemia (H/H=5.6/16.6, corrected reticulocyte count=3.2%), 2) Coagulopathy (PT=58, PTT >120) which did not correct with a 1:1 mix of normal plasma, 3) ESR >140, 4) ANA positive 1:640 homogeneous pattern, 5) Anti-dsDNA positive, and 6) Hypocomplementemia. She was admitted to the pediatric intensive care unit where she was evaluated by hematology and rheumatology. Given her coagulopathy and complaint of severe headache, a head CT was performed and was normal. Secondary to significant swelling of her left thigh, left lower extremity Doppler ultrasound and CT scan were performed, and both were normal revealing no thrombosis or hematoma. Treatment was started with high dose IV methylprednisolone and hydroxychloroquine. After further hematologic studies were obtained, she was given transfusions of fresh frozen plasma (FFP) and least incompatible packed red blood cells (PRBC), resulting in improvement in her coagulopathy and anemia. An extensive workup was initiated and findings were significant for 1) Lupus Anticoagulant positive, 2) Anti-Cardiolipin Antibodies elevated (IgG=82, IgM >60, IgA=35), 3) Anti-β2-Glycoprotein I elevated (IgG >150, IgM >150), 4) Prothrombin activity markedly decreased (3%). The patient showed continued improvement in her anemia and coagulopathy, and she was transferred to the general pediatric ward and transitioned from IV steroids to high dose prednisone. After a week of hospitalization, she was discharged home on high dose prednisone and hydroxychloroquine. Her final laboratory studies were remarkable for H/H=10.4/30.9, PT=16.7, and PTT=51.6.

Discussion: While the antiphospholipid antibody syndrome is more commonly characterized by thrombotic events, this case illustrates a rare and interesting phenomenon of severe bleeding associated with a circulating lupus anticoagulant directed against prothrombin. Lupus anticoagulants are commonly directed against prothrombin but seldom in sufficient titers to lead to hypoprothrombinemia. This patient also demonstrated a Coombs+ hemolytic anemia which further exacerbated her blood loss. Administration of FFP and least incompatible PRBC served to partially correct her coagulopathy and anemia, and treatment of her SLE targeted the underlying autoimmune process which had led to formation of the antiphospholipid antibodies.
ATYPICAL KAWASAKI DISEASE IN A 6-WEEK-OLD INFANT WITH FEVER:
A CASE REPORT
Keren Cedillos MD, Katherine Dueber MD, and Mark Rudinsky MD, Infectious Disease

Introduction: Kawasaki Disease (KD) is an acute vasculitic syndrome of unknown etiology. It was first described in Japan by Dr. Tomisaku Kawasaki in 1967. At that time, he described 50 children that presented with fever and a characteristic rash and it was thought to be a benign childhood illness. It was later discovered that children less than 2 years of age were dying from the disease as they appeared to be clinically improving or even after resolution of symptoms. Postmortem evaluation demonstrated the cause of death to be related to coronary artery aneurysms. Twenty to twenty-five percent of untreated children with KD develop coronary sequelae. Kawasaki Disease has now surpassed rheumatic fever as the leading cause of acquired heart disease in children under the age of 5 years in the United States. Therefore, the prompt recognition and treatment of Kawasaki Disease is essential for the prevention of coronary damage. The diagnosis is based on clinical symptoms including prolonged fever, rash, mucocutaneous involvement, extremity changes, lymph adenopathy, conjunctivitis and the development of coronary artery aneurysms. The peak age at onset is between 18-24 months of age. The risk of aneurysm is increased in patients who have fever for more than 14 days, are male, are younger than 1 year of age, have a hematocrit less than 35, serum sodium concentration less than 135 or a white cell count greater than 12,000. When children present outside of the typical age range or without typical symptoms the diagnosis may be delayed and therefore the risk for serious complications is increased. Treatment with intravenous immunoglobulin significantly decreases the risk of developing giant coronary artery aneurysms.

Case Report: BB is an 8-week-old female who initially presented to her pediatrician at 6 weeks of age with fever. She was admitted and a full sepsis work up was initiated including blood, urine and CSF studies and cultures. Empiric antibiotic therapy with ampicillin and cefotaxime was started. On hospital day number 2 she developed a rash that was describes as urticarial over the upper extremities, back, neck and face as well as target lesions on the back. The rash later progressed and was described as confluent, erythematous papules and macules on the extremities without central clearing. It was thought to be secondary to a drug reaction. Ampicillin was stopped and then later cefotaxime was also discontinued. The cultures were all negative except for a respiratory DFA for parainfluenza type 2. However, she continued to be febrile. The rash also persisted for several days despite discontinuation of the antibiotics. Further studies done to evaluate for occult infection included a bone scan, which was also negative. Repeat labs were notable for decreasing hemoglobin and hematocrit as well as thrombocytosis. The patient continued to be febrile on hospital day 12 when an echocardiogram was performed. It demonstrated significant dilation of the coronary arteries, including what appeared to be an aneurysm in the distal left anterior descending coronary artery, diffuse dilation of the right coronary system, as well as the circumflex coronary artery and left main coronary artery. The infant was treated with IVIG and aspirin after which her fever resolved. She was anti-coagulated with Lovenox and a repeat echocardiogram at the time of discharge did not show significant change from the previous study.

Discussion: This case represents Kawasaki Disease in an extremely young infant with fever and subsequent development of a non-specific rash. The age of the patient and the atypical presentation made the diagnosis difficult. At the time of diagnosis, the patient already had significant involvement of her coronary arteries. This case highlights the need to keep Kawasaki Disease in the differential diagnosis of any child with prolonged fever regardless of age or associated symptoms.
INCOMPLETE KAWASAKI DISEASE IN A 7 WEEK-OLD GIRL: A CASE REPORT

Darcey M. Winterland, M.D., Kipp Charlton, M.D.

Introduction: Kawasaki disease is one of the most common vasculitides of childhood. Criteria for diagnosis include fever for at least five days, bilateral nonexudative conjunctivitis, mucositis, rash, lymphadenopathy and extremity changes. Complications of Kawasaki disease include coronary artery aneurysm and myocardial dysfunction. Treatment is targeted at preventing such sequelae and includes IVIG and Aspirin. In children who do not meet the diagnostic criteria, incomplete Kawasaki disease should be considered. The term “incomplete” instead of “atypical” Kawasaki is preferred, as the features are not unusual but rather insufficient to meet specific criteria. Incomplete Kawasaki disease is more common in infants, especially those less than six months of age. These patients are at increased risk of cardiac complications. Prognosis for both types of Kawasaki disease is dependent upon cardiac involvement.

Case Report: A 7 week-old female was admitted from her pediatrician’s office for fever and fussiness for one day. Past medical history was unremarkable except for left dacrocystitis one week prior to admission. Review of systems was positive only for the fever and fussiness. There was no conjunctivitis, mucositis, rash, edema, or lymphadenopathy. Physical exam revealed a well appearing, fussy but consolable infant with a temperature 38.7ºC. Left eye had yellow discharge, but the conjunctiva was not injected. Right eye was normal. The remainder of the exam was normal. Rule out sepsis work-up was performed. CBC, UA and CSF studies were reassuring with normal WBC and platelets. Ampicillin and Cefotaxime were commenced. The following day, she developed an erythematous, maculopapular rash on her back with some target lesions. The rash was attributed to the Ampicillin, which was discontinued. The target lesions resolved on hospital day three. However, the rash persisted as erythematous, maculopapular lesions on her face, neck, trunk and extremities. No edema or induration of the extremities was noted, nor was there desquamation. Cefotaxime was discontinued after 48 hours of negative cultures. Fever, fussiness and rash persisted. Infectious Disease was consulted and believed the patient to have a viral infection. On day four, the patient continued to have fevers, irritability, rash and new onset nasal congestion. Repeat blood and urine cultures were obtained. ESR was 53 mm/hr. A chest X-ray was negative. Empiric Ceftriaxone was started and discontinued after 48 hours of negative blood, urine, stool and viral cultures. Rash and irritability resolved on day six. On day seven, a nasal culture grew Parainfluenza 2. Fever persisted. Repeat CBC revealed WBC 36.5 x 10^9/L, hemoglobin 8.8 gm/DL and platelet 887 x 10^9/L. ESR and CRP were 71 mm/hr and 15 mg/DL, respectively. Repeat blood culture and chest X-ray, abdominal X-ray, abdominal ultrasound and bone scan were negative. Additional bacterial, viral and fungal studies were negative. Repeat CRP on day eleven was 28 mg/DL. Echocardiogram performed on day twelve showed significant dilatation of the coronary arteries and a distal left anterior descending artery aneurysm. Incomplete Kawasaki disease was diagnosed. IVIG and high-dose Aspirin were started. Fevers resolved. She was discharged home on low-molecular-weight-heparin and Aspirin. Echocardiogram two months later demonstrated multiple fusiform coronary artery aneurysms without obstruction. She is maintained on the medications prescribed at discharge. Her risk of myocardial infarction is high.

Discussion: This case exemplifies the challenge in identifying Kawasaki disease in an infant. The patient’s age, lack of principal features of the disease and positive viral culture made the diagnosis challenging. Incomplete Kawasaki disease should be considered in any child with prolonged fevers. Echocardiogram is recommended for any infant less than six months of age with fever for more than seven days and laboratory evidence of systemic inflammation.
EPIDURAL TENOSYNOVIAL GIANT CELL TUMOR PRESENTING AS A LIMP IN AN 8 YEAR OLD CHILD: A CASE REPORT
Molly K. Haley MD, John R. Muhm Jr. MD, and Paul S. Dickman MD

Introduction: Synovial and tenosynovial giant cell tumors are common neoplasms of the hands and feet and only rarely arise within the axial skeleton. Additionally, these tumors most commonly occur in patients aged 30-50 years and are infrequently found in patients younger than ten years of age. These lesions are characterized as benign neoplasms with little risk of malignant degeneration or distant metastasis. Local recurrence is common, thought secondary to incomplete resection. The etiology of these tumors is unknown and pathogenic theories abound, the most widely accepted is that of a reactive or regenerative hyperplasia associated with an inflammatory process. These lesions typically present as painless masses and few neurological symptoms are described except for occasional numbness. We report a case in which an epidural tenosynovial giant cell tumor in the lumbar spine presented as areflexia, pain and progressive gait disturbance in an 8 year-old child.

Case Report: An 8 year-old male presented from Chinle with a two-month history of left leg pain and limp. His primary care physician had evaluated the patient several times in the preceding month and obtained plain films of his left lower extremity and bilateral hips as well as a CT scan of his left lower extremity in an attempt to further characterize a lytic lesion noted in the distal femur. He was transferred for possible biopsy of the left femur lytic lesion. Upon review of the images by pediatric radiologists the lesion was thought to be a benign fibrous cortical defect, and thus would not account for the patient’s leg pain or limp. The patient’s physical exam was significant for areflexia of the left lower extremity, significant gait abnormality in which the patient ambulated with left hip in flexion with inability to fully straighten his left hip or knee. He also demonstrated significant loss of lumbar lordosis. He had limited lumbar spine extension. He did not have any pain with palpation over any aspect of spine or lower extremities. Secondary to the patients concerning physical exam findings a pediatric orthopedic consult was obtained and MRI of the lumbar sacral spine was done which revealed a 4cm (cranial-caudal length) x 2cm (anterior/posterior diameter) homogenously enhancing epidural mass at the L2-L3 level displacing and compressing the involved nerve roots anteriorly. The lesion also was noted to extend posteriorly into the soft tissue between the L2 and L3 spinous processes. Bone scan was negative for other sites of involvement. Immediate neurosurgical consultation was obtained and the patient was taken to the operating room for urgent decompression of the involved lumbar spinal nerve roots. The patient underwent L3 laminectomy with gross total excision of the epidural neoplasm. Histopathologic diagnosis was consistent with tenosynovial giant cell tumor. The presence of tumor cells was noted at the margin of resection. The patient underwent a repeat MRI on post-operative day number one, which was satisfactory without residual tumor identified. The patient underwent physical therapy and neurologic rehabilitation for the remainder of his hospitalization and steadily progressed in his gait and strength training. At the time of discharge the patient’s deep tendon reflexes were symmetric bilaterally and he had sufficient strength to ambulate independently with a very mild left sided limp.

Discussion: In a patient with progressive gait disturbance and areflexia of the lower extremity a spinal cord lesion must be included in the differential diagnosis. After prompt neurosurgical decompression, physical therapy and rehabilitation the patient symptoms were relieved and neurologic functions regained. This patient was found to have a tenosynovial giant cell tumor of the axial skeleton, which is rarely described. The tumor resection margins were positive and therefore this patient will require periodic spinal imaging and neurosurgical consultation to address local recurrence.
PROLONGED VENTILATION AND HYPOTONIA LEADS TO A DIAGNOSIS OF CONGENITAL MYOTONIC DYSTROPHY: A CASE REPORT

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**Introduction**: Myotonic dystrophy is the most common form of muscular dystrophy among Caucasians with a prevalence estimated at 35 per 100,000 people and an incidence of one in 8000. Myotonic dystrophy is a multisystem disorder transmitted by autosomal dominant inheritance with variable penetrance. Myotonic dystrophy is caused by expansion of a CTG trinucleotide repeat in the gene DMPK. Patients with more than 50 CTG repeat size have the disease with manifestations. The CTG repeat size is >2000 in congenital myotonic dystrophy. Congenital myotonic dystrophy is characterized by hypotonia and severe generalized weakness at birth. Often presents before birth as polyhydramnios and reduced fetal movement. After delivery, the main features are severe generalized weakness, hypotonia, and respiratory compromise. Mental retardation is present in 50-60% of affected individuals. The cause of the mental retardation is unclear but cerebral atrophy and ventricular dilation are often evident at birth. Because feeding difficulties are common during the first two years of life, children with congenital myotonic dystrophy are at increased risk for aspiration and may benefit from feeding evaluation. Gastrostomy tube insertion is often necessary during the first six months of life to maintain nutrition and prevent aspiration pneumonia. Infants with congenital myotonic dystrophy often require continuous ventilatory support. Need for support longer than four weeks usually indicates a poor prognosis for survival. Mortality from respiratory failure is high.

**Case Report**: A female was born at 32 week gestation to a 20 year old gravida 1, para 0 woman with an unremarkable past medical history and family history. Pregnancy was complicated by decreased fetal movement, an elevated maternal serum AFP, and polyhydramnios. Ultrasound during the pregnancy showed no stigmata of Down syndrome. The patient was born via C-section secondary to premature rupture of membranes. Apgar scores at one minute were one and one at five minutes. Patient was cyanotic without improvement of heart rate requiring immediate intubation. Patient was found to be hypotonic for age with poor swallowing at birth. Radiographs showed a right diaphragmatic eventration. Head ultrasound and MRI showed dilated lateral ventricles. The hospital course for this infant included prolonged ventilation. One month after birth, the patient had undergone several trials of extubation which were unsuccessful always requiring reintubation. By this time, testing for myotonic dystrophy confirmed the diagnosis with CTG repeat size of 1350. With the diagnosis confirmed, patient underwent a right diaphragmatic plication, tracheostomy placement, and a gastrostomy tube placement. Approximately, one week after the gastrostomy tube placement, patient passed away from sepsis secondary to a gastric perforation and diffuse necrotizing enterocolitis.

**Discussion**: Without any significant family history, congenital myotonic dystrophy can be difficult to diagnose without a high clinical suspicion as is demonstrated by this case. While some signs and symptoms are subtle like polyhydramnios during pregnancy and dilated ventricles by head imaging, this patient’s whole clinical picture pointed toward congenital myotonic dystrophy with the prolonged ventilation, hypotonia, and feeding difficulties. Interestingly, this patient’s CTG repeat size was only 1350 when most cases of congenital myotonic dystrophy’s CTG repeat size is >2000.
PERSISTENT HYPOGLYCEMIA IN A 12 MONTH-OLD GIRL WHO PRESENTED WITH ATAXIA: A CASE REPORT

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Introduction: We report a case in which acute onset of ataxia in a 12 month old female led to a diagnosis of delayed onset of persistent hyperinsulinemic hypoglycemia of infancy (PHHI). PHHI, also referred to as primary hyperinsulinism, nesidioblastosis, or familial hyperinsulinism, is the most common cause of neonatal hypoglycemia persisting beyond the immediate neonatal period. Although the majority of cases are sporadic, both autosomal recessive and dominant mutations have been identified in several cases. In either case, the persistence of hypoglycemia stems from dysregulation of insulin secretion. The hallmark of PHHI is persistent hypoglycemia and inappropriately high concentrations of insulin. In PHHI, hyperinsulinemic states manifest as hypoglycemia, low serum free fatty acids, and low serum ketones. The lack of available energy substrate for the brain may result in serious long term neurological sequelae such as mental retardation and permanent brain damage.

Case Report: A 12 month old female presented to a medical facility with a 1 week history of truncal instability, as well as, unsteady, wide based gait associated with multiple falls. Subjective fevers, decreased appetite, and decreased energy were also noted. There were no mental status changes or other neurological deficits noted. Upon presentation, the blood sugar was found to be 23. Dextrose infusion was administered and the patient was transferred to Maricopa Medical Center where serum glucose was 26. Continuous dextrose infusion was started. The admission exam revealed a playful, appropriate 12 month old female. Cranial nerves, DTRs, sensation were grossly intact. Pt demonstrated wide based, ataxic gait with rare truncal ataxia. The blood sugars were stabilized in the normal range with a glucose infusion rate of 6.3 mg/kg/min. The patient’s ataxia resolved gradually within 2 to 3 days of normal serum glucose. The Endocrine service was consulted. During the hospitalization, 3 different hypoglycemic episodes were observed, at which time we obtained cortisol, UA, IGFBP-1, and Insulin levels. With each hypoglycemic episode, the patient’s glucose level fell between 35 and 40. Cortisol, IGFBP-1, and the UA for ketones were within normal limits at hypoglycemic state. The Insulin levels, however, were elevated at 7, 5, and 5 respectively at 3 different hypoglycemic states. The diagnosis of Persistent Hyperinsulinemic Hypoglycemia of infancy-late onset was made. On the 5th hospital day, the patient was started on standard dosing of Diazoxide (10mg/kg/day). Dextrose was quickly weaned over the next day and the patient remained euglycemic. The patient was discharged home to continue Diazoxide, accuchecks, and endocrine follow-up.

Discussion: Primary hyperinsulinism must be considered in cases of persistent hypoglycemia. In this case, the acute neurological deficits seen on presentation were a symptom of the patient’s hypoglycemia. Excessive insulin production by the pancreas can be problematic to treat and difficult to determine if the hyper-productive Beta cells are found throughout the pancreas or in a distinct locus. Diazoxide inhibits insulin release of insulin from the pancreas, but is not always effective. Surgical treatment must then be explored. Our patient has had over 2 months of normal serum glucose values and has remained asymptomatic on standard dosing of daily Diazoxide.
IDENTIFICATION OF NOVEL AUTISM SUSCEPTIBILITY LOCI USING SNP MICROARRAY-BASED GENOMIC COPY NUMBER ANALYSIS

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Purpose Autism is a complex neurodevelopmental disorder estimated to affect 1 in every 150 children in the US. It is a heterogeneous, multifactorial disorder with strong heritability, indicating that robust genetic influences exist. Prior linkage-based analyses have found evidence for multiple autism susceptibility genes. In addition, rare single gene mutations that cause autism have been identified. The present study describes the adaptation of microarray genomic copy number analysis (CNA), a high-resolution chromosome-scanning technology, to identify novel autism loci and confirm earlier findings derived from linkage and sequencing studies.

Methods An international sample of multiplex families in which two or more first degree relatives had autism was genotyped using Affymetrix 10K Single Nucleotide Polymorphism (SNP) Genotyping Microarrays. The copy number ascertainment package within DChipSNP, a free-access microarray analysis platform, was then utilized to generate genomic copy number data. This preliminary data was used to identify regions of chromosomal amplification or deletion that were shared by two or more family members with autism. Real-time PCR was then used to confirm that identified regions of interest represented true positive genomic copy number variants associated with autism.

Results Multiple amplifications and deletions associated with familial autism were identified by CNA. Included among these were several previously described genomic copy number variants, such as dup(15) (q11-13) and del(22) (q11). In addition, a number of loci first implicated in the pathogenesis of autism by linkage analyses were also identified using CNA. Finally, several novel genomic loci were identified, including a strong association with del (17) (p12).

Conclusion The present study demonstrates the utility of array-based copy number methods to identify critical regions of the genome associated with autism. Further analyses of these critical regions may result in identification of genes and pathways critical to the development of autism, and may ultimately contribute to improved diagnosis and treatment of this disorder.
NEUROLOGIC IMPAIRMENT IN ROCKY MOUNTAIN SPOTTED FEVER: A CASE REPORT

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Introduction: Rocky Mountain Spotted Fever (RMSF) is a tick-borne, small-vessel vasculitis commonly characterized by nonspecific symptoms and a maculopapular or petechial rash presenting 5-7 days after exposure. Although rash is often correlated with RMSF, up to 20% of patients are “spotless” and have severe disease. Prominent multisystem organ involvement and even death may occur in rare cases. In severe RMSF, significant long-term sequelae are common and may include neurologic, bladder/bowel incontinence, cerebral, vestibular and motor dysfunction. This case demonstrates RMSF masquerading as a CNS impairment comprised of lower extremity weakness, areflexia, headache, neck and back pain.

Case Report: A 17-year-old, otherwise healthy female, presented to another hospital with a two-week history of intermittent fevers, recurrent headaches, photophobia, neck/back pain and a waxing/waning maculopapular rash of her left wrist, forearm and chest, following a tick bite the week prior. An LP was performed and she was diagnosed with aseptic meningitis. Despite treatment, symptoms worsened and evolved into lower extremity weakness, peripheral sensory deficit, and unrelenting headaches. After 14 days, the patient was discharged home although she remained symptomatic with headache and weakness. Three weeks later, she presented to an outside ED with right hip pain after a syncopal episode and 15-minute period of LOC. After a negative hip x-ray, the patient was transferred to MMC. Additional studies were normal, including ultrasound of abdomen/pelvis, head CT, UDS, CMP and CBC. Upon admission the patient had point tenderness over the lower thoracic/upper lumbar spinous processes, absence of downward-going toes with Babinski, bilateral lower extremity areflexia and decreased (4/5) strength and diminished temperature/pain sensation of the right foot to mid-calf. She was noted to have urinary incontinence, limited neck movement by pain, decreased rectal tone, and right hip pain on palpation and movement. Due to the neurologic findings, a MRI of the head and entire spine were obtained and read as normal. A repeat LP was normal, except for a mildly elevated opening pressure of 21 cm H2O. ID was consulted. Mycoplasma, EBV and West Nile Virus titers, CSF HSV and Enterovirus PCR, and PPD skin test were all negative except EBV IgG, thus indicating past exposure. RMSF, Lyme Disease, and Cocci titers/complement fixation test, CSF viral culture, throat and rectal viral swabs for polio and CSF oligoclonal bands were all pending. CPK, Amylase, Lipase, EKG, B-HCG, CRP, and ESR were all essentially normal. A psychiatry consult was placed to evaluate for psychosomatic causes, and physical therapy was involved to encourage conditioning. Over the next few days, she markedly improved and was discharged with a diagnosis of myositis/myelopathy of unknown etiology. Pending labs were all normal except for RMSF IgM of 2.0, a low positive result. CSF oligoclonal bands were also positive with a normal IgG index, consistent with an inflammatory mediated response. The patient was treated for RMSF with 7 days of Doxycycline as an outpatient. Repeat RMSF titers were not obtained, but on subsequent interview, she reported resolution of symptoms. However, headache and neck pain have recurred over the past month, prompting head MRI in 2 weeks.

Discussion: An outbreak of 16 cases of RMSF have been reported in rural eastern Arizona from 2002-2004 due to the brown dog tick vector, which is different from the more commonly known American dog tick vector of the eastern/south central United States. This patient was coincidently from the San Carlos area of eastern Arizona. A presumptive diagnosis of RMSF was made based on a history of a tick bite, constellation of symptoms and IgM positivity. According to the reference lab, IgM sensitivity is 100% and specificity is 93.8%. On further followup a repeat IgM and IgG will be obtained to confirm infection. In any case of suspected RMSF, prompt treatment with Doxycycline should be instituted to afford the best outc
A CASE REPORT OF THE MANAGEMENT OF A PEDIATRIC PATIENT WITH METABOLIC SYNDROME

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Introduction: Metabolic syndrome is well described in adults and consists of central adiposity, hypertension, hypertriglyceridemia, glucose intolerance and low HDL cholesterol. The prevalence of metabolic syndrome in moderately obese subjects has been reported to be 38.7%; in severely obese subjects the prevalence is close to 50 percent (NEJM 2004). Metabolic syndrome in children is an increasing problem as the obesity epidemic worsens. There are currently no published guidelines for screening and management of children with metabolic syndrome. However, there are higher success rates with nutritional intervention and exercise than with dietary counseling alone (Pediatrics 2004). In addition, family based behavioral modification enhances weight loss and results in better maintenance of weight.

Case Report: An 8 year and 4 month old Hispanic male presented to metabolic clinic due to concerns for rapid weight gain and increased appetite. The mother described that weight gain has been a problem for this child since early childhood, but she believed it has worsened over the last year. His diet included few fruits and vegetables, several glasses of juice and soda daily, and fast food several nights per week. He is described as snoring at night. The child lives with his mother and younger sister. He has a family history of type 2 diabetes, thyroid problems, hyperlipidemia, and early cardiovascular disease. In addition, there are multiple family members with weight problems. On exam, the patient was found to be in the 95th percentile for height and greater than the 95th percentile for weight. His BMI was 28.5 Kg/m2 (much greater than the 95th percentile). His blood pressure was greater than the 99th percentile for height at 138/69. The patient was noted to have thick dark brown ruggated acanthosis nigricans on neck exam, but the exam was otherwise normal. The patient was assessed by the metabolic clinic’s multidisciplinary team consisting of a pediatric endocrinologist, a dietitian and a social worker, all who utilize motivational interviewing. The readiness stage of both the patient and the family was assessed.

Intervention: Through the motivational interviewing, the patient was encouraged to pick one specific goal to concentrate on until the next visit. In addition, the family was provided with information regarding healthy eating and ways to increase exercise. Initial labs indicated the patient had hyperlipidemia (total cholesterol 218, triglycerides 181, LDL 128, HDL 54). Fasting glucose and insulin and liver enzymes were normal. Thyroid function tests were normal.

Follow up: The patient was initially lost to follow up, but did schedule a follow up visit approximately 9 months after the first visit. The patient had decreased his juice and soda intake. In addition, the family made changes in their diet and portion sizes. His weight had increased 6 kilograms and his height had increased 7 centimeters, which decreased his BMI to 28 Kg/m2. His blood pressure improved to 122/74, which was in the 95th percentile for age. His lipids were all improved: cholesterol decreased to 182, LDL decreased to 107 and triglycerides decreased to 134. The patient has continued on the program and will be seen in follow up more frequently. Possible future goals include increasing physical activity, encouraging five fruits and vegetables a day and the implementing the use of the hunger scale.

Discussion: This patient demonstrates the challenges associated with pediatric metabolic syndrome. It is notable these children often have co-morbidities including sleep apnea, depression, polycystic ovarian syndrome, pseudotumor cerebri, steatohepatitis and orthopedic problems in addition to the components of the metabolic syndrome. The management of these patients can be challenging as the success of the patient truly depends on the readiness of the patient and family and the willingness of the family to participate in adopting a healthy lifestyle.
SUDDEN INFANT DEATH SYNDROME (SIDS) PREVENTION AND THE NEWBORN NURSERY: ARE NURSERIES EDUCATING PARENTS AND ROLE MODELING GOOD PRACTICES?

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PURPOSE: Since the first American Academy of Pediatrics (AAP) Back to Sleep Campaign (1994), SIDS deaths have decreased dramatically. Updated AAP recommendations (2005) state that non-supine sleep positions, soft bedding, and parent-infant bed sharing increase the risk of SIDS, but that pacifier usage provides a strong protective effect. The newborn nursery is the first place that parents are educated about SIDS prevention while learning to care for their newborn. This study was done to determine if Arizona term nurseries provide parent education about SIDS and engage in patient-care practices in accordance with the 2005 AAP SIDS prevention recommendations.

DESIGN/METHODS: We mailed surveys to the nurse manager of all Arizona hospitals that provide newborn deliveries regarding their nursery’s role in parental education and their adherence to AAP recommendations on SIDS.

RESULTS: 95% (40 of 42) responded. 90% of responding facilities were staffed mainly by pediatricians. 88% deliver more than 500 babies per year. Most infants delivered were Latino and insured by Medicaid. 63% were aware of updated AAP recommendations on SIDS.

Parental Education: 90% of nurseries provided information on SIDS. 83% had handouts/videos. 40% of nurseries had an informational class for mothers and 75% of them specifically addressed SIDS in the class.

Sleep Positioning: 70% of nurseries placed newborns supine only, and 65% had a policy about sleep position. Of the 25 nurseries aware of updated AAP recommendations, 24% placed newborns in positions other than supine.

Soft Bedding: 48% prohibited soft bedding/objects in the bassinette, and 15% of nurseries had a policy that addressed soft bedding/objects. Of nurseries aware of AAP recommendations, 44% permitted soft bedding/objects in bassinettes.

Bed Sharing: 78% did not allow bed sharing, and 44% had policies that addressed this issue. 16% of nurseries aware of AAP recommendations allowed bed sharing.

Pacifiers: 90% provided pacifiers to newborns. 4% of nurseries aware of the AAP stance on pacifiers and SIDS did not provide pacifiers.

33% (13 of 40) of all hospitals surveyed followed all the above AAP recommendations.

CONCLUSIONS: While most nurseries in this study provided parental education on SIDS prevention, many did not follow updated AAP recommendations. Most nurseries were aware of the AAP recommendations, yet many still did not follow them. Arizona's findings may be pertinent to other States.
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RECURRENT ABDOMINAL PAIN IN A 12 YEAR OLD BOY AS A MANIFESTATION OF HEREDITARY ANGIOEDEMA: A CASE REPORT

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Introduction: Hereditary Angioedema (HAE) is an autosomal dominant condition with variable penetrance. Sporadic cases with new mutation are also seen. Prevalence is 1/150,000 in western countries. There are three types of HAE. Type I is low plasma level of normal C1 esterase inhibitor (C1-INH) protein. Type II is normal or elevated level of a dysfunctional C1-INH. Type III is an estrogen-dependent inherited form of angioedema occurring exclusively in women with normal functional and quantitative levels of C1-INH. C1-INH deficiency results in an uncontrolled activation of classic complement cascade causing clinical manifestation of recurrent nonpruritic, nonpitting edema of the skin and mucous membrane. Laryngeal edema may cause life-threatening asphyxia. Hypotension, tachycardia or hypovolemic shock can result from extravasations of fluid. Central nervous system involvement may cause headache, hemiparesis or seizure due to focal cerebral edema. Gastrointestinal manifestations include abdominal pain, nausea, vomiting, diarrhea, transient ascites and partial bowel obstruction mimicking acute abdomen. The episodes usually develop over several hours and resolve within 1 to 4 days. This case report is about a 12-year-old boy with recurrent abdominal pain caused by HAE without any other system involvement.

Case report: A 12-year-old male was admitted to our hospital with increasing abdominal pain and vomiting. This was his 3rd hospitalization for abdominal pain in a 6-month period. Initial clinical presentation with abdominal pain mimic acute abdomen and include subsequent appendectomy for management but following pathological report was negative for appendicitis. A diagnosis of functional abdominal pain was made after extensive workups done in previous hospital admissions. Work up included normal celiac screen, IBD serology, serum amylase, lipase, CBC, CMP, CRP and ESR. Stool studies were negative for blood, giardia and clostridia difficile toxin. Initial abdominal CT scan showed marked mucosal edema in distal duodenum and proximal jejunum “with a stack of coins’ appearance to the mucosa. Subsequent CT scan 4 days later showed improvement of mucosal inflammation. A follow up CT scan 1 week later showed thickening of colonic mucosa and resolution of small bowel mucosal edema. An EGD (Esophago-gastro-Duodenoscopy) and colonoscopy with biopsy as well as capsule endoscopy was within normal limit. An Upper GI small bowel follow through showed mucosal edema of distal duodenum and proximal jejunum. During this admission patients recurrent abdominal pain associated with vomiting and CT scan findings with focal segment of small bowel thickening or inflammation and ascites gave the suspicion of HAE as the cause. Further inquiries reveal his initial abdominal pain 6 month back started approximately one week after a dental procedure. Again his CBC, CMP, CRP, amylase, lipase were normal. But normal C3 and C2 with low C4, C1-INH , functional C1 inhibitor and total complement level gave us the diagnosis of HAE. Patient was discharged home to be seen by allergy-immunologist on the day of discharge.

Discussion: Isolated abdominal manifestation of HAE is rare but should be considered in patient with recurrent abdominal pain particularly when radiological evidence of bowel wall thickening/inflammation and ascites. This will avoid unnecessary investigations and ensure prompt specific effective treatment.
GENDER INFLUENCES ON MEDICAL STUDENTS CHOOSING OB GYN AS A CAREER

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Purpose: According to the National Resident Matching Program (NRMP), the number of OB GYN positions filled in the match has decreased from 95% in 1998 to 91.2% in 2003, indicating a need to strengthen recruiting into the OB GYN specialty. In addition, the percentage of OB GYNs who are male has declined: from 84% in 1975 to 26% in 2002. This study was designed to determine whether medical students are being encouraged or discouraged to enter the field of Obstetrics and Gynecology based on their gender and to identify factors that influence students’ career choice in OB GYN. In addition, methods for attracting more men into the field of OB GYN were also examined.

Methods: A prospective, cross-sectional, longitudinal study of the class of 2007 of University of Arizona Medical School was conducted utilizing an internet-based survey. Surveys were conducted in 2003, 2004, and 2005. In 2005 a focus group was also conducted in order to expand on the questions previously addressed by the survey. Linear regression, unpaired t-tests, and analysis of variance were used to compare responses by gender.

Results: There were a total of 299 responses across three years from 233 different students. Seventy-one percent of respondents from Year 1 (131/184) were lost to follow-up at Year 2. Seven percent (12/184) completed all three surveys. Male respondents were significantly more likely to be denied the opportunity to interview/examine a patient than female respondents (80% v 5%). There was no significant difference in perception of encouragement or discouragement to enter the field of OB GYN by gender. Physicians were the largest source of both encouragement and discouragement in the choice of OB GYN as a specialty. The opportunity to perform surgical and other types of procedures was significantly more important to male than female respondents when choosing a specialty. Three prominent themes emerged from the focus group. There was an impression that call obligations in residency would be similar to those when in practice. Malpractice issues were also a significant deterrent. Finally, focus group participants stressed the need for information early in the course of their medical training.

Conclusions: In order to attract more men into the field of OB GYN, an approach emphasizing the surgical and technical aspect of the specialty needs to be implemented. Approaching medical students early in their career with realistic representations of the practice of obstetrics and gynecology might be a useful strategy.
THE IMPACT OF INDUCTION OF LABOR ON CESAREAN DELIVERY AND NEONATAL MORBIDITY

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Purpose: Many studies have found a higher rate of cesarean delivery (CD) associated with induction of labor (IOL) versus spontaneous labor for a given gestational age. However, the more relevant choice for the practitioner is that between IOL and expectant management. Caughey et al. recently found that IOL may not increase the risk of CD when compared to expectant management. We re-examined this finding for a larger range of gestational ages. The results will be useful in counseling women who request elective IOL, as this is becoming increasingly common.

Methods: Our data source will be birth certificate information from the State of Arizona for the calendar year of 2005, including approximately 97,000 births. Women were excluded who received IOL due to indications such as underlying maternal disease, previous cesarean delivery, diabetes, and those with fetal anomalies. Institutions with less than 100 deliveries per year were also excluded, leaving a total of approximately 65,000 cases in the analysis. Women with pre-eclampsia and eclampsia were included, as these may be avoided by IOL. The primary maternal outcome was the rate of CD, and this was also analyzed by parity. The neonatal outcomes included any newborn intensive care received, respiratory distress syndrome, meconium aspiration syndrome, assisted ventilation, seizures, and birth injuries. A log binomial regression was used to estimate the relative risk for CD with IOL compared to expectant management. Neonatal outcomes were compared across the two groups.

Results: After controlling for race, insurance status, educational level, and adequacy of prenatal care, we found that the risk of CD associated with IOL approximated a U-shaped distribution with a nadir at 39 weeks of gestation. At 38 and 39 weeks of gestation, IOL was associated with a lower rate of CD (relative risk of 0.88 and 0.84, respectively) than expectant management. At 40 and 41 weeks of gestation, IOL was associated with a higher rate of CD (relative risk of 1.25 and 1.34, respectively). The rates of CD for IOL at 36 and 37 weeks of gestation were also higher than expectant management, but these results did not reach statistical significance. The results of the neonatal outcomes and maternal outcomes by parity are pending final analysis.

Conclusions: Patients with uncomplicated pregnancies undergoing IOL have the lowest risk of CD at 38 and 39 weeks of gestation, and this risk is less than that associated with expectant management. After 39 weeks, the rates of CD rise for both IOL and expectant management with the latter having the lower rate of CD. Providers may find this data useful in counseling women who request elective IOL and desire to avoid CD.
PRENATAL DIAGNOSIS OF A BLADDER DIVERTICULUM 
CAUSING BLADDER OUTLET OBSTRUCTION

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Introduction: When an enlarged fetal bladder is seen on ultrasound, differential diagnosis includes posterior urethral valves, bladder diverticulum, megacystis-microcolon, and cloacal anomaly. All of these can cause bladder outlet obstruction, leading to renal failure and pulmonary hypoplasia. Posterior urethral valves are the most common cause of bladder outlet obstruction, while bladder diverticula have rarely been diagnosed prenatally.

Case Report: We present a case diagnosed at 29 weeks gestation with specific ultrasound findings, which may assist in prenatal diagnosis of a bladder diverticulum.

Discussion: Being able to determine the etiology for an enlarged bladder is important in order to determine the prognosis and whether prenatal intervention is appropriate, thus, preventing serious perinatal morbidity.
THE RELATIONSHIP OF MODE OF OXYGENATION
AND DEVELOPMENT OF IVH IN THE NEWBORN

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Purpose: Intraventricular hemorrhage (IVH) is a significant cause of neurologic morbidity in preterm infants and is associated with a high mortality rate. Previous studies have suggested multiple risk factors for development of IVH, but few have examined the length and type of postnatal respiratory treatment on the development of IVH. The purpose of this study was to examine the relationship between different modes of respiratory therapy and the risk of developing IVH.

Methods: linked data set consisting of 372,276 Arizona birth certificates (1994-98) and 19,890 infants enrolled in a high risk perinatal program provided the source data. We identified 104 cases of grade III or IV IVH which were compared with 416 controls without high grade IVH. The relationship of respiratory therapy with case status was determined using logistic regression to control for potential confounding variables.

Results: There was a significantly increased risk of grade III or IV IVH associated with jet ventilation (p<0.001). After adjustment for confounding variables this remained a risk factor, odds ratio (OR), 95% confidence interval (CI) 2.32 (1.07-5.03). When conventional respiratory therapies were compared to no therapy, in the multivariate model only hood oxygen showed an association (protective OR .117 (.015-.917)) while more intense therapies showed no significant association. Surfactant use did show a significant association with IVH in the multivariate analysis (p<0.001).

Conclusions: In this analysis, jet ventilation posed a possible significant risk to the development of IVH in the newborn. Premature infants receiving jet ventilation had a two fold risk for development of a grade III or IV IVH. Further study of impact of mode of respiratory treatment in neonates needs to be considered.
Purpose: Traditionally, the total cesarean delivery (CD) rate has been the most commonly used quality measure for maternity services. The increasing safety of CD, and the controversy over vaginal delivery after CD versus repeat CD suggest that a more refined measure is needed. The nulliparous term singleton vertex (NTSV) CD rate has been proposed as a purer measure of maternity care quality. We compared NTSV CD rates at Arizona hospitals, and identified individual- and institutional-level variables that predict whether or not an NTSV CD occurs.

Methods: Our data source was birth certificate information from the State of Arizona for the calendar year of 2005, including approximately 97,000 births. Births that were not NTSV were excluded, as well as births at institutions with less than 100 deliveries during 2005, leaving a total of approximately 30,000 cases (representing 40 Arizona hospitals) in the study file. The primary outcome was whether or not a CD occurred. First, NTSV CD rates were compared across hospitals using statistical process control methods. Next, six individual level variables and three institutional level variables were entered into a binomial logistic regression model as potential predictors of the occurrence of NTSV CD. The intraclass correlation coefficient was .01, obviating the need for a hierarchical modeling approach.

Results: Major variations in NTSV CD rates were found across hospitals. For example, the NTSV CD rate at 20 Phoenix area hospitals ranged from 10.1% to 31.5%. The following individual characteristics were associated with an increased probability of an NTSV CD: Mother’s age, hypertension during pregnancy or eclampsia, chronic hypertension, the presence of a congenital anomaly, and birth weight. The following institutional characteristics were associated with a decreased probability of an NTSV CD: the percentage of government paid births, the percentage of births in which labor was induced, and the volume of NTSV deliveries.

Conclusions: The NTSV CD rate is a useful measure for purposes of monitoring and improving maternity service quality. There is wide variation in these rates among Arizona hospitals. Some of this variation can be explained by both individual- and institutional-level characteristics. The predictive model developed here can be used to statistically adjust hospital-to-hospital comparisons of NTSV CD rates, refining these comparisons even further.
RANDOMIZED TRIAL OF INDUCTION VERSUS EXPECTANT MANAGEMENT IN POORLY-DATED POST-DATES PREGNANCY

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Phoenix Integrated Residency in Obstetrics and Gynecology

**Purpose:** Previous prospective trials of post-dates pregnancy have shown that induction of labor at 41 weeks is superior to expectant management. However, these trials included only well-dated pregnancies with reliable gestational ages. Poorly-dated presumably post-dates pregnancies include women who are actually at earlier gestational ages and are therefore not at increased risk for complications. Unnecessary inductions of labor in these patients likely incur higher costs of care and waste labor room resources without improving outcomes. This pilot study was designed to determine the optimal clinical management for poorly-dated post-dates pregnancies.

**Methods:** A prospective, randomized, controlled trial was conducted enrolling forty-nine women with poorly dated post-dates pregnancies. At 41 weeks of gestation by best clinical estimate, participants were randomly assigned to either induction of labor or expectant management including antenatal testing. Outcomes measured include rates of operative delivery, maternal and fetal morbidity and mortality, and lengths of hospital stay.

**Results:** There was a reduction in the average time from admission to delivery in the expectant management group compared to the induction group (13.7 vs. 19.9 hours, p = 0.052). Operative delivery rate was similar (30.4% expectant management vs. 26.9% induction, p = .786). There were no other statistically significant differences in maternal or fetal morbidity.

**Conclusion:** In contrast to the management of well-dated post-dates pregnancies, expectant management of poorly-dated pregnancies between 41 and 42 weeks appears to be a safe and preferable alternative due to a reduction in inpatient length of labor, without a large difference in incidence of operative delivery.
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QUANTIFERON-TB GOLD FOR DIAGNOSING LATENT MYCOBACTERIUM TUBERCULOSIS IN PREGNANCY

Melissa Mendez, MD, Lora Nordstrom, PhD BSN, Kathleen Mathieson, PhD, Sherry Gamble, MS, 1 Maricela Moffitt, MD, 2 Dean Coonrod, MD MPH

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1Maricopa Integrated Health System Microbiology Laboratory
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Purpose: The quantiFERON-TB GOLD (QTB) whole blood test for latent tuberculosis infection (LTBI) has a number of advantages over the traditional TB skin test (TST). Patients need not return to the clinic to have their TST read and in addition, unlike the TST, the QTB does not produce false-positive results in patients who have had a Bacille Calmette Guerin (BCG) TB vaccine. The BCG vaccine is widely used in Mexico, making the QTB particularly useful in Mexican immigrant populations. Despite the advantages to the QTB test, it has not been tested in pregnant women. This study was designed to determine the agreement between the TST and the QTB assay in pregnant women. BCG status was also collected to determine how it affected the level of agreement between the two tests.

Methods: Pregnant women arriving for their first prenatal visit at the Women’s Clinic at Maricopa Medical Center and three different Family Health Care Centers were recruited to participate in this study. Complete data sets were obtained for 50 women. Study participants completed a questionnaire including basic demographic and pregnancy information and risk factors for LTBI. A TST was placed and blood was drawn for the QTB assay. When the participants returned to the clinic for their TST reading, they were given a gift certificate. Agreement between the TST and QTB assays were computed using coefficients.

Results: The average age of the women was 24. 24% (12) were nulliparous, while 76% (38) were parous. 83% (41) of the participants were born in a country other than the US and 40 of the 41 were born in Mexico. The most common risk factor for LTBI was moving to the US within the last 5 years: 44% (22). 20% (10) of the participants had no LTBI risk factors. 52% (26) of the participants were BCG positive. Agreement between the TST and the QTB was low: (81%, =.277). Of those participants who had discordance between the TST and QTB results, a large percentage were BCG positive: TST/QTB in-tube: 70% (7).

Conclusions: The low agreement between the TST and the QTB in this study is likely due to the high percentage of BCG-positive study participants. Since the QTB assay does not react to the presence of the BCG antigen, the use of the QTB assay in this population might be advantageous.
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**BILATERAL OVARIAN REMNANT SYNDROME: A CASE REPORT**

Renju Raj MD, Michael Hibner MD, PhD

**Introduction:** Ovarian remnant syndrome (ORS) is defined as pelvic pain in the presence of residual ovarian tissue after salpingo-oophorectomy. It is an uncommon complication of difficult bilateral oophorectomy. The gold standard in diagnosis is the histopathologic confirmation of ovarian cortical tissue at surgical excision in a patient with a history of oophorectomy. Risk factors associated with ORS include a history of endometriosis, pelvic inflammatory disease, multiple previous abdominal or pelvic surgeries, and pelvic adhesive disease. Blunt surgical dissection of ovarian adhesions from attached surrounding structures increase the risk of viable ovarian cortical tissue on pelvic peritoneum or pelvic viscera. We present an interesting case report of chronic pelvic pain with bilateral ovarian remnant syndrome.

**Case Report:** This is a 43 year old multiparous female with long standing history of chronic pelvic pain. She had multiple surgeries in the past which included total abdominal hysterectomy and a laparoscopic bilateral salpingo-oophorectomy for her pelvic pain. Patient had several emergency room visits for the pain. She was diagnosed with interstitial cystitis (IC), also known as painful bladder syndrome. Her pelvic pain was attributed to adhesions from the surgeries and also IC. On laparoscopy, the patient had mesenteric adhesions to anterior abdominal wall, and caecal adhesion to right psoas muscle, which were released. There was definite ovarian tissue identified on right lateral pelvic wall with a small cyst and also suspected ovarian tissue on left lateral pelvic wall. Bilateral infundibulopelvic ligaments were dissected off the ureters (ureterolysis) and the remnant ovarian tissue was resected through the laparoscope. Bladder hydrodistention was performed for IC. Histopathology identified bilateral ovarian tissue which confirmed the diagnosis of ORS. On her follow-up, the patient reported alleviation of ORS associated pain.

**Discussion:** ORS, though uncommon, is a recognized cause for chronic pelvic pain. Surgical management is the preferred treatment, but it is often technically difficult. The resection could be performed through laparotomy or, as in this case, laparoscopy, with knowledge and surgical skills in difficult pelvic dissections and resection of organs other than those of the female genital tract.
A STUDY OF URINARY AND SEXUAL FUNCTION BEFORE AND AFTER TOTAL LAPAROSCOPIC HYSTERECTOMY

Bidisha Ray, MD, Kelli Williamson, RN, MPH, Lora Nordstrom, PhD BSN, Michael Hibner, MD, PhD

Purpose: Laparoscopic hysterectomy is becoming increasingly popular among patients and surgeons. Lower cost, lesser blood loss and shorter recovery time make it an attractive alternative to total abdominal hysterectomy. Laparoscopic hysterectomy is technically more difficult than abdominal or vaginal hysterectomy. It requires specialized training and instrumentation. The most difficult part of the laparoscopic hysterectomy is dissection of the cervix off the vagina. Because of that, some surgeons began doing supracervical hysterectomies. In that procedure only the corpus of the uterus is removed, and the cervix is left attached to the vagina. Some surgeons suggested that if cervix is left intact, it will provide better support to the vaginal cuff as well as it would prevent any impairment in the sexual functioning. Recent studies have shown that leaving the cervix intact does not prevent vaginal vault prolapse. Studies on patients who had abdominal hysterectomy or vaginal hysterectomy (when the cervix is always removed) showed no difference in sexual functioning, in fact they showed some improvement. The aim of this study was to assess sexual functioning and urinary continence in patients before and after total laparoscopic hysterectomy, by completion of a questionnaire.

Methods: Between October 2004 and October 2006, 28 patients were enrolled in the study at St. Joseph’s hospital and Maricopa Medical center. Patients scheduled to undergo a total laparoscopic hysterectomy were asked to participate and informed consent was obtained. Study participants completed two questionnaires designed to assess the impact of incontinence, Incontinence Impact Questionnaire and The Urogenital Distress Inventory (IIQ-7 and UDI-6) and one questionnaire to assess sexual functioning Female Sexual Function Index (FSFI). Questionnaires were available in both Spanish and English. The same questionnaires were completed by patients in 6, 12 and 24 months after surgery. These follow-up questionnaires were completed during routine appointments, via telephone, or via mailed surveys. Study participants were compensated for their time by gift certificate payment after completion of the follow up surveys.

Results:

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<tr>
<th>Questionnaire</th>
<th>Time of Questionnaire Administration</th>
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<td></td>
<td>Initial Visit</td>
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<td>IIQ7*</td>
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<td>Mean (N)</td>
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<td>FSFI*</td>
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Conclusions: Despite all of the potential complications of doing a supracervical hysterectomy many patients insist upon preservation of the cervix for potential sexual and urinary incontinence benefits. As this study shows there is no statistical difference in sexual function or urinary incontinence by removal of the cervix at the time of a laparoscopic hysterectomy. This information may have important implications when counseling patients prior to surgery.
METHIMazole-INDUCED HEPATITIS: A CASE REPORT

Andrew Cunningham, D.O.

Introduction: The thioamides, propylthiouracil (PTU) and methimazole have been used clinically for the treatment of hyperthyroidism (Grave’s disease) for more than 60 years. Methimazole is favored by most clinicians because it is more readily absorbed in the thyroid gland, has a longer half life, and is associated with fewer side effects. Common adverse reactions to the thioamides include rash and fever. Serious side effects include agranulocytosis and hepatitis. Although hepatitis is a known complication of thioamide use, a review of the literature reveals only 21 reported cases, 13 cases from methimazole.

Case Report: A 23 year-old Indian man with recent diagnosis of hyperthyroidism presents with a three day history of yellow eyes and dark-colored urine. The patient recently returned from a trip to India, where he was started on methimazole three weeks prior. On review of systems, there are no GI symptoms. The patient does report a two month history of tremor and palpitations which lead to his recent diagnosis of Grave’s disease. The only medication the patient is presently using is methimazole 10mg once daily. Past medical, surgical, social, and family history is unremarkable. The pt was born in India and moved to the U.S. two years prior. He has had one female sexual partner. Pertinent negatives include no history of intravenous drug abuse, tattoos, body piercings, or blood transfusions. There is no family history of autoimmune disease. Physical exam is remarkable for scleral icterus, jaundice and signs of hyperthyroidism.

Labs are drawn which show markedly elevated aminotransferases and direct hyperbilirubinemia. There is mild elevation in alkaline phosphatase. The patient is admitted to the hospital for further workup. Acute infectious hepatitis A, B, and C are ruled out with lab studies. Imaging of the liver and gallbladder is negative. Further investigation reveals no active CMV or EBV infection. Liver biopsy is obtained which is consistent with the diagnosis of methimazole-induced hepatitis.

Five days after withdrawal of the offending agent, this patient’s aminotransferases continued to trend up, above 1500 U/L (over 150 times normal), and then began to trend down towards normal. The patient was eventually discharged home in good condition with close follow up.

Discussion: The medical literature relating to thioamide hepatotoxicity is reviewed. Thirteen cases of methimazole hepatotoxicity were identified. Seven of these cases were severe, with elevations of aminotransfereases above 1000 U/L. Three of those patients died of liver failure.

There are two broad mechanisms of drug-induced hepatitis: Intrinsic hepatotoxins, and idiosyncratic reaction. The clinically important direct hepatotoxins are acetaminophen and iron sulfate. These agents produce hepatocyte necrosis in a dose dependent relationship. This mechanism of liver injury is well studied and widely recognized by clinicians.

Other drugs induce hepatic injury in an idiosyncratic mechanism. This includes a hypersensitivity reaction, or a metabolic process which involves aberrant metabolism of the drug in susceptible patients within the hepatocyte. Medications which induce hepatic damage via a hypersensitivity reaction include phenytoin, amoxicillin-clavulanate, sulfonamides, halothane, dapsone, sulindac, the tricyclic antidepressants, and chlorpromazine. Isoniazid, ketoconazole, diclofenac, disulfiram, valproate, troglitazone, amiodarone, and methimazole rarely can induce severe hepatitis via an aberrant metabolic process in the liver. The latency of exposure to the drug to development of toxicity varies from weeks to months. Reactions can even occur several weeks after drug discontinuation. It is important for clinicians to be aware of this serious potential complication of commonly used drugs.
PYOGENIC BRAIN ABSCESS CAUSED BY *STREPTOCOCCUS PNEUMONIAE*: A CASE REPORT

Susan Del Sordi, DO, Joseph Summers, MD

**Introduction:** While cerebritis is a common complication of meningitis, it is rarely caused as a complication of pneumococcal meningitis. It is even rarer that *S. pneumoniae* is reported as a cause of pyogenic brain abscess. A review of the literature revealed that when *S. pneumoniae* has caused cerebritis or abscess the most common source is spread from a contiguous focus of infection (otitis media, mastoiditis, paranasal sinusitis, dental). There are few reports of hematogenous spread from extracranial sites, as a result of trauma, or preceded by empyema or meningitis (as in our case). Our review revealed that prior to 1945 and the antibiotic era, *S. pneumoniae* caused 10-12% of brain abscesses. Currently, this is only around 1% of cases, with nearly all of these having identifiable sources of spreading infection. However, since 1970 there have been only three case reports of cryptogenic abscesses caused by *S. pneumoniae*.

**Case Report:** A 43 year old Hispanic male was brought to Scottsdale Healthcare ER by family members unresponsive. He had begun complaining of headache with mild neck pain and stiffness two days prior. His symptoms acutely worsened and on day of admission patient was exhibiting slurred speech, confusion and ultimately became unresponsive at home. The patient, born in Mexico and residing in Arizona for past eight years, was employed as a construction worker. His past medical history was significant for prior head trauma with skull fracture and remote alcohol abuse. He had no sick contacts, recent illnesses or medication use. On exam, he was unresponsive to verbal stimuli, with no purposeful movements and exhibited nuchal rigidity. The remainder of the exam was otherwise normal. Lumbar puncture revealed grossly purulent CSF culture positive for *S. pneumoniae*. Blood cultures also returned *S. pneumoniae*. Primary MRI revealed diffuse cerebritis with multiple small infarcts. Antibiotic therapy of ceftriaxone and vancomycin was initiated. The patient slowly improved, but began spiking fevers after ten days of care. His antibiotics were changed to cefepime and vancomycin. Repeat MRI revealed a progression to abscess in the left frontal lobe. The patient underwent surgical drainage without improvement in symptoms. At this point the cefepime was stopped and the patient continued to receive ceftriaxone and vancomycin. Within 12 hours the patient exhibited a dramatic improvement in mental status. He was discharged to home without residual neurological deficit and at six month follow-up continues to report no complaints.

**Discussion:** In this case, recognition of the patient’s worsening symptoms after ten days of therapy was key to the detection of brain abscess formation. While the patient had previous head trauma, this was several years prior and likely had no impact on the abscess formation. We did not identify any focus of infection as a cause of this patient’s meningitis. With so few cases of brain abscess from *S. pneumoniae* reported without prior infection or immunosuppressed state, we want to contribute this case to the medical literature.
ACUTE CEREBROVASCULAR ACCIDENT IN A 26 YEAR OLD MALE WITH HISTORY OF PYRUVATE KINASE DEFICIENCY: A CASE REPORT

Elizabeth O’Connor, DO; Phillip Snider, DO and Nicole Nedella, MS-IV

Introduction: Pyruvate kinase deficiency (PKD) is an enzymopathy affecting the Embden-Meyerhof pathway of anaerobic glycolysis in mature red blood cells (RBC). This enzyme catalyzes the conversion of phosphoenolpyruvate to pyruvate, which is a necessary step for ATP production as well as the normal function of the hexose monophosphate shunt pathway (HMP). The resultant decrease in ATP and NADPH levels in the RBC leads to premature destruction of RBC by at least two mechanisms. First, the deficient ATP production leads to a derangement of the sodium-potassium ATPase pump causing an irreversible RBC membrane injury, cellular distortion and destruction by the spleen. Second, the decrease in NADPH levels impairs the antioxidant defense of the RBC rendering the RBC vulnerable to damage from free radicals and reactive oxygen species.

Individuals affected by PKD typically receive splenectomy at a young age and are particularly susceptible to severe hemolytic anemia, hyperbilirubinemia, cholecystitis and hemolytic crises. Patients require multiple transfusions putting them at risk for blood-borne infections and iron overload. Of particular interest, PKD has been shown to place patients at an increased risk of thromboembolic events; however, this phenomenon has not been well studied. We report a case in which a patient with PKD, who was admitted for acute cholecystitis, developed an acute cerebrovascular accident (CVA) and was also found to have evidence of multiple prior silent cerebral and renal infarctions.

Case Report: A 26-year-old male presented to the emergency department with a chief complaint of abdominal pain and jaundice. On arrival, the patient reported numerous episodes of bilious emesis, severe RUQ pain and a two-day history of worsening jaundice. He also had a history of PKD. An abdominal ultrasound showed an acute cholecystitis with elevated liver enzymes and total bilirubin. The patient was admitted, given antiemetics and pain medication and scheduled for cholecystectomy. Of note, the abdominal ultrasound revealed bilateral renal densities consistent with prior infarctions.

The night before his scheduled surgery, the patient developed slurred speech, left-sided upper and lower extremity weakness, as well as sensory deficits. An MRI demonstrated an acute right-sided CVA in addition to multiple lacunar infarctions throughout the brain. He was transferred to the ICU where he improved over the following three days. The patient was then transferred back to the med-surg floor and received a cholecystectomy without incident. Prior to discharge, he was started on chronic warfarin therapy to prevent subsequent thromboembolic events.

Discussion: Despite the paucity of literature on silent thromboembolic events in patients with PKD, evaluations should be performed on a routine basis for such occurrences. If evidence exists, the patient should be started in chronic anticoagulation therapy, as this is likely to decrease morbidity and mortality. The discussion with the patient prior to initiation of therapy should focus on the risks and benefits, the possible dietary implications and the frequent monitoring of PT/INR or PTT, depending on the anticoagulant agent selected.
NEW ONSET SPEECH DIFFICULTY: A CASE REPORT

Shannon Scott, D.O.

Introduction: Elderly individuals with new onset speech difficulty require a thorough workup for progressive neurological conditions, neuromuscular or anatomical abnormalities, and sources of underlying infection. This case report is an example of speech difficulty initially diagnosed as Spastic Dystonia (SD) that was recently re-evaluated and considered more consistent with a progressive neurological disease such as Amyotrophic Lateral Sclerosis (ALS).

Case Report: A 69 y.o. female presented with trouble speaking which began 6 weeks post-op from a routine hysterectomy and bladder suspension surgery. She had difficulty “getting words out”, which continued for one week before evaluation. She had no problem with concentration, comprehension, memory, or other neurological symptoms. Her only other complaint included shortness of breath while speaking and walking. Her past medical history included hyperlipidemia and hypertension. Her medications included Triamterene/Hydrochlorothiazide, Atorvastatin, Aspirin, and Amitriptyline. Her initial physical exam demonstrated a thin female with a mild masked-like face with a strained and tremulous voice. She would vocalize 1-3 words at a time and complete full sentences with obvious effort. She had no noticeable tremors. Her gait was normal. Several studies to evaluate the dysarthria were initiated. An MRI of her brain showed chronic small vessel ischemia. Bilateral carotid dopplers, CBC, CMP, thyroid studies, and an ESR were negative. She was referred to a Neurologist whose differential diagnosis included vocal cord dystonia, degenerative conditions affecting the cerebellum, or early Parkinson’s disease. She was also referred to an otolaryngologist who performed a fiber optic laryngoscopy and diagnosed Spastic Dystonia. The recommended treatment was Botox injections of the vocal cords. The patient declined botox therapy. Over the next year, her symptoms persisted and she developed difficulty swallowing. She went for a second ENT opinion with a physician who had expertise in spastic dysphonia and Botox treatments. This evaluation was suggestive of a progressive neurological condition such as ALS. A second neurological opinion is pending.

Discussion: Spastic Dystonia (SD) is a focal dystonia characterized by excessive or inappropriate contractions of laryngeal muscles during speech producing strained or strangled phonation and irregular voice stoppages. SD is frequently associated with an essential tremor. The disease prevalence is rare, but shows an 8:1 female to male ratio with age of onset 48-50 years. Patients with SD have high resting electromyography (EMG) activity in the muscles of the larynx causing increased tension during speech, swallowing, and quiet breathing. A neurotransmitter defect has been suggested in some patients that have improved with L-dopa therapy. Most patients identify precipitating physical or emotional factors prior to the onset of voice problems. The workup encompasses a multidisciplinary approach with neurology, speech therapy, and otolaryngology. Treatment options include Botox injections and laryngeal procedures.

Amyotrophic Lateral Sclerosis (ALS), often referred to as “Lou Gehrig’s disease”, is a progressive neurodegenerative disease affecting nerve cells in the brain and spinal cord. Motor neuron loss leads to the inability of the brain to control voluntary muscles and can lead to paralysis. Early symptoms include muscle weakness in 60% of patients, especially in the arms and legs, speech, swallowing, or breathing. An estimated 30,000 people in the United States have been diagnosed with ALS. The workup may include an EMG and nerve conduction tests, blood and urine studies, thyroid and parathyroid hormone levels, lumbar puncture, MRI, myelogram of the cervical spine, muscle and/or nerve biopsy. Riluzole (Rilutek) is the only FDA approved drug for ALS.
ABLEPHARON MACROSTOMIA SYNDROME: A CASE REPORT

Nicole Anania, DO, Shook Yap, MD, Lawrence Lilien, MD

Introduction: Ablepharon Macrostomia Syndrome is a rare syndrome first described by McCarthy and West in 1977. The syndrome is characterized by absent eyelids, eyebrows and eyelashes, fusion defects of the mouth, which result in an enlarged, fish-like mouth, deformed external ears and nose, hypoplastic zygomatic arches, ventral hernia, ambiguous genitalia, absent or barely perceptible nipples, excessive skin folds, and finger/toe abnormalities (webbing). The inheritance pattern of this syndrome is unclear, but it is thought to be an autosomal recessive trait and some associations with 18q have been identified. Some individuals with this syndrome appear to have delayed language development and some have mental retardation, while others have normal intelligence. There are approximately 20 cases of this syndrome reported in the literature.

Case Report: On October 20th, 2006 a female infant (A.M.) was born at St. Joe’s with this syndrome. Her progress has been followed since discharge from the Neonatal Intensive Care Unit (NICU) at the Pediatric Ambulatory Care Clinic (PACC). A.M. was born to a 19 year old G1P1 female at 38 weeks after 8 prenatal care visits. All prenatal labs were negative. A.M. was born by vacuum-assisted vaginal delivery with Apgar scores of 9 at one and five minutes. After delivery, the infant was noted to have several apneic episodes and was moved to the NICU. In the NICU, the patient was noted to have additional apneic episodes that were brought on by thick green nasal/oral discharge. Due to the obvious physical abnormalities, a detailed physical exam and additional tests were performed. The patient had a normal abdominal/pelvic ultrasound, a normal head ultrasound, a normal skeletal survey and an echocardiogram showed only a closing patent ductus arteriosus and shunting foramen ovale. On exam, she was noted to have the following: no visible hair on her head/body, no eyebrows or eyelashes, bilateral ectropion, hypoplastic ala nasi, bilateral microtia, redundant nuchal skin, hypoplastic nipples, ventral hernia, hypoplastic labia, proximally placed anus, broad deviated great toes, thin skin with prominent blood vessels, and cutis marmorata appearance to the skin.

Discussion: A.M. has done well overall since birth. Initially, hood humidification was employed to moisten the eyes and respiratory passages and suctioning was employed to relieve the symptoms associated with the green discharge. Within a couple of days, the apneic episodes resolved. Genetics consult diagnosed her with Ablepharon Macrostomia Syndrome after an extensive literary search and normal high resolution chromosome result (46xx). A.M. did have unconjugated hyperbilirubinemia that required 4 days of phototherapy. Ophthalmology evaluation showed absent eyelids and a risk for corneal scarring due to inability to close the eyes. Frequent lubrication with lacrilube was employed to maintain normal vision and an oculoplastics physician was consulted to perform eyelid construction. On October 25, 2006, A.M. underwent construction of complete upper and lower eyelids (skin grafts, taken from the loose skin lateral to her rudimentary ears, were used). The infant is still unable to fully close her eyes (lagophthalmos) and continues to require frequent lubrication with lacrilube and erythromycin ointment, and further surgery is planned. Due to her oral anomalies, she has had difficulty feeding. Initially, she required oral-gastric tube feedings to meet her caloric requirements but then she was transitioned to a Haberman nipple (a special nipple usually used for infants with cleft palates who are unable to maintain the proper seal on other infant nipples). She has continued to have feeding difficulties and has been diagnosed in clinic with failure to thrive. She has been placed on a 22 kcal/ounce formula and has been referred to a maxillofacial surgeon. A.M.’s progress will continue to be tracked through the Pediatric Ambulatory Care Clinic as she ages.
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RECURRENT OPTIC NEURITIS IN ADOLESCENT FEMALE:
A CASE REPORT

Jennifer Chittum, MD

Introduction
Optic neuritis involves inflammation or demyelination of the optic nerve. Optic neuritis is seen in children and adults, but with varying etiologies. In children, it is usually due to an immune-mediated process, such as viral, infectious, or post-immunization, is often bilateral and commonly associated with headaches with a low probability of recurrent events. Children with optic neuritis are found to have a low probability of MS. In adults, optic neuritis is usually idiopathic, unilateral, has associated pain with eye movements and a high probability of recurrence. Adults also have a higher probability of CNS events including MS. Optic neuritis can produce a sub acute vision loss that can be unilateral or bilateral. In unilateral optic neuritis it is common to have an afferent pupil defect. There is a gradual improvement in vision over several weeks, but there may be longer lasting defects in color, contrast, or brightness perception. This is a case of an adolescent female with three unique presentations of optic neuritis without any underlying disease process.

Case Report
A 14-year-old female presents to the hospital on three different occasions with complaints of eye pain and vision loss. Initially she presents to the emergency department complaining of pain in both eyes, right greater than left, for the past ten days, associated with decreased visual acuity and the feeling that she might pass out. The second visit involved pain in her right eye, worsening with eye movements and blurring of her vision. The third hospital visit involved intermittent bouts of vision loss affecting the left eye and was described as a curtain coming down. Visual acuity during the hospital visits were 20/25 in the right eye and 20/20 in the left and 20/20 bilaterally for the two subsequent visits. At the second presentation her pupils were small with the right reacting sluggishly and the left reacting briskly. There was an afferent pupillary defect in the right eye. Pain was experienced with extreme upward and downward gaze during all visits. Fundal exam demonstrated complete blurring of all margins and positive venous pulsations on the right and some mild disk blurring at the inferior nasal margin with fewer pulsations on the left. The visual field of the right eye showed an enlarged blind spot, a large inferior area of depression, and superior constriction. Retinal nerve fiber layer studies showed elevated and increased disc edema also on the right. Neurological exams were entirely normal on all visits. Other studies done during the patient’s hospital stays include MRI’s of the brain with and without contrast, which showed increased T2 signal along the right optic nerve. Multiple sclerosis panels, complete antibody screens, lyme titers, and cerebrospinal fluid analysis were also negative. At the initial hospital presentation the patient was treated with one gram of solumedrol for five days, which temporarily helped resolve the symptoms. The following visit was not treated pharmacologically, but with close observation and follow-up. The third visit was thought to have a vascular component so she was started on a daily aspirin therapy of 81mg. It was concluded from these presentations that our patient had three varying presentations of optic neuritis without any other underlying disease process.

Discussion
This adolescent female with unilateral optic neuritis is a unique case in that each presentation was slightly varied and occurred within a short timeframe. As there was no determinable underlying disease process, such as multiple sclerosis, it was concluded that the cause was idiopathic and another recurrence would be likely. The patient has been followed closely as an out-patient and has not experienced another episode of eye pain or vision loss.
THE RED RASH & FEVER THAT CAN BE FATAL: A CASE REPORT

Atousa Ghaneian, MD

Introduction: Toxic shock syndrome (TSS) is an inflammatory syndrome that is characterized by a triad of fever, rash and hypotension and multi-organ involvement. TSS has been linked to tampon use and several bacterial infections including pneumonia, osteomyelitis, sinusitis and other gynecologic infections. TSS is a toxin-mediated disease, produced by strains of *Staphylococcus Aureus* and *Streptococcus Pyogenes*. These toxins activate superantigens like TNF-α, TNF-β, IL-1, IL-2, M-protein, and gamma interferon that result in cytokine production. The net effect is a massive production of cytokines mediating shock and severe tissue injury resulting in any of the following: multi-organ failure, DIC, ARDS, altered CNS, mucosal inflammation and renal failure. The Center for Disease Control criteria for diagnosis of TSS is a triad of fever (> 102.0°F), hypotension (systolic BP less than 90 mmHg or orthostatic decrease in systolic BP of 15 mmHg), rash, and involvement of 3 or more organ systems. There should be no serologic evidence of Rocky Mountain Spotted Fever, Leptospirosis, Measles, Hepatitis B, Lupus, Syphilis and Epstein Barr Virus. The red book also requires negative cultures from blood, throat and CSF if obtained. Blood cultures may be positive for staphylococcus aureus in < 5% of cases.

Case Report: A 3-year girl arrived at St. Joseph’s Medical Center emergency department with a 3-day history of fevers of >102°, vomiting, decreased appetite, with a one day history of a blanching maculopapular rash. Initially, she was started on Rocephin, Tylenol and Motrin due to pneumonia found on CXR in the ED. The patient continued to clinically deteriorate despite supportive management. On physical exam, she presented with bilateral injected conjunctivae, swelling and crusting of her lips, a strawberry tongue, a diffuse blanching sandpaper type maculopapular rash, severe irritability and confusion. She developed thrombocytopenia and hyponatremia. She also had decreased urine output leading to azotemia. Due to these findings, Kawasaki and Rocky Mountain Spotted Fever (RMSF) were high on the differential and thus, the patient was placed on high dose aspirin, IVIG, and doxycycline. Albeit, the patient continued to decompensate, with a clinical picture of DIC, RDS, and congestive heart failure and cardiac compromise. Several blood cultures, urine cultures and CSF cultures were negative. The patient was transferred to the pediatric intensive care unit for hemodynamic instability and vancomycin, aggressive fluid and pressor support were initiated. The patient clinically improved within 48-72 hours. Titers were sent for RMSF, Rubeola, Rubella, Adenovirus, Leptospirosis, and these were all negative. She was transferred back to the pediatric ward and discharged home several days later.

Discussion: TSS is associated with wide range of non-menstrual-related conditions. It mimics several common diseases, and is not always in the differential. TSS is a clinical diagnosis and one of exclusion from other disease processes. When patients present with a fever, rash, hypotension and rapid clinical decompensation, with unanticipated lab findings, TSS should be high on the differential. Furthermore, several studies have shown the use of IVIG to be effective in neutralizing TSS toxins and thus aiding in patients’ recovery. Future research into the mechanism of action of IVIG in TSS pathophysiology can aid physicians in effective medical management and optimal recovery time for patients with TSS.
Purpose: To review the role of CT angiography of the chest for diagnosis of pulmonary embolism (PE) with respect to risk factors and appropriateness of indications in a large series performed at a 700 bed hospital. PE is the third most common cause of cardiovascular death behind stroke and myocardial infarction, and represents one of the most common etiologies for preventable death. There is a tendency for increasing diagnostic tests including CTA for PE, without commensurate proof of efficacy. This study should help direct appropriate utilization and reduce unnecessary use of CT angiography.

Methods: 2136 CT angiography evaluations were reviewed retrospectively over a 1½ year period at our institution in patients with indications for PE with 1069 and 1067 CTA studies performed from the Emergency Department (ED) and inpatient units, respectively. Age, gender, admitting diagnosis, patient location (ED or inpatient), prior vascular ultrasound study of the extremities, d-dimer level, presence or absence of PE, and location of the embolism if present were assessed. Of the 320 Doppler ultrasounds performed for DVT, 87 and 233 studies were performed for patients who had positive and negative pulmonary embolism, respectively. The etiology and likelihood of PE in association with age, cancer, hypercoagulable state, pregnancy, immobility, medications, prior history of PE/deep venous thrombosis (DVT), and autoimmune status also were assessed. The analysis involved five total reviewers from the Departments of Radiology, Internal Medicine, and the ED.

Results: The total positive rate of PE was 9.6% (n=205), with 6.45% (n=69) positive in ED patients and 12.7% (n=136) positive in inpatients. In patients with a positive PE who had a Doppler US, 56% (n=49) were positive for DVT. In patients with a negative PE who had a Doppler US, 20.6% (n=48) were positive for DVT.

Conclusions: Our data show that hospital inpatients are twice as likely to have positive PE than ED patients. Also, a strong correlation is seen with positive PE and positive DVT. The relatively low overall positive rate for the diagnosis of PE by this relatively expensive test suggests that better screening of patients can avoid unnecessary expense and reduce the risk of harm to patients with risk of contrast reactions.
DILATED CARDIOMYOPATHY FOUND IN 3 WEEK OLD MALE ADMITTED FOR SEPSIS: A LESSON IN KEEPING YOUR DIFFERENTIAL OPEN. A CASE REPORT

Kelly Hughes, DO, PL-1 Pediatrics

Introduction: Dilated Cardiomyopathy has a prevalence of 50/100,000; with 30,000 children affected in U.S. it is comparable to the number of people with cystic fibrosis. 68% of cases are idiopathic with a male and hispanic/black predominance. It is most likely to present in the first year of life. If the etiology is viral 33% recover, 33% stabilize and 33% deteriorate. Physical signs that point to the diagnosis include: tachycardia, tachypnea, poor pulse pressure, failure to thrive, JVD (although this is very difficult to see in infants), a dynamic precordium or substernal heave, gallop rhythm, holosystolic murmur, wheeze, retractions, hepatomegaly, extremities that are pale and cool, cyanotic (possibly), edema. Infants can also have feeding intolerance with excessive perspiration and quick fatigue, weak cry, and irritability.

Case Report: 3 week old male presented with a history of 3 days of constipation and increasing respiratory rate. The patient was seen in ER 3 days ago and was given suppositories - he then had one large BM, but none since. On the day of admission patients mother had noticed increased belly size and respiratory rate. The baby was born full term NSVD with no complications and a birth weight of 3.38 kg. Mom had good PNC and normal labs and Ultrasounds and no infections during the pregnancy. Baby is bottle fed Enfamil 2 oz every 3 hours, has no allergies and takes no medications. The patient was admitted for possible sepsis with respiratory distress. During the admit physical the patient was noted to have a temp 37.4, heart rate of 170-190, respiration rate of 60-90 while at rest on the exam table not fussing. Cardiac exam revealed a dynamic precordium, 2/6 holosystolic M, with a gallop beat at left lower sternum and the lungs were clear, but with decreased breath sounds on the left, no retractions, no nasal flaring. Abdominal exam showed enlarged liver to 3 cm below the costal margin. Immediate CXR showed and enlarged heart and mild pulmonary edema, a cardiology consult and Echocardiogram were then made. The patient ended up intubated for 3 days in the PICU, all of his virology labs were negative, and he was not found to have any other cardiac anomalies. The patients initial echocardiogram showed an EF of 19% which increased to 28% by discharge on medical management of digoxin, captopril, carvedilol, lasix and aldactone. He is now on the cardiac transplant list and continues to maintain cardiac function with maximal medical management.

Discussion: This case comes to attention because of the relative routine nature of the admission for sepsis, yet was found to be in cardiac failure. As clinicians we should keep an open differential as we evaluate each patient for the first time, even if we have been given the “diagnosis.” The signs and symptoms associated with respiratory distress from cardiac vs. septic etiologies can be very close and therefore in the young neonate need to be completely evaluated.
IS INGESTION OF ENERGY DRINKS ASSOCIATED WITH SEIZURES?

Stanley Jones P. Iyadurai, PhD, MD, Steve S. Chung, MD

Abstract

Energy drinks are rich in caffeine, taurine and guaranine, amongst other components and are very popular amongst teenagers, college students and young adults. We report 2 cases of new-onset seizures in adults associated with high volume ingestion of energy drinks. Both the patients had 2 discrete seizure episodes separated about 4-6 months in time, both of which were preceded by high volume ingestion of energy drinks. In both cases, there was no previous history or family history of seizures. There was no previous history of trauma and no history of illicit drug use. EEGs and MRIs were also normal. Upon abstinence of energy drinks, both patients reported no seizures. We raise the question if ingestion of high-volume energy drinks may be associated with new-onset seizures in susceptible individuals. Given the widespread use of energy drinks in the society, it may be of public concern, if more cases were to be reported.

Abstract #: 952145
Objective: To report new-onset seizures in 2 adult patients with no significant past medical history, in conjunction with ingestion of high volume of energy drinks.

Background: Energy drinks are rich in caffeine, taurine and guaranine, amongst other components and are very popular amongst teenagers, college students and young adults.

Design/Methods: Case Report.

Results: We report 2 cases of new-onset seizures in adults associated with high volume ingestion of energy drinks. Both the patients had 2 discrete seizure episodes separated about 4-6 months in time, both of which were preceded by high volume ingestion of energy drinks. In both cases, there was no previous history or family history of seizures. There was no previous history of trauma and no history of illicit drug use. EEGs and MRIs were also normal. Upon abstinence of energy drinks, both patients reported no seizures.

Conclusions/Relevance: We raise the question if ingestion of high-volume energy drinks may be associated with new-onset seizures in susceptible individuals. Given the widespread use of energy drinks in the society, it may be of public concern, if more cases were to be reported.
Abstract:

Fetal Alcohol Spectrum Disorders (FASD) is the spectrum of structural anomalies, neurocognitive disabilities and behavioral difficulties seen secondarily to the adverse effects of alcohol exposure in the developing fetus. This spectrum is broad, making patient care and diagnosis difficult and arduous.

Since FASD is a spectrum, three cases were evaluated in a retrospective and ongoing manner. These three children fall under the umbrella term of FASD, but only one fully qualifies for Fetal Alcohol Syndrome (FAS). The other two have been diagnosed with Fetal Alcohol Effects (FAE). While comparing these three children, the spectrum of the disorder can be demonstrated.

FAS is the diagnosis that describes the most severe effects of alcohol on the fetus. There are specific criteria that must be met to qualify for FAS. These are confirmed alcohol exposure in-utero, pre and/or postnatal growth deficiency, minor facial anomalies and central nervous system neurodevelopmental findings. The diagnosis of FAE is given when a child meets some but not all of the criteria for FAS. Other terms used to describe part of the spectrum of FASD include alcohol-related birth defects (ARBD) and alcohol-related neurodevelopmental disorder (ARND). The range of diagnoses is reflective of the broad effects of alcohol in the fetus including, the effects of alcohol exposure at different developmental stages of the fetus. Understanding of in-utero alcohol exposure and its consequences is not complete but by evaluating children with this condition we may begin to comprehend the short and long term effects.
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St. Joseph's Hospital & Medical Center
Radiology

RADIOFREQUENCY ABLATION AT AN INDEPENDENT ACADEMIC CENTER: THE FIRST YEAR

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Purpose: To describe our first year experiences with a radiofrequency ablation service (RFA) at an independent academic center with a discussion of the many facets of starting an ablation program. The discussion should serve as a guide for those hospitals starting similar programs.

Methods: Fifty-five patients were evaluated and 33 ablations were performed in 23 patients with RFA +/- alcohol. Radiology residents were involved in all evaluations and ablations as well as follow-up. Ablation sites included liver (23), bone (3), and lung (7). Indications were palliative as well as curative; specifics include: pain relief (5), debulking of mass effect (2) and tumor burden (18), relief of cough (1), and palliation of carcinoid syndrome symptoms (1). Cure was the goal in 6 ablations. CT (31) and ultrasound (2) were used for guidance. Referrals came from nine different specialties. Referrals were from our institution, local physicians, physicians outside of Arizona, and self referrals. One to 3 lesions were treated per patient.

Results: Pain relief was achieved as a goal in 5 of 5 patients. Necrosis was achieved in all 33 lesions. There were no major complications. One patient required a transfusion of 1 unit of blood post procedure. The longest hospital stay for those who came in for the procedure as outpatients was 2 days. Five patients had minor postablation syndrome. The ablation referrals prompted pre and post PET/CT, MRI, CT, and plain radiographs. Three patients also went on to have SIR-Sphere procedures within our department. All ablations were reimbursed. Academically, for the institution, outgrowths of RFA included at least eight submissions/publications, several CME courses, a SIR-Sphere program, a pain ablation program, and the establishment of an oncology center of excellence.

Conclusion: The presence of a solid referral base and the ability to treat a wide variety of diseases has helped to establish our radiology residency program as a regional referral center for RFA within roughly a year's time. Academically, for the institution, outgrowths of RFA included at least eight submissions/publications, several CME courses, a SIR-Sphere program, a pain ablation program, and the establishment of an oncology center of excellence. Additionally, few, if any, radiology residency programs can boast more hands on experience for residents in this modality.
THE ROLE OF CT AND MR IMAGING IN PATIENTS WITH TRUNCUS ARTERIOSUS

J. A. Machayya, MD, M. Switzer, R. Richardson, MD, M. Myneni, MD

**Purpose:** To demonstrate the role of cardiac CT and MRI in the diagnosis, presurgical planning, and postsurgical follow-up in patients with truncus arteriosus.

**Methods:** A retrospective review of nine patients with truncus arteriosus was performed. All patients underwent cardiac CT and/or MRI prior to surgery. 3D reconstructions of the anatomy were performed using commercially available workstations. An MRI was performed on one of the patients after surgery.

**Results:** The types of truncus arteriosus detected were as follows: 3/9 cases were type 1 forms of truncus arteriosus; 1/9 cases was a type 2 form; 2/9 cases were type 3 forms; 1/9 was a type 4 or pseudotruncus form; and 2/9 cases showed hemitruncus anatomy. All of the patients had associated ventricular septal defects. One patient had total anomalous pulmonary venous return in addition to truncus arteriosus. An aberrant right subclavian artery was seen in one of the patients. Omphalocele was seen in one of the patients. An adult patient presented with severe pulmonary hypertension with Eisenmenger’s physiology. No further imaging was required prior to surgical intervention after the CT or MRI study. Postsurgical MRI was performed on one of the patients, and a mild narrowing of the right ventricular outflow tract was shown.

**Conclusions:** Cardiac CT and MRI are modalities well suited to detect the different forms of truncus arteriosus. The 3D reconstructions facilitate presurgical planning and clearly demonstrate the anatomy for teaching purposes. Postsurgical follow-up clearly showed mild narrowing of the reconstructed right ventricular outflow tract.
ACUTE DISSEMINATED ENCEPHALOMYELITIS IN A 12 YEAR OLD BOY
CASE REPORT
Giovani Michieli, MD

Introduction: Acute disseminated encephalomyelitis (ADEM) is an uncommon monophasic inflammatory demyelinating disease that usually presents in childhood. Highest prevalence is in prepubertal boys. It's thought to be an autoimmune disorder, where myelin autoantigens share antigenic determinants with those of an infecting pathogen. ADEM usually follows a prodromal viral illness in 75% of cases, with findings following in 1 to 3 weeks. Common signs are fever, nausea and vomiting, headache, irritability, and stiff neck. Progression to the maximum deficit is usually over one week. The disease is usually diffuse and neurologic signs depend upon the location of the CNS involvement but usual signs are ataxia, hemiparesis and impaired consciousness. Lab is usually nonspecific, like elevated ESR and CRP, leukocytosis, CSF with pleocytosis, increased protein and some patients may have oligoclonal bands. MRI changes are best defined by T2 weighted images and FLAIR sequences. CT scans are often normal. MRI abnormalities are typically large, bilateral, asymmetric and poorly marginated. Almost all have multiple lesions in the subcortical white matter. The thalami and basal ganglia are frequently affected in a symmetrical pattern. Brain stem and spinal cord abnormalities are common, large confluent intramedullary lesions over multiple segments are typical. Differential diagnosis includes MS, optic neuritis, transverse myelitis, neuromyelitis optica and acute hemorrhagic leukoencephalitis. Recommended treatment is with IV Methylprednisolone 30 mg/kg per day, up to a max of 1000 mg per day for a total of 5 days without taper. IV immune globulin and plasmapheresis are used if failure to respond. Fully recovery usually follows in 4 to 6 weeks in about 60-80%. Disability is more likely in children who present with optic neuritis.

Case Report: A previously healthy 12 year old boy was seen at the ED c/o tingling sensation in hands and diplopia. The boy had flu symptoms 1 moth prior, with emesis, dizziness and fatigue. He started 10 days ago gradually developing tingling sensation in hands, sparing the first 2 fingers on L hand. Associated with dizziness, emesis, decrease appetite and blurry vision and diplopia. At a previous ED visit he was given IVF and antiemetic and antibiotic after normal labs and CTH. His symptoms persisted and his PCP ordered an MRI that showed multiple brain lesions and he was sent for neurological evaluation. At arrival patient was still c/o dizziness and hand tingling but visual symptoms had resolved. Temp98.5, HR63, RR20, BP126/64, O297%, RA, Wt48kg, HC65.2. NC, PERLA, EOMI, slight nystagmus with extreme right gaze, fundoscopic exam with slightly enlarged cup to disk ratio but sharp disk margins, MMM, pharynx clear, TM bulging bilaterally with no erythema. Neck supple, lungs CTAB, heart RRR with flow murmur at apex, abdomen soft NT ND BS+ no HSM, capillary refill 2-3 seconds. Skin no rash, Neuro alert and cooperative, clear speech, strength 5/5 in all extremities, CN II-XII grossly intact. Normal muscle tone, subtle weakness of proximal arm on R, grip strength equal, subtle pronator drift of R arm, subtle tremor of the R arm, normal finger to nose, normal sensation, Romberg negative, DTR’s brisk 3+ in UE and 3-4+ in LE. Able to walk independently but unable to tandem walk. MRI showed multiple lesions in the white matter on both hemispheres involving the middle cerebral white matter as well as cerebellar, lesions in the peduncles bilaterally and one small lesion in the brainstem. Most of the lesions enhanced uniformly. Sagital FLAIR images show abnormalities in the corpus callosum. CBC, CMP and ESR normal. LP with clear CSF, RBC 283, nucleated cells 9 with lymphocytes 95%, polys 1%, macrophage 4%, glucose 56, protein 25. MS panel was sent out. CSF Cx(-)38hrs. Visual fields normal per ophthalmology. ADEM was clinically diagnosed and patient was started on solumedrol high dose x 3 days.

Discussion: ADEM is a monophasic, immunologically mediated inflammatory demyelinating disease of CNS. That should be suspected in a child developing neurologic abnormalities when recovering from a viral prodrome. This case demonstrates how this disorder can be challenging for clinicians due to its low incidence and that even costly sophisticated test like CTH are usually noncontributory. Follow up to document recovery is the only confirmatory factor for diagnosis.
MULTIMODALITY IMAGING OF AZYGOUS VEIN ANOMALIES

Courtney Mitchell, MD, Hedieh Saghari, MD, Gregory B. Stringfellow, MD, Randy R. Richardson, M.D.

Purpose: Azygous vein anomalies are commonly encountered on MDCT and MR of the chest and abdomen. Although the majority of these anomalies are incidental and of little clinical significance some can be symptomatic such as the fistulous communication with the left atrium and some may be part of a heterotaxy syndrome. The major anomalies of the azygous vein include congenital absence of the azygous, azygous lobe and azygous continuation of the IVC. Less common azygous anomalies include interruption of the azygous vein with reconstitution, fistulous communication of the azygous vein with the left atrium and a double azygous arch.

Materials: 230 patients who underwent CTA or MRA of the chest and abdomen.
Methods: We retrospectively reviewed 120 Cardiac MRA’s and 150 CTA’s in approximately 230 patients. MRA was performed using double dose contrast with 3D time of flight GRE sequences. CTA was performed using 3cc/kg nonionic contrast at 3cc/sec and 1mm axial slices at 11 sec and 16 sec delays. Raw data was used to construct mulitplanar and 3D reformatted images. Correlation with angiography was obtained when the anatomy was out of the ordinary.

Results: We encountered five cases of azygous continuation of the IVC. One case demonstrated in utero IVC clot and showed enlargement of the azygous system at birth with the IVC difficult to follow below the liver on MRI. Four out of five cases of azygous continuation of the IVC had other common situs anomalies with associated congenital heart disease. Additionally, there were two cases of congenital absence of the azygous vein and two cases of an accessory azygous vein. Of the less common anomalies, we found one case of a double azygous arch, and 2 cases of interruption of the azygous with blood return from the lower azygous to the left atrium and reconstitution of the azygous vein forming an arch and emptying into the SVC.

Conclusion: MRA and CTA are excellent imaging modalities for evaluation of venous anomalies in chest and abdomen. The most common type of azygous anomaly (other than an azygous fissure/lobe) associated with other congenital anomalies is azygous continuation of the IVC, in which we found 6 cases in 230 patients. The two cases of fistulous communication of the azygous vein with the left atrium are important to recognize because they represent right to left shunts and could be the source of emboli. The other encountered anomalies represent interesting anatomic variants that are important for radiologists and clinicians to recognize to avoid diagnostic pitfalls.
LANGERHAN’S CELL HISTIOCYTOSIS PRESENTING AS DIABETES INSIPIDUS

Annie Nguyen MD, Shook H Yap MD, Jesse Cohen MD

Introduction: Langerhan’s cell histiocytosis is a rare neoplastic disorder of dendritic cells affecting only 1 to 5 out a million people. LCH can present as a unifocal disease usually as a bone lesion or as a multifocal systemic disease of bone and skin with soft organ involvement. CNS involvement of LCH commonly presents as diabetes insipidus with polydipsia and polyuria. The high percentage of LCH with CNS involvement is multifocal with additional bone and skin lesions. The following case is an example of a Langerhan’s cell histiocytosis presenting as a single CNS lesion.

Case report: A 5 year old male of mixed descent presents with a 2 week history of excessive fluid intake, frequent urination, and copious vomiting. His PCP who sent him in to the E.R. secondary to a urinary analysis with a low specific gravity, otherwise negative and therefore diagnosis of diabetes insipidus was made. Review of systems was positive for a 10-pound weight loss, anorexia, diffuse intermittent headaches, and odd morning behavior in which patient would be confused and unable to walk without support. Parents deny any previous medical problems, hospitalizations or surgeries. Family history was non-contributory. Developmentally our patient was appropriate; toilet trained at 3 years old, no episodes of enuresis, and in addition patient was in preschool learning the alphabet. On physical exam, the patient was minimally dehydrated and one hypopigmented circular skin lesion on his chin. Throughout his hospital course the patient’s serum sodium and osmolarity were within normal limits due to patient’s ability to self-correct by excessive fluid intake. The patient’s antidiuretic hormone level was found to be low, cortisol levels were within normal limits, and his free T4 was low. Patient was initiated desmospressin and levothyroxine treatment. A CT head at admission demonstrated a prominent soft tissue in the suprasellar cistern. A follow up MRI again illustrated an abnormal enhancement of the pituitary infundibulum/hypothalamus and an additional 8 mm enhancing left temporal lobe nodule. Because of the concerns for neoplastic origin, Hematology and Oncology obtained a bone scan and a PET scan, which ruled out additional lesions. CSF fluid was obtained and a smear was acellular and alpha feta protein was negative. Because of the inconclusive workup, neurosurgery performed a hypothalamic biopsy of the lesion demonstrated by the MRI, which was positive for CD1A and S-100, which represents an X-histocytosis. The sole LCH lesions in the patient seemed to be only of CNS origin with all additional imaging being negative. The patient was started on chemotherapy and high dose steroids because of neoplastic nature of LCH. The patient continued on his replacement therapy of desmopressin and levothyroxine, and was to follow-up with endocrine for management.

Discussion: Diabetes insipidus is known to have either nephrogenic or central origins. Because of the patient’s additional symptoms of behavior change, a rule out CT head was obtained which help in further diagnosis the cause of the DI. In the literature histocytosis rarely presents solely with neurogenic symptoms. Review of case reports found only rare documentation of LCH patient presents with ataxia or seizure which then led to follow-up head imaging and biopsy to diagnosis. However no case of sole D.I. in a patient was found. All case reports of LCH presenting as D.I. remark on additional finds of either bone or skin involvement. The knowledge of the association between LCH central D.I. and skull lesion led to multiple attempts by the patient’s doctor to locate such a lesion. LCH is a rare disorder with multiple presentations, such as in our case in which presented only D.I.
Purpose: We present a series of 26 patients with clinically suspected pudendal nerve entrapment referred to the Department of Radiology by a gynecologist specializing in pelvic pain. Relevant gross and radiographic anatomy and pathophysiology will be highlighted, with special attention to the technical and imaging principles of CT-guided nerve blockade.

Methods: Following evaluation by the pelvic pain specialist, patients were referred to the Interventional Radiology Service of the Radiology Department for image-guided pudendal nerve blockade. Suspected etiologies for the pain syndrome were tabulated. Regional anatomy was mapped with 1.25-2.50 mm thin section CT with a multi-detector GE-lightspeed scanner. Treatment was targeted to the primary areas of pudendal nerve entrapment: 1) the interligamentous space between the sacrospinous and sacrotuberous ligaments, 2) the Pudendal Canal of Alcock. The anatomic boundaries of the target areas were confirmed with the injection of contrast material, and followed by therapeutic injections of both short-acting anesthetics and corticosteroids. Pre- and post-procedure pain was assessed by a visual analog scale (VAS), with a two to three point decline in pain establishing diagnostic and therapeutic efficacy.

Results: On all patients, the anatomic boundaries of the Pudendal Canal of Alcock were identified using thin section multi-detector CT. The canal was successfully accessed via needle placement and demonstrated by contrast injection in all patients. There were no complications during or after the procedure. Statistically significant improvements in symptom severity were demonstrated in our patients, as assessed by VAS. Several patients experienced long-term relief, although this was not uniform.

Conclusion: High resolution meticulous needle placement by CT imaging provides precise accuracy to access the Pudendal Canal of Alcock. CT-guided pudendal nerve blocks offer an efficacious option for diagnosis and treatment of patients suffering from pudendal neuralgia. The exquisite anatomic detail by multi-detector CT further aids the surgeon in pre-operative planning. Although early, initial results are promising, and deserving of further investigation.
Abstract 171
St. Joseph's Hospital & Medical Center
Family Medicine

SARCOMATOID MESOTHELIOMA: A CASE REPORT
Asha Patel, DO

Introduction: Mesothelioma is a rare cancer that originates in the linings of pleural and peritoneal cavities, the tunica vaginalis and the pericardium. Eighty percent of mesothelioma cases are cancer of the pleural and commonly associated with asbestos. It has also been shown that Simian virus-40 (SV-40), a viral oncogene has been detected in mesothelioma cases in which asbestos exposure is not present. Mesothelioma invades the visceral and parietal surfaces forming plaques and nodules and can invade into the chest wall, pericardium, diaphragm and interlobar fissures. It is not uncommon for mediastinal lymph node involvement and hematogenous spread to liver, lung, bone and adrenal glands. Histologically there are three subtypes-epithelial, sarcomatoid and biphasic. The epithelial variant is the most common and has the better prognosis. The sarcomatoid and biphasic types are more difficult to diagnose and need larger tissue samples. The incidence of mesothelioma is one in one million Americans with no asbestos exposure and ten in one million with known history of exposure. The cancer typically appears forty years after asbestos exposure and patients experience symptoms for 4-6 months before the diagnosis is made. Symptoms classically include shortness of breath, chest pain, cough, weight loss, weakness, and sputum production. The most common sign is the development of pleural effusions. Treatment options include surgical, primarily pleurectomy and extrapleural pneumonectomy, chemotherapy and radiation. MRI and PET scans may be done to define the extent of tumor.

Case Report: A 73 year old female with known right lung masses with no history of tobacco use or asbestos exposure, was sent to the hospital secondary to generalized weakness and unexplained weight loss of forty pounds over the past four months. The lung masses had been followed as an outpatient for four months and were diagnosed by CT chest and needle biopsy as granulomatous inflammatory changes. The patient was treated with oral fluconazole for a possible underlying fungal infection but continued to worsen clinically and was brought to the hospital. Upon admission the patient's laboratory values showed anemia of chronic disease, reactive thrombocytosis and a hyponatremia secondary to SIADH. A repeat CT chest was done secondary to high clinical suspicion for carcinoma. The test revealed an increased size of the lung nodules and the patient underwent a right bronchoscopy and right thoracoscopy and biopsy of chest wall. A frozen section revealed malignant cells and further pathological review showed a poorly differentiated spindle cell neoplasm. Special staining proved the diagnosis of sarcomatoid mesothelioma. The patient was discharged to home with plans for palliative radiation as needed and given a prognosis of 2-4 months if no intervention was done.

Discussion: Sarcomatoid mesothelioma is the least common form of mesothelioma accounting for 10-15% of cases. Pathologically, it is difficult to differentiate and often confused with sarcomatoid carcinoma or sarcomas based on the spindle cell shapes. The cells of mesothelioma are an irregular oval shape with rough endoplasmic reticulum and poorly visualized elongated nuclei under electron microscopy. The definitive diagnosis requires special stains and consideration of general appearance of localized or diffuse masses in the lung. Also, the use of immunohistochemistry markers including, CK 5/6, WT1, thrombomodulin, mesothelin, D2-40 and podoplanin are used.
MENKE’S DISEASE: SUSPECTED CASE IN NEWBORN INFANT WITH POSITIVE FAMILY HISTORY: A CASE REPORT

Janette Reeves, DO

Introduction: Menke kinky hair syndrome is an x-linked recessively inherited defect of copper metabolism, which causes severe cerebellar degeneration. The defect appears on the long arm of the X-chromosome near the centromere. Affected individuals are unable to transport copper within cells, specifically mitochondria, therefore enzymatic failure which causes decreased oxidative energy output. Copper is poorly distributed to the body, but accumulates in other tissues. Small intestine, kidneys, and brain show unusually low levels; while the copper containing enzymes necessary for structure of hair, bone, skin, blood vessels and nervous system are adversely affected. Associated defective dopamine metabolism causes sequellae which appear clinically similar to neuropathy. Classically, infant appears healthy until approximately 2-3 months, then loss of developmental milestones, hypotonia, seizures and failure to thrive. Early findings may include temperature instability and hypoglycemia. The name “kinky hair syndrome” comes from the clinical finding of pili torti (hair shaft twists 180 degrees), trichoclasis (transverse fracture of hair shaft) and trichoptilosis (longitudinal splitting of hair shaft). This diagnosis carries a poor prognosis with death usually in the first decade of life.

Case Report: January 2007 term male infant born to a G5 now P5 Hispanic mother (first two children are healthy). In this family there is a 6 year old male with known Menke’s disease; and a history of a male toddler who died at age 2, secondary to hydrocephalus, etiology unknown. Baby #5 appears grossly normal at birth, however first temperature taken is mildly low with repeat temperatures remaining low, despite warming lights and swaddling, for approximately two hours. No evidence of sepsis is present. Serum glucose is within normal values. Hair appears unevenly pigmented, with patches of hypopigmentation and hair, which also seems to stand on end. Neurological exam is normal, with good tone, symmetric moro, +fencer, +grasp x4, suck, rooting. Pediatric genetics is consulted in order to manage diagnosis and arrange for confirmatory testing. Patient is discharged with follow up at 2 months of age and gene mapping of affected brother will be used to analyze this infant’s karyotype.

Discussion: The ATP7A gene is the only gene with known association with Menke’s. Multiplex protocol of targeted mutation analysis, mutation scanning, and sequence analysis detects mutations in greater than 95% of affected individuals. Although this is a familial X-linked disease, 1/3 cases result from a new mutation in the gene. My first thought was to check serum levels of copper and ceruloplasmin. This was an error for the following reasons: serum copper concentrations are 20-70μg/dL at birth-6 months, in Menkes disease the range is 0-60μg/dL; and ceruloplasmin in Menke’s is 30-150μg/dL and birth-6 months is 50-220. As you can see these concentrations are naturally low in infants so these are not appropriate diagnostic tests. Plasma and CSF catecholamine analysis are distinctively low at all ages and reflect partial deficiency of 1) DBH (dopamine-beta-hydroxylase) a copper dependent enzyme critical in the catecholamine biosynthesis pathway, and 2) cysyl oxidase: a copper-dependent enzyme with low activity. There is molecular genetic testing available: the multiplex PCR detects large ATP7A deletions. Sequence analysis directly measures gene coding and intron sequence defects. In males point mutations make up approximately 80% of mutations and deletions are roughly 15%. Mutation scanning is heteroduplex analysis used to detect deletions too small to detect with multiplex PCR.
NOT EVERYTHING THAT BARKS IS CROUP

Laurie Salameh, DO

**Introduction**: Foreign body aspiration can be a deadly pediatric phenomenon. The National Safety Council statistics from 1995 reveal that mechanical suffocation accounted for 5% of all unintentional deaths among children 4 years old and younger. The most commonly aspirated objects are food items. The history is often key when evaluating for foreign body aspiration but is often times unavailable. The classic history can include cough, wheezing, stridor and sudden onset asthma symptoms. Presenting symptoms include cough, tachypnea, diminished breath sounds, cyanosis and retractions although the patient may present asymptotically. Most aspirated objects are radiolucent and so radiographs are good for only indirect signs such as air trapping, mediastinal shift, atelectasis, pneumonia or lobar collapse.

**Case Report**: A 2-year old male presented to St. Joseph’s Emergency Room with a several day history of a barky cough and fever. He had been admitted to another hospital two days earlier, treated for cough with humidified air and racemic epinephrine and discharged the day before admission at St. Joseph’s. Further questioning revealed that the patient had been experiencing coughs for the past couple of weeks without fever, shortness of breath, or increased work of breathing. He had no previous history of asthma nor a family history. Per mom, cough had continued to get worse even while hospitalized for the first time. On admission, patient had a low grade fever, a barky cough, suprasternal and intercostal retractions and looked very uncomfortable. The patient was treated symptomatically and given humidified air and racemic epinephrine treatments. He remained in house for two days. He had fewer retractions and was breathing more comfortably on room air. Per mom, he was much better and he was discharged. He returned a few days later with the return of cough, fever, retractions, and increased work of breathing. Secondary to the reoccurrence of symptoms even after treatment and hospitalization, a broncoscopy was performed which revealed a small plastic tag stuck in the trachea with surrounding erythema and the beginning of ulcerations. Mom remembered at this time that a few weeks ago the patient had a coughing episode from which he recovered so she had never thought anything of it. The foreign body was removed and the patient’s symptoms were alleviated.

**Discussion**: Foreign body aspiration can often be a hard diagnosis to make. History of aspiration by a witness is hard to obtain. Radiographic evidence is sometimes inconclusive and the patient may present with symptoms similar to those seen in croup, asthma, bronchiolitis or an upper respiratory infection. It is often easy to jump to a conclusion made by another provider without considering other possibilities. Any time a patient presents with respiratory symptoms that cannot be alleviated by conventional treatments, other diagnosis must be considered.
Abstract 174
St. Joseph's Hospital & Medical Center
Radiology

CTA AND MRA EVALUATION OF LEFT SUPERIOR VENA CAVA ANOMALIES

Amy Trahan, MD, Hedieh Saghari, MD, Gregory B. Stringfellow, MD, Courtney Mitchell, MD, Randy R. Richardson, MD

Purpose: A left superior vena cava (SVC) is a commonly encountered vascular anomaly seen on MDCT and MR of the chest. Although the majority of these anomalies are incidental and are of little clinical significance some can be symptomatic and may be part of a congenital heart disease complex. The left SVC typically inserts into the coronary sinus returning blood to the right atrium. We found one left SVC that passed under the aorta back to the right SVC. A left SVC may connect directly to the left atrium and can be a cause of cyanosis. Finally the left SVC can be a conduit for the pulmonary venous return in patients with total anomalous pulmonary venous return. (Materials: 230 patients who underwent CTA or MRA of the chest.)

Methods: We retrospectively reviewed 120 Cardiac MRA's and 150 CTA's in approximately 230 patients. MRA was performed using double dose contrast with 3D time of flight GRE sequences. CTA was performed using 3cc/kg nonionic contrast at 3cc/sec and 1mm axial slices at 11 sec and 16 sec delays. Raw data was used to construct multplanar and 3D reformatted images. Conventional angiography was performed in 5 patients. Correlation with angiography was obtained when the anatomy suggested a symptomatic lesion.

Results: We found a left SVC in 31 patients. Of these, 25 were of the classic left SVC type with blood return to the right atrium via the coronary sinus. Three of the patients had a left SVC that connected directly to the left atrium and had symptoms of cyanosis or low oxygen saturations. One patient had total anomalous pulmonary venous return (TAPVR) with the left SVC serving as a conduit to return blood from the lungs back to the right SVC and right atrium. One patient had blood return to the coronary sinus but also had a partial anomalous pulmonary venous return (PAPVR) from the left upper lobe. Finally one patient had a left SVC that passed under the aorta and connected to the right SVC, which may make this an aberrant left brachioccephalic vein rather than a left SVC. There were no false positives or false negatives when correlating with conventional angiography.

Conclusion: MRA and CTA are excellent imaging modalities for evaluation of venous anomalies in the chest with excellent correlation with conventional angiography. The most common type of left SVC returns blood to the right atrium via the coronary sinus. It is important to always trace the blood flow of a left SVC as they may return blood to the left atrium or serve as a conduit for pulmonary blood flow in PAPVR or TAPVR.
THE METHAMPHETAMINE EPIDEMIC: MATERNAL IMPLICATIONS

Kelli Williamson, RN, MPH, Meadow Good, BS, Matthew Kim, MD, Richard Blumrick, MD, James Balducci, MD, MBA

Purpose: Methamphetamine (meth) is the leading illicit drug of abuse in the southwest. Approximately 5% of the U.S. population admits to trying it. Little data has been published related to meth and its impact on human reproduction. This study reports on maternal demographics and outcomes in a tertiary care center located in the center of the meth epidemic.

Methods: Medical records (1/2000 – 3/3006) identified by ICD-9 code for substance use and pregnancy, were reviewed. Records documenting meth exposure during pregnancy were analyzed for the following: maternal age, ethnicity, employment status, education, marital status, domestic violence, smoking, prenatal care, and maternal complications.

Results: 276 patients were identified. 19/276 (7%) reported being employed, 79/141 (56%) had an 11th grade education or less, 53/275 (78%) were active tobacco smokers, 235/275 (86%) tested positive for illicit substances at the time of presentation, 66/275 (24%) tested positive for multiple illicit substances (THC, cocaine, opiates), 48/274 (17%) had a hypertensive complication, 25/272 (9%) had placental abruption, 15/276 (6%) had an unattended out of hospital delivery, and 25/275 (9%) were hospital to hospital transport. The table below illustrates statistically significant differences between meth patients and a non-meth exposed control population.

<table>
<thead>
<tr>
<th></th>
<th>Meth n=276 (%)</th>
<th>Control n=34055 (%)</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 20</td>
<td>25 (9)</td>
<td>5449 (16)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Ob Visit &lt; 5</td>
<td>190 (69)</td>
<td>3324 (10)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>152 (55)</td>
<td>24179 (71)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Married</td>
<td>34 (12)</td>
<td>15686 (46)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>OB + ICU Admit</td>
<td>6 (2)</td>
<td>95 (0.3)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Conclusion: Meth abusers in this study were generally older, single, less Hispanic in origin, smoke tobacco, less educated, unemployed, less compliant with prenatal care and more likely to report domestic violence compared to the control data set. Meth abusers have many characteristics that may lead to a high risk pregnancy with complicated outcomes related to hypertension, placental abruption and ICU admission. Meth abuse substantially increases the likelihood of perinatal morbidity, mortality and decreased maternal-infant bonding. The incidence of meth use is on the rise. Attempts to identify these patients early and intervene in an effort to improve pregnancy related outcomes are warranted.
Arizona Medical Education Consortium

Partnering to advance the quality of graduate medical education in Arizona.

The Arizona Medical Education Consortium (AzMEC) is dedicated to collaboration between and among all Accreditation Council for Graduate Medical Education (ACGME) accredited institutions and programs in Arizona. AzMEC assists member hospitals for all program and institutional accreditation requirements, and the development of necessary administrative processes to enhance all of the training programs. The Consortium is an active clinical partner in the state biomedical research initiative.

AzMEC serves as the crucible of innovative approaches for GME and UME among all the teaching programs in Arizona, and develops new programs and processes to address regulatory and accreditation standards as they evolve.

The Arizona Medical Education Consortium naturally evolved from the Phoenix Area Medical Education Consortium (PAMEC), established in 1996. The state-wide organization was incorporated in 2003. This metamorphosis took place due to the recognition of the rapid changes in the standards and competency based parameters that were being developed for accreditation of GME programs and that they would best be served by this collaborative and collective approach.

AzMEC is proud to work with all of our member hospitals to continue Academic Excellence Day to celebrate the accomplishments of our residents and fellows and their supporting faculty.

Consortium Members:
Banner Good Samaritan Medical Center
Carl T. Hayden VA Medical Center – Phoenix
Maricopa Integrated Health System
Mayo Clinic Arizona
Phoenix Baptist Hospital
Phoenix Children’s Hospital
St. Joseph’s Hospital and Medical Center
Scottsdale Healthcare
Southern Arizona VA Medical Center – Tucson
Tucson Medical Center
University Medical Center
University of Arizona College of Medicine
Kirksville College of Osteopathic Medicine – AZ Region
Mission

We exist to make a difference in people’s lives through excellent patient care.

Overview

Banner Good Samaritan Medical Center has served as a leader in healthcare in the Southwest since 1911. It is the flagship, quaternary care hospital of not-for-profit Banner Health which has 21 facilities throughout Arizona and other western and midwestern states. Banner Good Sam is located in the heart of Phoenix on a 60-acre campus including a modernistic 12-story inpatient complex and state-of-the-art diagnostic, emergency, ambulatory and support services. We are a major teaching affiliate of the University of Arizona’s College of Medicine and an integral component of its expanding Phoenix Campus. Our Medical Center’s academically oriented clinical setting with over 250 residents and fellows, medical students, other healthcare trainees and an excellent hospital-based faculty, fosters a very stimulating and rewarding educational atmosphere.

Banner Good Samaritan has core residencies in Internal Medicine, Surgery, Family Practice, Obstetrics and Gynecology and Psychiatry. There is a Combined Internal Medicine-Pediatrics Residency and first year Transitional and Preliminary Medicine programs as well. Our subspecialty fellowships include Cardiology, Interventional Cardiology, Endocrinology, Gastroenterology, Geriatrics, Medical Toxicology, Maternal-Fetal Medicine, and Pulmonary Disease and Critical Care Medicine.

ACGME Approved Residency Programs

Internal Medicine

The Internal Medicine programs at Banner Good Samaritan Medical Center (“Good Sam”) include categorical internal medicine, combined medicine-pediatrics and preliminary medicine. All programs, including the internal medicine subspecialty programs described below are fully integrated with the Phoenix Veterans Affairs Medical Center.

Last summer, the internal medicine program was invited to participate in the Residency Review Committee for Internal Medicine’s (RRC-IM) Educational Innovations Project, based upon stringent educational criteria for participation, 17 were selected. The Banner Good Sam internal medicine program was selected to be in this group of 17 “Best in Class” internal medicine programs and qualified for a 10 year accreditation cycle.

All faculty members hold academic appointments at the University. Each year, 40% or more of University of Arizona medical students complete their core clinical clerkship and elective rotations at Good Sam.

The categorical medicine program provides 36 months of training in internal medicine. The program is designed to train physicians who will enter the field of general internal medicine or one of the subspecialties. Residents are exposed to patients from different socioeconomic backgrounds who have a variety of common and uncommon medical problems. The program is designed to provide residents with elective time that allows the house officer to explore individual interests in the inpatient and outpatient settings. Required rotations include emergency medicine, neurology, geriatrics,
ambulatory medicine and a research month. The program matches for 20 interns per year. In addition there are 11 preliminary medicine interns.

**Medicine-Pediatrics**

The combined program in internal medicine and pediatrics is a four-year program that contains the core elements of training in both Internal Medicine and Pediatrics. The goal of the combined program is to train physicians who are fully capable of caring for the spectrum of illnesses that affect newborns, children, adolescents, and adults.

Residents who complete the four-year curriculum are eligible for board certification in both Internal Medicine and Pediatrics. Most physicians who complete the combined training experience join primary care physicians. Others choose to pursue subspecialty training in fields that include the care of both children and adults. As a result of recent restructuring of many medical practices, there are many positions available for medicine-pediatrics graduates to work as full-time hospitalists, providing in-hospital care for a wide variety of patient groups.

**Family Practice**

As the first family practice training program in Arizona and the 15th in the nation, Good Sam has a long and rich tradition in family medicine. The largest teaching hospital in the Southwest, Good Sam offers a unique site where family physicians learn and practice in an academically stimulating and supportive environment. The faculty includes superb, experienced family medicine educators and creative, dynamic new members.

The primary focus of our program is to provide superior family medicine education in a "real world" medical setting that will prepare our graduates to thrive in a wide range of practice settings from inner-city metropolitan to frontier rural locations.

**Obstetrics & Gynecology**

This residency program helps new physicians make the transition from student to specialist by providing the support they need to develop clinical competence, relationship building with patients, methods for life long learning and health management experience.

Residents learn, first-hand, the importance of continuity of care by caring for their own patients at Good Samaritan's outpatient Women's Health Service under the supervision of faculty. All major subspecialties are represented and the faculty includes 16 perinatologists, many who enjoy national recognition. This fully accredited program functions on a single campus and accepts seven categorical residents each year for a total of 28.

**Surgery**

The Phoenix Integrated Surgical Resident training program is primarily housed within two integrated hospitals, yet it is well supported by rotations at several affiliated institutions. At BGSMC you to participate in the care of patients with a myriad of surgical disease entities under the rubrics of general surgery and the specialties, including (to name a few): trauma and emergency surgery, advanced laparoscopy, cardiothoracic surgery, colon and rectal surgery, surgical endocrinology, transplantation, oncology, plastic and reconstructive surgery, surgical critical care and vascular/endovascular surgery. The second integral component, located a few miles up the road, is the Carl T. Hayden Veterans Affairs Medical Center. With more than 450 inpatient beds and an extensive outpatient system linked by a state-of-art informatics system, this facility provides house officers with additional opportunities.
to hone their clinical skills in general surgery and a variety of additional subspecialties.

Beyond these opportunities, house officers spend a considerable amount of their training at several affiliates during the middle years of their training. Another central Phoenix facility, Phoenix Children's Hospital, provides residents with their primary experience in management of age-specific congenital and acquired surgical diseases. To the east, in Mesa, is the Banner Desert Medical Center, a burgeoning medical center that exposes house officers to a large private practice opportunity in contemporary general, oncologic, and pediatric surgery. Finally, both junior- and senior-level residents spend several months at the Alaska Native Medical Center.

**Psychiatry**

Over the past four decades, the Psychiatry Residency at Banner Good Samaritan Medical Center has provided excellent opportunities for our residents to acquire contemporary clinical skills and a solid foundation of knowledge for lifelong professional development. Beyond the fundamental goals of training competent, caring and ethical psychiatrists, our educational philosophy genuinely considers an integrated, biopsychosocial model the cornerstone of understanding and treating patients. A strong sense of responsibility is fostered in a variety of clinical settings with supervision by experienced and enthusiastic full-time faculty. The clinical rotations are complemented by daily organized lectures, seminars and conferences addressing the rapidly expanding body of information in modern Psychiatry.

The clinical Psychiatry programs at Banner Good Samaritan include 22 inpatient beds and attractive outpatient clinics with personal offices for each resident. Our active consultation-liaison and emergency psychiatric services allow routine interaction with non-psychiatric colleagues throughout the Medical Center. Our residents are exposed to an excellent mixture of public, managed care and private patients with diverse economic and socio-cultural backgrounds and every type of psychiatric illness, level of acuity and age. Our Psychiatry Residency Program also offers required and elective experiences at other well-supervised, nearby clinical sites, including the Veteran's Administration Medical Center (VAMC), Phoenix Children's Hospital (PCH), a community mental health clinic, forensic settings, Arizona State University and outreach to rural areas.

**ACGME Approved Fellowship Programs**

The following internal medicine subspecialty fellowships are fully integrated between Banner Good Samaritan Medical Center and the Phoenix Veterans Affairs Medical Center: Each program leads to board eligibility in the subspecialty.

**Cardiology**

The Cardiology Fellowship Program encompasses full-time and part-time faculty members at both institutions. There are 3 fellows in each of the 3 years of training.

**Interventional Cardiology**

There are three fellows in this one year fellowship, based primarily at Banner Good Samaritan.

**Endocrinology**

This is a 2-year training program with an optional 3rd year for those interested in furthering their skills in biomedical research. There are two fellows in each year of training.
**Gastroenterology**

This is a 3-year program with 3 fellows in each year. There is a core group of full and part-time faculty at BGSMC and at the Phoenix VAMC.

**Geriatrics**

There is one fellow in this one year fellowship, based at Banner Good Sam.

**Pulmonary Disease and Critical Care Medicine**

This is a 3-year program with 2 fellows in each year. Full-time faculty at both hospitals as well as part-time staff at Banner Good Sam provides teaching.

**Hepatology**

This 1 year program is based at the Liver Disease Center at Banner Good Sam and the Liver Transplant unit. There is 1 fellow each year. Currently, there is no board certification in this subspecialty.

**Other Specialty Training Programs**

**Maternal-Fetal Medicine**

There is one fellow every other year in this three year program that is integrated with the University of Arizona College of Medicine.

**Medical Toxicology**

The Department of Medical Toxicology consists of five board-certified medical toxicologists who along with the fellows work in conjunction with the Banner Poison Control Center. Two fellows are chosen to enter the 2 year fellowship each academic year.
Maricopa Integrated Health System
Residency Programs

To provide quality patient care in a setting of education and research through a commitment to continually improve services that exceeds the expectations of our patients, physicians, employees, payers, and the community.

An Overview of Maricopa Integrated Health System

Maricopa Integrated Health System (MIHS) includes a tertiary care hospital licensed for 639 beds (450 at Maricopa Medical Center, 190 at Desert Vista and the Psychiatric Annex), a 141,560 square foot Comprehensive Health Care Center, and 11 primary care and family health care centers located throughout Maricopa County. A separate educational and administrative building has auditorium seating for 400 and teleconferencing capabilities. The Psychiatric services are offered in several venues and include Desert Vista Behavioral Health Hospital in Mesa and an on-campus inpatient facility. MIHS is licensed by the Arizona Department of Health Services and accredited by the Joint Commission on Accreditation of Health Care Organizations. In our last survey we received a score of 92.

MIHS is officially recognized for its Level one Trauma Center, ACS verified Level one Arizona Burn Center, Perinatal Level three Unit, and Behavioral Health Center. MIHS is accredited by the Accreditation Council for Continuing Medical Education and is a member of American Hospital Association AAMC Council for Teaching Hospitals, Association of Western Hospitals and other groups on a local, state and national level representing under-graduate, graduate, continuing medical education and research.

Maricopa Integrated Health System provides care for a diverse patient population including a high percentage of low-income patients. This provides house staff with interesting and challenging learning opportunities in medical diagnosis and treatment. Patient care activities are supported and enhanced by morbidity/mortality conferences and inter-departmental and inter-disciplinary conferences. Visiting professors from across the nation give perspective on clinical and research applications of current information.

In addition to 200 house staff, MIHS also has residents rotating from 12 base hospitals and medical students from 48 medical schools. University of Arizona 3rd and 4th year medical student electives are available through each clinical department. All residents have an opportunity to teach these medical students in the many learning modalities of medical education.

MIHS' Residents represent the top medical graduates of some of the finest medical schools across the country. Their diverse ethnic backgrounds add to the cultural diversity of the institution, its patients and employees.

Residents participate in clinical, bench and outcome research. Clinical departments provide research support, travel to academic meetings and a biostatistician is available for project design, implementation support and statistical analysis.

House Staff participate as full members on numerous hospital committees and participate in departmental peer review activities. The Residents' organization promotes social activities, support groups, and is active in the development of policies and procedures, which impact the house staff.

Maricopa Integrated Health System has both full-time and part-time clinical attending staff, who dedicate their time and expertise to further medical education and guide residents through their training. Many of
these well-qualified and teaching-oriented staff have dual academic appointments with the Mayo School of Medicine and the University of Arizona College of Medicine.

ACGME Approved Residency Programs

Emergency Medicine: Maricopa Integrated Health System is the third busiest trauma center in the Phoenix area. Residents are exposed to a wide variety of trauma, as well as routine emergency medicine. To broaden the experience, residents also rotate to other Emergency Departments in valley hospitals to learn about emergency medicine in a private hospital setting.

Positions per level: 10
Chair: Stephan Staczyński, MD
Boston UCLA School of Medicine
Program Director: Eric Katz, MD
Albert Einstein College of Medicine

Medicine: More than half of the graduates of this program enter general internal medicine. The program is ideally designed to train well-rounded, competent internist to care for patients in the hospital as well as an ambulatory clinic. Approximately forty percent of training takes place in the ambulatory setting. Our program offers a diverse exposure to medicine in family health care centers where residents experience continuity of care. Other features of the program are the rotations at Mayo Clinic Scottsdale, which enable residents to learn about medical care in a large private clinic. Opportunities are also available for residents to take electives at Mayo Clinic Scottsdale and Rochester. Residents are encouraged to participate in clinical research and a customized curriculum is available to those who choose to do so.

Positions per level: 14
Chair: David Wisinger, MD
University of South Florida
Program Director: Jaya Raj, MD
Columbia University

Medicine-Pediatrics (Med-Peds): The goal of this program is to train physicians skilled in patient-based care, interdisciplinary teamwork, evidence based practice, continuing quality improvement, and the use of modern information technology. The program draws on the strengths of two primary care services to generate a comprehensive ambulatory experience and thorough hospitalist training. The Family Health Centers of the Maricopa Health System are utilized for the continuity clinics. Opportunities are also available for residents to take electives at Mayo Clinic Scottsdale and Rochester. Residents are encouraged to participate in clinical research and a customized curriculum is available to those who choose to do so.

Positions per level: 4
Program Director: Shannon Skinner, MD
Texas Tech University

Obstetrics & Gynecology: This program is sponsored by Maricopa Integrated Health System, and is integrated with St. Joseph's Hospital thereby offering the benefits of both a public and private hospital experience. With over 11,000 deliveries and over 4000 major GYN operative procedures, the program is the largest in the state and one of the largest in the country. The residents also rotate through other hospitals in the Phoenix area.

Positions per level: 7
Chair: Dean Coonrod, MD
University of Washington
Program Director: R. Michael Brady, MD
University Of Virginia

Pediatrics: This program is integrated with Phoenix Children's Hospital. Having both sites provides a balanced educational curriculum in the full spectrum of general and subspecialty pediatrics. The core values of the program are a commitment to excellence in patient care and support of each resident’s professional and personal growth.

Positions per level: 21
Chair: Kote Chundu, MD
Guntur Medical College; India
Program Director: Grace L. Caputo, MD, MPH
State University of New York, Downstate Medical Center
Harvard School of Public Health

**Psychiatry:** The psychiatry program provides residents with individualized and progressive responsibilities to treat patients in acute and long-term settings. Affiliations with the Arizona State University Student Health Service, the Arizona State Hospital, and numerous community based treatment settings allow the resident to gain a wide perspective on patient care while receiving extensive supervision in a broad range of classical and contemporary treatment modalities.

Positions per level: 4
Chair: Carol Olsen, MD
University of Arizona
Program Director: William James, MD
Stanford University

**Child Psychiatry:** The child psychiatry residency program is sponsored by Maricopa Integrated Health System and is a two year program. This is a unique residency in that the majority of the training occurs in community settings.

Positions per level: 2
Chair: Carol Olsen, MD
Program Director: Shayne Tomisato, MD
Baylor College of Medicine

**Radiology:** Radiology is our newest residency program and received ACGME provisional accreditation for two years in March 2005. The department is eagerly awaiting the results of our most recent site review. Currently our resident compliment is at its full capacity of 8, with an additional resident from the New Orleans area.

Positions per level: 2
Chair: Theron Ovitt, MD
Marquette University College of Medicine
Program Director: Mary Connell, MD
Georgetown University College of Medicine

**Surgery:** In the last year the General Surgery program has become fully integrated with Scottsdale Healthcare. Approximately 106 beds at Maricopa Integrated Health System are dedicated to Surgery and surgical specialties currently. Residents see large caseloads of level I traumas, and our 20-bed Burn Center serves as a regional Burn Center. Affiliations include the Mayo Clinic Scottsdale, Arizona Heart Institute, University Medical Center and VA Medical Center, Good Samaritan Regional Medical Center and Legacy Health System in Portland, Oregon. These relationships provide residents with a diverse patient population and a wide variety of preoperative experiences.

Positions per level: 4
Chair: Daniel Caruso, MD
Wayne State University
Program Director: Kevin Foster, MD
Medical College of Ohio

**Other Affiliated Programs & Departments with Rotating Residents**

**Family and Community Medicine**
Chair: William Ellert, MD
Northeastern Ohio University
Program Director: John Andazola, MD
University of New Mexico
Since opening its doors in 1987, Mayo Clinic Arizona/Mayo School of Graduate Medical Education has developed ten Mayo Clinic Arizona-based residency programs in addition to twenty-eight advanced fellowship training programs. These programs exemplify the Mayo School of Graduate Medical Education’s long-standing tradition of academic excellence. The academic milieu at Mayo Clinic Arizona also includes short term rotations for residents from Mayo Clinic Rochester and Mayo Clinic Jacksonville, as well as residents from other institutions with whom Mayo Clinic Arizona has an academic affiliation, such as Maricopa Medical Center. The Mayo Clinic Hospital opened its doors in the fall of 1998. This 208-licensed bed facility provides Mayo Clinic residents with a state of the art inpatient facility utilizing state of the art robotic surgery equipment and an electronic medical record.

Information regarding specific medical student clerkship, residency, or fellowship opportunities can be obtained from the appropriate clinical department or by contacting the Mayo Clinic Arizona Education Office at 480-301-8071 or e-mail at http://www.mayo.edu/msgme/

**Anesthesiology:** The Anesthesiology Residency at Mayo Clinic in Arizona will begin in July 2007. This residency provides an outstanding clinical anesthesia experience that can be tailored to meet individual educational goals. Residents receive thorough preparation for board certification in anesthesiology, extensive didactic training, subspecialty training, and clinical and laboratory research opportunities.

Positions per Level: 3
Chair: Daniel J. Cole, MD
Loma Linda University
Program Director: Daniel J. Cole, MD

**Dermatology:** Mayo Clinic in Arizona offers a categorical program, which combines a one-year Transitional Year Residency (PGY-1) with a three-year Dermatology Residency Program (PGY-2 through PGY-4), which will prepare residents for a career in private practice or academic medicine. The Dermatology training includes; outpatient and inpatient clinical dermatology, pediatric dermatology, dermatologic surgery, dermatopathology, immunodermatology, clinical research and elective rotations at Mayo Clinic in Jacksonville, Mayo Clinic in Rochester and other approved institutions.

Positions per Level: 2
Chair: James A. Yiannias, M.D.
Baylor College of Medicine, Houston
Program Director: Karen E. Warschaw, M.D.
University of Minnesota

**Family Medicine:** The three-year Family Medicine Residency Program at Mayo Clinic in Arizona offers comprehensive training for family physicians who wish to assume responsibility for the total health care of individuals and families. This program provides a solid base of clinical skills and exposure to a variety of patient populations and health-care settings. It emphasizes the principles of family medicine and the importance of accessible, affordable and cost-effective health care. The program has developed an advanced system of competency-based education and offers a safe learning environment where ongoing formative evaluation is the norm.

Positions Per Level: 6
Chair: Robert L. Bratton, M.D.
University of Kentucky, Lexington
Program Director: Frederick D. Edwards, M.D.
University of Arizona College of Medicine
General Surgery: The five-year General Surgery Residency Program at Mayo Clinic in Arizona offers training in advanced surgical techniques with an emphasis on evidence-based surgery. Training includes; a “mentoring and mastery” model of education delivered through personal, ongoing patient-based teaching, provided directly from faculty surgeons supported by a robust, dynamic electronic core curriculum, daily didactic programs and acquisition of the judgment and skill sets to become a leader in general or subspecialty surgery.

Categorical Positions Per Level: 3
Chair: Richard J. Fowl, M.D.
Rush University
Program Director: Richard J. Gray, MD
Michigan State University

Neurology: Combined with the Transitional Year Residency at Mayo Clinic in Arizona, this 4-year Adult Neurology Residency Program is a subspecialty-focused training program. Subspecialty neurologists in behavioral neurology, cerebrovascular diseases, clinical neurophysiology, epilepsy, headache, movement disorders, multiple sclerosis, peripheral nerve disorders and neuromuscular diseases serve the ongoing needs of a large local population, as well as an extensive national and international referral network.

Mayo Clinic in Arizona enjoys the advantages of a large metropolitan area with expertise in pediatric neurology and neuropathology offered to our residents through Barrow Neurological Institute.

Positions per Level: 3
Chair: Richard J. Caselli, M.D.
Columbia University
Program Director: David W. Dodick, M.D.
Dalhousie University

Internal Medicine: The three-year Internal Medicine Residency Program at Mayo Clinic in Arizona will prepare residents for board certification and a career in clinical practice, research or academic medicine. The program is designed so that responsibilities will increase with knowledge, experience and performance. There is extensive contact with the faculty, and residents have the opportunity to develop close working relationships with faculty members from all areas of general and subspecialty medicine. The clinical component of the program emphasizes training in general internal medicine and education over service. Residents gain extensive experience in outpatient ambulatory care and take rotations in all internal medicine subspecialties. Residents have ample opportunity to become skilled in diagnostic procedures such as arthrocentesis, endotracheal intubation, lumbar puncture and thoracentesis.

Positions Per Level: 9
Chair: Jorge Rakela, M.D.
Universidad de Chile
Program Director: Keith J. Cannon, MD
UCLA School of Medicine

Otolaryngology: This five-year residency will prepare the resident for either private practice or academic medicine by training with a board-certified staff that teaches management concepts in Otology, Rhinology, Laryngology, Endoscopy, Pediatric otolaryngology, Head and neck trauma, facial plastic and reconstructive surgery and head and neck oncology.

Positions Per Level: 1
Chair: Richard E. Hayden, MD
McGill University
Program Director: Michael Hinni, MD
University of Missouri

Preliminary Surgery: The one-year Preliminary Surgery Residency Program at Mayo Clinic Arizona is designated for urology residents and provides a wide variety of surgical experience.

Positions Per Level: 2
Chair: Richard J. Fowl, M.D.
Rush University
Program Director: Richard J. Gray, MD
Michigan State University
Transitional Year: The Transitional Year Residency Program at Mayo Clinic in Arizona is designed to introduce you to a wide range of medical and surgical specialties through elective rotations and self-planned learning activities.

The goal is that during this year's experiences, you will build a broad foundation of clinical skills as a base for your future training.

The positions offered in this program are designated to the Mayo Clinic Arizona Dermatology and Neurology Residency programs. The program offers a solid foundation in the fundamental skills of clinical medicine so residents will emerge prepared for these two areas of specialty.

Positions per Level: 5
Program Director: Mark K. Edwin, M.D.
McGill University

Urology: The five-year Urology Residency Program, in conjunction with the Preliminary Surgery Program at Mayo Clinic in Arizona, provides a well-rounded clinical and research experience, with exposure to all aspects of urology. The Urology Residency program is accredited by the ACGME and offers training towards clinical proficiency in a broad area of urologic fields including infertility, endo-urology, laparoscopic urology, neuro-urology and sexual dysfunction.

Positions per level: 2
Chair: Robert G. Ferrigni, MD
Emory University School of Medicine
Program Director: Scott K. Swanson, MD
Tulane University School of Medicine

Advanced Fellowships: After completing a residency, many physicians pursue placement in one of the following programs offered at Mayo Clinic Arizona. Among these are:

- Adult Reconstructive Orthopedic
- Aesthetic and Reconstructive Surgery
- Cardiovascular Diseases
- Echocardiography
- Clinical Cardiac Electrophysiology
- Cerebrovascular Neurology
- Chief Medical Resident (Internal Medicine)
- MRI/Cross-Sectional Imaging
- EEG/Epilepsy/Neurophysiology
- Emergency Medicine Services
- Electromyography [EMG]
- Female Pelvic Medicine and Reconstructive Surgery
- Foot/Ankle Surgery
- Gastroenterology
- Head & Neck Surgery and Microvascular Reconstruction
- Headache
- Hematology/Oncology
- Hepatology Transplant
- Laparoscopic Colon & Rectal Surgery
- Movement Disorders
- Multiple Sclerosis/Neuroimmunology
- Musculoskeletal Imaging
- Pain Medicine
- Palliative Care
- PET/CT Imaging
- Physical Medicine and Rehabilitation
- Pulmonary Medicine
- Women's Imaging
The Phoenix Baptist Hospital Family Medicine Residency Program was established in 1978. Located in central Phoenix, we are an unopposed, community-based program serving a culturally diverse and underserved population. We value our affiliation with the University of Arizona College of Medicine and enjoy having third and fourth year medical students rotate from the University of Arizona, Kirksville and Midwestern medical schools. We are a member of the Arizona Medical Education Consortium (AzMEC) and collaborate with other programs to maintain high standards of quality for medical education in Arizona.

Our family medicine residents benefit by being the only residents within the hospital. The experience gained in caring for the full spectrum of healthcare needs in a diverse population is both rewarding and challenging. The broad scope of training includes exposure to a vast array of inpatient and outpatient procedural skills. Residents can become competent in obstetrical procedures including ultrasonography, fracture management, joint injection, dermatologic procedures, vasectomy, circumcision, colposcopy and LEEP, to name a few.

Our faculty are committed to providing an energetic and enthusiastic learning environment. We apply evidence-based principles in our approach to patient care and strive for safety and high quality. Because our outpatient clinic is on the hospital campus, we tend to have great continuity of care between the inpatient and outpatient service.

Our residents and faculty participate in research as well as quality improvement activities. The residency and staff are involved in outcome measurements and work collaboratively with the hospital to drive quality improvement. Our house staff are part of the general medical staff and sit on hospital and departmental committees, including peer review sessions. Family medicine residents present cases for monthly Grand Rounds, Morbidity/Mortality and Tumor Board staff conferences.

It is our mission to develop family physicians who not only practice in any setting, but successfully manage a practice in any setting. A strong practice management curriculum is the cornerstone of our program. With an emphasis on business management, office administration, quality improvement, billing and coding, we provide the skills required for family physicians to be successful in any practice environment. You will find many of our graduates in successful private and group-owned practices.
The Pediatric Residency program has been in existence since 1974, and integrates the programs at Phoenix Children's Hospital and Maricopa Medical Center. We are fully accredited by the ACGME, and a primary affiliate of the University of Arizona College of Medicine and Mayo Graduate School of Medicine. One of the strengths of our program is the access to a large and diverse patient population, which provides a rich clinical experience. Our faculty and staff provide excellent clinical instruction in a supportive environment. We accept 21 categorical pediatric positions per year.

Our primary mission is to provide excellent training for pediatric residents and medical students, while offering high quality medical care to all children and their families. Research and community service are important aspects of our program. We are proud to provide quality training in general pediatrics as well as in all subspecialty areas of pediatric medicine. Special emphasis is given to the cultural and developmental aspects of pediatric care, health care supervision, advocacy, and community medicine.

Phoenix is a culturally diverse area that provides residents the opportunity to work with Native American and Hispanic population. The goal is to provide excellent training for residents, whether they are interested in pursuing a career in general pediatrics or applying for subspecialty fellowship training experience. Many of our graduates have entered prestigious fellowship programs, while others have chosen to pursue careers in general pediatrics in a variety of settings.

The Phoenix Children's Hospital is a 290-bed multi-specialty freestanding children's hospital which brings together a full range of specialists in the field of Pediatrics. Advanced technology, innovative research and a spirit of community involvement are combined to promote health educations and the well-being of children. Comprehensive services offered at Phoenix Children's Hospital include a fully equipped Pediatric Intensive Care Unit, two Neonatal Intensive Care Units, a dedicated Pediatric Emergency Department, cardiac catheterization and cardiac surgery, renal transplantation, the Children's Cancer Center, a bone marrow transplant program, the Cystic Fibrosis Center and the Pediatric Subspecialty Care Center.

Maricopa Medical Center is a 449-bed major public teaching hospital, of which beds are designated to pediatrics. It is a designated Level One Trauma Center, with an accredited regional burn unit. Maricopa Medical Center also provides a fully equipped Pediatric Intensive Care and Neonatal Intensive Care Units, and a 24 hour Pediatric Emergency Department. Maricopa Integrated Health System supports 10 community-oriented family health centers, and a pediatric multi-specialty Comprehensive Health Center adjacent to the main hospital that offers care to a culturally diverse population with complex medical and social problems. Annually, MIHS has nearly 20,000 inpatient admissions and 300,000 outpatient visits.

The leadership of the program is an innovative group of physician directors, chief residents, and resident representatives who are actively involved in residency training. Educational issues, curriculum innovations, and professional development strategies are openly discussed in regular planning meetings. We offer resident retreats each year for each class, and involve the residents in creative planning. There are scheduled luncheons with the program directors, and an annual program evaluation that provides extensive resident involvement in program development.
Phoenix Children’s Hospital sponsors three fellowship programs: pediatric dermatology, pediatric emergency medicine and pediatric endocrinology.
St. Joseph’s Hospital and Medical Center
Residency/Fellowship Programs

Catholic Healthcare West and our
Sponsoring Congregations are committed to
furthering the healing ministry of Jesus. We
dedicate our resources to: delivering
compassionate, high-quality, affordable
health services; serving and advocating for
our sisters and brothers who are poor and
disenfranchised; and partnering with others
in the community to improve the quality of
life.

An Overview of St. Joseph’s Hospital and
Medical Center

Driven by a commitment to excellence in
teaching, research and clinical care, St.
Joseph’s Hospital and Medical Center has
been a symbol of quality healthcare in the
Valley for 110 years. The hospital offers a
wide range of services to treat the most
severely ill and injured in our community
and has more than 150 medical residents in
its teaching programs.

St. Joseph’s is home to Barrow Neurological
Institute, which is annually recognized as
one of the top 10 neuroscience centers in
the nation, and the Children’s Health
Center, which offers a full range of specialty
pediatric services. St. Joseph’s Trauma
Center is the only Level 1 trauma center in
the state that is verified by the American
College of Surgeons. In addition, the
hospital offers high-risk obstetrical,
neonatal intensive and a wide range of
cardiovascular care programs.

St. Joseph’s is developing into an academic
medical center with a teaching structure that
is based on diverse clinical experience, a
comprehensive curriculum, as well as a
balance between acute and primary care
medical training opportunities. Residency
programs are available in internal medicine
family medicine, pediatrics, neurology,
neurosurgery, OB/Gyn, pathology and
radiology. For more information, go to

ACGME Approved Residency Programs

Family Medicine: The Family Medicine
Residency Training Program at St. Joseph’s
Hospital & Medical Center was established
in 1975. The program is now in its 30th
year, with over 148 graduates who are
practicing all over the United States and the
world. Our graduates are extremely well
trained at St. Joe’s, due to a curriculum that
is not only comprehensive, but taught by
some of the best health care professionals
in the industry. Graduates from our program
are capable of moving into any practice
setting that may include inpatient medicine,
obstetrics, comprehensive outpatient
continuity care, and also careers in
Academic medicine. We are the only Family
Medicine Residency Program in Arizona in
which all core rotations to be done are at
the sponsoring institution, allowing residents
to get an excellent education. St. Joseph’s
Family Medicine program is affiliated with
the Sun Health Geriatric Fellowship
Program. In addition to Family Medicine
residents, we train geriatric fellows, 3rd and
4th year U of A Medical Students and
OBGYN residents from the PIROG
Program.

Positions per level: 8
Academic Chair and Program Director:
Paul Steinberg, MD

Internal Medicine: The Internal Medicine
Postgraduate Training Program is
committed to a comprehensive inpatient and
ambulatory training experience designed to
produce compassionate and highly skilled
general internists. An academically rigorous
program teaches residents state-of-the-art
medicine, skills of critical thinking, self-study
habits, and techniques of information
access that promote lifelong learning in our ever-changing field. Residents who train at St. Joseph’s Internal Medicine program are well prepared for today's medical marketplace for positions such as: hospitalists, sub-specialists, or primary care physicians. We believe that the continuing role of evidenced-based learning and outcomes-based teaching are the core of the program.

Positions per level: Preliminary 8, Categorical 9
Academic Chair and Program Director: Richard Blinkhorn, M.D.

Obstetrics and Gynecology: This program is sponsored by Maricopa Integrated Health System, and is an integrated program, thereby offering the benefits of both a public and private hospital experience. With over 11,000 deliveries and over 4000 major GYN operative procedures, the program is the largest in the state and one of the largest in the country. The residents also rotate through other hospitals in the Phoenix area.

Positions per level: 7
Preliminary positions: 2
Academic Chair: Dean Coonrod, M.D. and James Balducci, M.D.
Program Director: Michael Brady, M.D.

Pediatrics: The Pediatric Residency Program consists of a division of general pediatrics and ambulatory care, a division of child abuse assessment, fellowships in child development and child abuse and a division of developmental and behavioral pediatrics. We have 22-employed faculty; 32-contracted faculty; and a full complement of pediatric subspecialty faculty Each year approximately 3,500 patients are admitted to the pediatric ward. An average of 1,300 patients are admitted to the Pediatric Intensive Care Unit (PICU). Of the patients admitted to the PICU in the past 3 years, an average of 250 were cardiology/cardiovascular surgeries. In addition, approximately 170 pediatric cardiac catheterizations are performed at the Children’s Health Center each year.

Positions per level: 6
Academic Chair: William Shapiro, M.D.
Program Director: Steven Chung, M.D.

Neurology: As an integral part of Barrow Neurological Institute at St. Joseph’s Hospital and Medical Center, the Department of Neurology has been chosen for its highly skilled neuroscience care. The Division of Neurology offers comprehensive diagnosis, treatment, rehabilitation and education for patients suffering from diseases and injuries of the nervous system. Adult and child receive both inpatient and outpatient care from world-renowned specialists and have the opportunity to participate in pharmaceutical clinical trials. Diagnostic and research studies are perfected by scientists utilizing state-of-the-art equipment.

Experts at BNI provide teaching for medical residencies and sponsor on-going educational programs for physicians, health care professionals, patients and their families. Clinics include: Neuro-Oncology, Parkinson's Disease, Neurovascular, Neuromuscular, Epilepsy, Neurorehabilitation, Alzheimer's Disease, Muscular Dystrophy, Headache, and Dizziness/Balance Disorders.

Positions per level: 10
Academic Chair: Bruce White, D.O.
Program Director: Lilia Parra-Roide, M.D.

Neurosurgery: The Residency Program in Neurological Surgery is rigorous and fully accredited by the Accreditation Council for Graduate Medical Education. The first year is a mandatory internship in General Surgery at the Good Samaritan Regional Medical Center in Phoenix. During the PGY-1 year, rotating 3 months on Neurology Services at the Barrow fulfills the first Neurosurgery Board requirement. Five years are dedicated to the Neurosurgery Residency Training, including rotations in Neuropathology, Laboratory Research (12 months), or electives in addition to the core
neurosurgical training. An additional postgraduate year is devoted to further laboratory research or other electives. Residents develop their clinical skills by caring for patients in need of the entire spectrum of neurological surgery: trauma, cerebrovascular, spine, neoplastic, functional, and pediatric. The breadth of clinical experience available to residents is reflected by the volume of patients at the Barrow.

Positions per level: 4
Academic Chair: Robert Spetzler, MD
Program Director: Volker Sonntag, MD

Pathology: The combined anatomic and clinical pathology program at St. Joseph's Hospital provides excellent training opportunities for residents. A busy inpatient and outpatient surgical service, as well as tertiary referrals, keeps cases diverse and interesting. The four-year curriculum includes training in surgical pathology, cytopathology, autopsy pathology, immunohistochemistry, cytogenetics, flow cytometry, forensic pathology, immunohematology, hematology, chemistry and microbiology. Five months are available for electives. Our most recent graduates have completed fellowships (forensic pathology, dermatopathology, hematopathology) or have joined private practice groups in the Phoenix area. Currently, fifteen former residents are in practice in the Phoenix area. A recent addition to the curriculum has been a research requirement. This has resulted in several original articles and poster presentations. In addition, an annual pathology conference has been held on the St. Joseph's Campus, attracting local and national speakers. The conference has been a highlight for our residents.

Positions per level: 2
Academic Chair and Program Director: Jeffrey Oliver, MD
Department Chair: Roy Davis, M.D.

Diagnostic Radiology: The academic structure of our program is based on a rich and diverse clinical patient experience with a flexible curriculum designed for the individual resident's needs and a balance between tertiary and primary care experiences. Our world-renowned Barrow Neurological Institute provides training in the field of Neuroradiology. The majority of the resident's training is spent at St. Joseph's Hospital with the exception of one month rotations in Interventional Radiology, Nuclear Medicine, Pediatrics and Ultrasound at Good Samaritan Regional Medical Center and Phoenix Children's Hospital in Phoenix. In addition, Residents will rotate through the McAuley Office Building and Biltmore outpatient imaging facilities and will be exposed to pure outpatient imaging, performing and interpreting studies in areas such as CT, Ultrasound, Mammography, MRI, Fluoro and Breast Biopsy (U/S and Stereotactic Guided).

Positions per level: 4
Academic Chair: Eric vanSonnenberg, M.D.
Program Director: Sandy Ornstein, M.D.
Scottsdale Healthcare
Family Medicine Residency Program

Scottsdale Healthcare's Heuser Family Medicine Residency Program was established in 1974. Our community-based program has an affiliation with the University of Arizona College of Medicine. The high standards of training in our program have been documented through a long history of successful graduates and a 100% pass rate on the American Board of Family Medicine Certification Examination year after year.

We are a member of the Arizona Medical Education Consortium (AzMEC) to collectively ensure high quality medical education in the Phoenix area. Other consortium participants include Carl T. Hayden Veterans Affairs Medical Center, Catholic Healthcare Arizona (St. Joseph's Hospital), Banner Health Arizona (Samaritan Health System), Phoenix Baptist Hospital & Medical Center, Phoenix Children's Hospital, Kirksville College of Osteopathic Medicine and the University of Arizona.

Our mission is to produce excellent family physicians that are knowledgeable, capable, and compassionate. This is accomplished through an academic and stimulating learning environment, where residents and faculty are encouraged to pursue a regular and systematic program of lifelong learning. Over and above disease orientation, we value maintaining health and preventing disease throughout the life of the patient.

Our graduates have gone on to practice in a wide variety of settings, including private practice, academic institutions, rural settings, urgent care or ER based practices, and as hospitalists.

Since the program's inception, approximately one half of our graduates have remained in the state of Arizona, while others have gone on to practice throughout the United States and internationally.

Positions per level: 8
Program Director: Robert Creager, MD