INTRODUCTION

- Blood utilization monitoring is a component of our institutional PBM program.
- At Saint Louis University Hospital (SLUH), an academic, tertiary care facility, we perform concurrent daily blood utilization reviews.
- During our audit, a surprising number of single-unit plasma transfusions were identified in patients with normal coagulation values.
- This study was performed to evaluate single-unit plasma transfusions in detail, to identify opportunities to improve transfusion practice.

RESULTS

- A total of 2,887 units of plasma were transfused in 2017.
- 395 (14%) were single-unit transfusions; 328 (11%) met the inclusion criteria.
- 55 single-unit transfusions were associated with INR values ≤1.5.
- Surgical subspecialities and emergency medicine were the most common transfusing services.
- A post-transfusion INR, when available, did not demonstrate a significant change from the pre-transfusion baseline.
- The most common indications for transfusion included hypovolemia and bleeding.
- See Results Diagram below

STUDY DESIGN

Data for 2017 plasma transfusions were extracted from our electronic health record system.

Inclusion Criteria:
- All patients were adults (>18 years old)
- Patients further subdivided into two groups: patients with INR values ≤1.5 and patients with INR values >1.5
- Patients with INR values ≤1.5 were the primary focus of this study
- Additional study data collected included the transfusing clinical service, a post-transfusion INR value obtained within 24 hours of transfusion (if available), and the probable indication for transfusion

Exclusion Criteria:
- Patients transfused with plasma in the operating room or post-anesthesia care unit

CONCLUSIONS

- A daily audit revealed that single-unit plasma transfusion events are common.
- Surgical subspecialties and emergency medicine accounted for the majority of these transfusions.
- These likely represent inappropriate transfusions and opportunities to improve practice institutionally.
- Though single-unit red cell and platelet transfusions represent desirable practices, single-unit plasma transfusions are an undesirable quality improvement metric.
BACKGROUND
- Patients with primary immunodeficiency (PID) are at increased risk of developing hematological malignancies (HM).
- Malignancy is the second most common cause of death in children and adults with PID.
- There is paucity of data regarding the impact of PID on short-term outcomes in hospitalized patients with HM.

OBJECTIVES
- This study aimed to describe the prevalence of PID, socio-demographic correlates of PID, and the impact of PID on short-term outcomes in hospitalized patients with HM.

METHODS

Data Source, Study Design, and Sample
- Data source: The Nationwide Inpatient Sample (NIS) 2008 – 2014
- Encompasses 1,000 hospitals in 44 states
- Includes 8 million annual hospital discharges
- Study design: cross-sectional study

Sample
- ICD-9 codes were used to identify patients with HM and PID
- The sample comprised of 537941 hospitalized patients (aged ≥18 years)

Measures
- Outcome of interest: Diagnosis of PID, and impact of PID on in-hospital mortality, length of hospital stay, and average total hospital charges among patients with HM.
- Independent variables: Age, gender, race, comorbidities, hospital region, urban versus rural hospital.

Statistical Analysis
- Descriptive statistics: chi square and independent sample t tests
- Multilevel hierarchical logistic regression model to create a predictive model of the impact of PID.

RESULTS

Table 1 Prevalence characteristics of patients with HM, stratified by PID. Nationwide Inpatient Sample, 2008 – 2014

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Overall (N=4,046,000)</th>
<th>PID (N=33,098)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>53% (95% CI)</td>
<td>50% (9)</td>
<td></td>
</tr>
<tr>
<td>Male gender</td>
<td>52% (95% CI)</td>
<td>48% (9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Age in years</td>
<td>55 ± 34.2</td>
<td>56 ± 34.1</td>
<td>0.152</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>40% (95% CI)</td>
<td>42% (9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hispanic</td>
<td>62% (95% CI)</td>
<td>65% (9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Other</td>
<td>38% (95% CI)</td>
<td>33% (9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hospital region</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>26% (95% CI)</td>
<td>27% (9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Midwest</td>
<td>26% (95% CI)</td>
<td>28% (9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>West</td>
<td>35% (95% CI)</td>
<td>34% (9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Urban hospital</td>
<td>55% (95% CI)</td>
<td>57% (9)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Note: OR=odds ratio; CI=confidence interval

Overall, the prevalence of PID was 1.86%
- PID IgA deficiency, IgM deficiency, CVID, SCID, hyper IgM, hyper IgE, ECD, and others
- The highest prevalence was among patients with CLL, followed by ALL, and NHL.
- Higher odds of PID were among male, young, white adults, those with higher comorbidities, and those living in Midwest and South.

Table 2 Multivariate logistic regression evaluating the correlates of PID among patients with HM. Nationwide Inpatient Sample, 2008 – 2014

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>OR (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital mortality</td>
<td>3.17 (1.97 - 5.00)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Prolonged hospital stay</td>
<td>3.51 (2.09 - 5.84)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total hospital charges, mean ($)</td>
<td>2588.081 (5685.12)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

CONCLUSIONS
- Among hospitalized patients with HM, patients with PID were associated with higher in-hospital mortality, longer hospital stay, and increased hospital expenses.
- This study highlights disparities in health and hospital outcomes across race/ethnicity, geographic region, and other hospital level factors in PID patients with HM.
- Strength: large sample size, ability to generalize findings to hospitalized patients.
- Weakness: small sample size, ability to generalize findings to hospitalized patients.

IMPLICATIONS & FUTURE DIRECTIONS
- This study suggests the need to identify PID patients at risk of HM. A scoring system to measure risk can help to reduce mortality and healthcare expenses.
- A greater understanding of the pathways responsible for the increased risk of HM in PID is needed, especially if early treatment of PID can reduce the risk of cancer.
Diagnostic Accuracy of The SLU AMSAD Scale for Depression in Non-Demented Elderly

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1 Department of Psychiatry and Behavioral Neuroscience, Saint Louis University

Introduction

Despite its significant impact, geriatric depression remains both underdiagnosed and undertreated (1). In the absence of specific diagnostic criteria, the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria currently represent the gold standard diagnostic tool for late-life depression. Given the fact that most elderly patients receive medical care in primary care settings (2), there is an increasing need to develop practical diagnostic tools to be used by primary care practitioners. The Saint Louis University (SLU) AMSAD tool is a brief (5-item) questionnaire that was recently developed to screen for late-life depression. It is a reference appetite, mood, sleep, activity and death ideation using simple language and scaling. Previous research has supported its validity and reliability in cognitively intact older adults in relation to the Geriatric Depression Scale (GDS-15) and the Montgomery-Asberg Depression Rating Scale (MADRS) (3). The objective of this study was to evaluate the accuracy and reliability of the SLU AMSAD regarding diagnosis of major depressive disorder (MDD) per DSM-5 criteria in a sample of older adults without major neurocognitive disorder.

Methodology

A convenience sample of 50 patients, ≥65 years of age was enrolled through our specialized geriatric psychiatry outpatient clinic. Patients with a clinical suspicion or diagnosis of major neurocognitive disorder as reflected by a Saint Louis University Mental Status (SLUMS) score of ≥20 were excluded. MDD diagnosis was determined by the treating physician using the DSM-5 criteria. The SLU AMSAD, GDS-15 and MADRS, were then independently administered by a member of the research team who was blind to the MDD diagnosis. Internal consistency reliability of the SLU AMSAD was determined using Cronbach’s alpha coefficient. Diagnostic accuracy was evaluated using receiver operating characteristic curve (ROC) analysis, with area under the curve (AUC) and sensitivity/specificity parameters calculated. Correlations coefficients (Spearman ρ) were calculated between the various screening measures and MDD diagnosis.

Results

Receiver Operating Characteristic Curve Analysis and Correlation of Depression Scales with DSM-5 MDD Diagnosis

<table>
<thead>
<tr>
<th>Measures</th>
<th>Area Under the Curve</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>ρ (P-Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Score (Continuous)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GDS-15</td>
<td>.94 / .93 / .86 / .70</td>
<td>.79 / .79 / .57 / .53</td>
<td>.89 / .93 / .86 / .75</td>
<td>&lt; .001 / &lt; .001 / &lt; .001 / &lt; .001</td>
</tr>
<tr>
<td>No vs. Any (Mild-Mod-Sev) Depression</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>No-Mild vs. Mod-Sev Depression</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MADRS</td>
<td>.94 / .93 / .80 / .70</td>
<td>.69 / .69 / .37 / .39</td>
<td>.85 / .87 / .83 / .66</td>
<td>&lt; .001 / &lt; .001 / &lt; .001 / &lt; .001</td>
</tr>
<tr>
<td>SLU AMSAD</td>
<td>.93 / .93 / .86 / .69</td>
<td>.71 / .71 / .43 / .43</td>
<td>.82 / .93 / .71 / .59</td>
<td>&lt; .001 / &lt; .001 / &lt; .001 / &lt; .001</td>
</tr>
</tbody>
</table>

Funding sources

None

References


Conclusions

The results indicated strong diagnostic accuracy for all three depression scales in relation to the DSM-5 by ROC and correlation analyses. The SLU AMSAD performed at least as well as the GDS-15 (three times the length of the AMSAD and slightly better than the much longer and complex MADRS). However, the clinical superiorly of the SLU AMSAD for depression screening in the elderly (in relation to the other measures) is supported by the fact that it encompasses not only the similarly worded, similarly-scaled items. Thus, the SLU AMSAD emerges as a potentially strong candidate for depression screening in busy clinical settings, including primary care but also in the emergency department.
What percentage of adolescents at Danis Pediatrics are screened and treated for depression?

Libby Noonan, MD, Nora Olson, MD, M. Susan Heaney, MD, MPH
Saint Louis University School of Medicine, Department of Pediatrics

Background

• Roughly 1 in 5 teens experience depression during adolescence but only about 50% are diagnosed before adulthood.
• The American Academy of Pediatrics (AAP) and United States Preventative Service Task Force (USPSTF) recommend screening adolescents for depression with a validated screening tool at least once a year.
• At Danis Pediatrics patients are screened for depression starting at age 12 using the Patient Health Questionnaire-Adolescent (PHQ-A).
• A score of 10 or greater on PHQ-A has a 75% sensitivity and 94% specificity for the diagnosis of major depressive disorder and dysthymia.

Objectives

• Determine adherence to the USPTF recommendations for adolescent depression screening.
• Determine the percentage of providers that are screening for depression and offering an intervention for positive screens.

Methods

• Retrospective chart review of patient visits ages 12 to 18 seen at Danis Pediatrics July through September 2018.
• Total of 558 patients included in study.

Results

<table>
<thead>
<tr>
<th>n (%)</th>
<th>PHQ-A performed</th>
<th>Positive screen ≥10</th>
<th>Intervention offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>391</td>
<td>167</td>
<td>32 (8.2%)**</td>
<td>25 (78.1%)**</td>
</tr>
<tr>
<td>359</td>
<td>141</td>
<td>335 (91.8%)</td>
<td>7 (21.9%)</td>
</tr>
</tbody>
</table>

Figure 1. Demographics of study subjects and characteristics of visit.

Figure 2. Screening and intervention rate. *out of 391 screens performed **out of 32 positive screens

Figure 3. Percentage of PHQ-A performed based on visit type and provider. PHQ-A were more likely to be performed in a well-child visit than in an acute or follow-up visit (p <0.001).

Conclusions

• Screening for depression in adolescents at Danis Pediatrics varies based on the type of clinic visit.
• Screening is highest at well child checks (Figure 3).
• By not screening at all visits there are missed opportunities to diagnose and treat adolescents with depression.
• Only 78% of positive screens had some form of intervention documented.
• Interventions included referral to Psychiatry, Psychology, or Behavioral Health, close follow up at Danis Pediatrics, and prescribing or continuing mood related medications.
• Barriers to intervention may be due to lack of familiarity of resources available.

Limitations

• Data collection relies on provider documentation.

Future Directions

• Develop an intervention via the Electronic Health Record that will remind the provider to administer the PHQ-A screen at all appointments for patients ages 12 to 18.
• Educate providers about the mental health resources available for positive PHQ-A screens.
• Review patient charts from July, August and Sept 2019 and assess effectiveness of intervention.
Effect of Smoking and Other Factors on Outcome of Mohs Reconstruction
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Saint Louis University Department of Dermatology, Saint Louis, Missouri
(The authors have no financial disclosures)

Background
Smoking is a common lifestyle trait that negatively affects post-surgical wound-healing.1-2
- Rate of flap necrosis3 and infection4
- TGF-β5,6 and collagen synthesis7-8 → ? scar

Few studies directly measure the impact of smoking on wound-healing after Mohs reconstruction.
- Suggested to ↑ acute complication as a covariate in studies pertaining to other topics
- The 1 study in dermatology literature only addressed acute complication and did not take into account any relevant covariates3

Method
- Retrospective single-centered case-control study
  - Jul 2012- Jun 2016, 1,008 cases of Mohs reconstructions that used flap/graft.
- Main outcomes
  - Acute: infection, dehiscence, hematoma, uncontrolled-bleeding, tissue necrosis
  - Chronic: unsatisfactory scarring/ cosmesis

Statistical analysis
- IBM SPSS v25
- Univariate analysis for each covariate
- Iteration 1 of multivariate logistic regression includes covariates with p < 0.20 in univariate analysis
- Iteration 2 of multivariate logistic regression excludes covariates found to be statistically non-significant during Iteration 1

Table 1: Univariate analysis of covariates and outcomes

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>ACUTE COMPLICATION</th>
<th>CHRONIC COMPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, median (SD)</td>
<td>69.3 (12.2)</td>
<td>69.8 (12.2)</td>
</tr>
<tr>
<td>No complication</td>
<td>0.067</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>With complication</td>
<td>68.3 (14.4)</td>
<td>62.9 (13.8)</td>
</tr>
<tr>
<td>Defect size, mean ± SD</td>
<td>4.3 cm² (5.6)</td>
<td>3.7 cm² (6.6)</td>
</tr>
<tr>
<td>No complication</td>
<td>0.00181*</td>
<td>0.361</td>
</tr>
<tr>
<td>With complication</td>
<td>6.6 cm² (9.3)</td>
<td>3.1 cm² (3.2)</td>
</tr>
<tr>
<td>Flap size, mean ± SD</td>
<td>12.4 cm² (14.1)</td>
<td>12.5 cm² (14.6)</td>
</tr>
<tr>
<td>No complication</td>
<td>0.00029*</td>
<td>0.076</td>
</tr>
<tr>
<td>With complication</td>
<td>20.9 cm² (24.3)</td>
<td>15.6 cm² (16.0)</td>
</tr>
<tr>
<td>Sex (%)</td>
<td>Male</td>
<td>0.028*</td>
</tr>
<tr>
<td></td>
<td>9/396 (2.3%)</td>
<td>40/362 (10.1)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>32/612 (5.2%)</td>
</tr>
<tr>
<td></td>
<td>35/612 (5.7%)</td>
<td></td>
</tr>
<tr>
<td>Smoking status (%)</td>
<td>Neiver</td>
<td>4/695 (0.6%)</td>
</tr>
<tr>
<td></td>
<td>4/695 (0.8%)</td>
<td></td>
</tr>
<tr>
<td>Former</td>
<td>18/338 (5.4%)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Current</td>
<td>17/126 (13.2%)</td>
<td>23/385 (6.0)</td>
</tr>
<tr>
<td>Tumor Type (%)</td>
<td>SCCS</td>
<td>1/600 (1.7)</td>
</tr>
<tr>
<td></td>
<td>BCC or basocoid</td>
<td>35/820 (4.3)</td>
</tr>
<tr>
<td></td>
<td>SCC or other</td>
<td>5/128 (3.9)</td>
</tr>
<tr>
<td></td>
<td>7/282 (2.1)</td>
<td></td>
</tr>
<tr>
<td>Location (%)</td>
<td>Peripheral face</td>
<td>1/619 (1.3)</td>
</tr>
<tr>
<td></td>
<td>Central face</td>
<td>23/627 (7.3)</td>
</tr>
<tr>
<td></td>
<td>16/50 (3.2)</td>
<td></td>
</tr>
<tr>
<td>Earl</td>
<td>5/157 (3.2)</td>
<td>0.164</td>
</tr>
<tr>
<td>Scalp and Other</td>
<td>6/55 (10.9)</td>
<td>0.055</td>
</tr>
<tr>
<td>Repair Type (%)</td>
<td>Local flap</td>
<td>6/55 (10.9)</td>
</tr>
<tr>
<td></td>
<td>FTSG</td>
<td>25/751 (3.3)</td>
</tr>
<tr>
<td></td>
<td>48/751 (6.4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interpolation or combined flap/graft</td>
<td>6/78 (7.7)</td>
</tr>
<tr>
<td>Cartilage graft</td>
<td>3/131 (2.5)</td>
<td>1/13 (7.7)</td>
</tr>
<tr>
<td>Anti-platelet (%)</td>
<td>None</td>
<td>21/531 (4.0)</td>
</tr>
<tr>
<td></td>
<td>42/531 (7.9)</td>
<td></td>
</tr>
<tr>
<td>ASA</td>
<td>13/410 (3.2)</td>
<td>0.034*</td>
</tr>
<tr>
<td></td>
<td>30/410 (7.3)</td>
<td>0.670</td>
</tr>
<tr>
<td>Other</td>
<td>7/67 (10.4)</td>
<td>3/67 (4.5)</td>
</tr>
<tr>
<td>Warfarin or DOAC (%)</td>
<td>None</td>
<td>37/939 (3.9)</td>
</tr>
<tr>
<td></td>
<td>73/939 (7.8)</td>
<td></td>
</tr>
<tr>
<td>Warfarin</td>
<td>3/55 (5.5)</td>
<td>0.424</td>
</tr>
<tr>
<td></td>
<td>2/55 (3.6)</td>
<td>0.553</td>
</tr>
<tr>
<td>Other</td>
<td>1/14 (7.1)</td>
<td>0.14 (0.0)</td>
</tr>
<tr>
<td>Other anti-coagulant (%)</td>
<td>No</td>
<td>37/942 (3.9)</td>
</tr>
<tr>
<td></td>
<td>3/466 (6.1)</td>
<td>0.337</td>
</tr>
<tr>
<td></td>
<td>2/466 (6.1)</td>
<td>0.411</td>
</tr>
<tr>
<td>Diabetes (%)</td>
<td>Yes</td>
<td>37/838 (4.4)</td>
</tr>
<tr>
<td></td>
<td>61/838 (7.3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1/170 (0.6)</td>
</tr>
<tr>
<td></td>
<td>14/170 (8.2)</td>
<td>0.665</td>
</tr>
<tr>
<td>Immuno-suppression (%)</td>
<td>Yes</td>
<td>40/389 (4.0)</td>
</tr>
<tr>
<td></td>
<td>0.540f</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0/19 (0.0)</td>
<td>0.389f</td>
</tr>
</tbody>
</table>

Table 2: Multivariate logistic regression for acute complications

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>iteration 1</th>
<th>iteration 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former smoker</td>
<td>0.021</td>
<td>0.007</td>
</tr>
<tr>
<td>Current smoker</td>
<td>0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Defect size (Ln)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Cartilage graft</td>
<td>0.008</td>
<td>0.020</td>
</tr>
<tr>
<td>Age</td>
<td>0.105</td>
<td>0.296</td>
</tr>
<tr>
<td>Male</td>
<td>0.380</td>
<td>0.105</td>
</tr>
</tbody>
</table>

Table 3: Multivariate logistic regression for long-term complications

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>iteration 1</th>
<th>iteration 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former smoker</td>
<td>0.052</td>
<td>0.386</td>
</tr>
<tr>
<td>Current smoker</td>
<td>0.876</td>
<td>0.105</td>
</tr>
<tr>
<td>Central face</td>
<td>&lt;0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Interpolation or combined flap/graft</td>
<td>&lt;0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Older age</td>
<td>0.349</td>
<td>0.105</td>
</tr>
<tr>
<td>Flap size (Ln)</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Female sex</td>
<td>0.434</td>
<td>0.105</td>
</tr>
</tbody>
</table>

Discussion

Possible risk factors α/ acute complications
- Larger defect size
- Cartilage graft

Possible risk factors α/ long-term complications
- Central face location
- Use of interpolation or combined flap/graft
- Larger repair size
- BCC/basocoid tumor type
- Older age may be protective

References
Neuropsychiatric symptoms in an adolescent: Dig Deeper

M. Khan, M.D., A. Tanios, M.D.
Saint Louis University, Department of Pediatrics
SSM Health Cardinal Glennon Children’s Hospital, St. Louis, MO

Case presentation

A seventeen year old female presented with a three month history of
- Depressed mood and behavioral changes - fatigue, anorexia, anhedonia and insomnia. She also identified a recent breakup as the trigger
- "Near syncopal" episodes - with frequent falls, Intermittent headaches and vomiting,
- Fifteen pound weight loss,
- Enuresis,
- Family history - Mother with multiple sclerosis.

Physical exam was notable for
- Flat affect, short attention span, slow thought process,
- Bilateral pupillary dilation - 7mm, Grade IV Papilledema
- Generalized hyperreflexia, bilateral Babinski's sign and postural hand tremors

Hospital Course

- Admitted for inpatient evaluation and management. Initial workup - blood counts, chemistry, toxicology - all negative.
- Pan positive for Major Depressive Disorder with severe features. However, bladder incontinence, frequent falls, headache and vomiting could not be explained by an isolated mood disorder. Cortical and upper motor neuron signs warranted neuroimaging for intracranial pathology.

Differential Diagnosis

<table>
<thead>
<tr>
<th>Disease</th>
<th>Pertinent positives in our patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Depressive Disorder</td>
<td>Met 7 of 9 DSM V criteria for MDD - depressed mood, anorexia, weight loss, insomnia, anhedonia, psychomotor retardation, impaired concentration.</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>Age of onset, cognitive impairment, bladder incontinence, fatigue, upper motor neuron signs. Family history of Multiple Sclerosis - mother.</td>
</tr>
<tr>
<td>Normal Pressure Hydrocephalus</td>
<td>Triad of cognitive impairment, urinary incontinence and gait/balance dysfunction.</td>
</tr>
<tr>
<td>Eating disorder</td>
<td>Weight loss, vomiting, BMI - 19, concurrent depression and cognitive dysfunction.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Frontal Lobe</th>
<th>Upper Motor Neuron</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral changes</td>
<td>Bilateral dilated pupils, hyperreflexia, Babinski’s positive</td>
</tr>
<tr>
<td>Bladder incontinence</td>
<td></td>
</tr>
<tr>
<td>Flat affect, poor attention span, slow response</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: MRI brain showing heterogeneous enhancing lobular mass likely arising from septum pellucidum resulting in obstructive hydrocephalus.

Figure 2: Presentation of central/intraventricular tumors

Conclusions

- This is a classic case of a neuropsychiatric interface where timely diagnosis was very crucial requiring emergent neurosurgical intervention.
- A cluster of vague symptoms that do not fit into a single psychiatric category should prompt a high index of suspicion for intracranial pathology.
- A thorough history and complete physical examination including neurological is important and neuroimaging will clinch the diagnosis.

References

Off-label Use of Dupilumab for Pediatric Patients with Atopic Dermatitis:
A Multicenter Retrospective Review


*St. Louis University and Cardinal Glennon Children’s Hospital, St. Louis, MO, USA *University of Texas at Austin Dell Medical School, Austin, TX USA *Trinity University School of Medicine, New Haven, CT, USA *Children’s Hospital of Philadelphia, Philadelphia, PA, USA *University of Pittsburgh Medical Center, Pittsburgh, PA, USA *University of California at San Francisco, San Francisco, CA, USA *University of Wisconsin School of Medicine & Public Health, Madison, WI, USA

Background/Aim

- Dupilumab is an anti-IL-4 receptor monoclonal antibody, USFDA approved on 03/25/17 for adults with moderate-to-severe atopic dermatitis (AD), dosed at 600 mg (loading) and 300 mg (maintenance Q2Wk)
- Industry-sponsored pediatric clinical trials including children 26 mo are in process, but the drug is not yet approved for AD in children
- Only a limited number of children have an opportunity to participate in a clinical trial
- Many payers use age as the sole reason for denying access to this medication for children with moderate-to-severe AD, who have failed multiple other treatments
- Optimal pediatric dosing has not yet been defined, and the medication is currently available in single-dose, unmarked syringes
- Pending FDA-approval for pediatric AD, this data may help inform use of dupilumab in children

Methods

- IRB-approved, retrospective review
- 7 collaborating centers with Pediatric Dermatologists
- Records reviewed from all pediatric patients, age 0 to <18 years. who were prescribed dupilumab for AD
- Adolescents with moderate-to-severe atopic dermatitis, dupilumab for AD: Results From a Multicenter, Randomized, Placebo-Controlled, Double-Blind, Parallel-Group, Phase 3 Study. Presented at the 27th annual EADV conference, Sept 12–16 2016, Paris, France
- Despite off-label use, access to dupilumab was generally granted, after a delay
- Optimal pediatric dosing is under investigation
- Doses of 200 mg (1.14 ml/kg) for asthma and 300 mg (2 ml/kg) are now marketed

Results

- N=109 children
- Demographics: mean age at dupilumab initiation was 13yr (3-18; SD = 3.9); 41% female
- Prior Hospitalizations for AD: 36 (32%
- Prior systemic treatments - antihistamines: sedating (82%); non-sedating (79%); oral corticosteroids (72%); methotrexate (64%); cyclosporine (40%); mycophenolate mofetil (11%); IVIG (10%); thalidomide (9%)
- Access: PA required: 109 (100%); mean delay in access to treatment: 9.4 wk (range: 1 day - 69 wk)
- insurance coverage denided: 13 (12%)

Associated Morbidities

- Atopic Morbidities N [%]
  - Food Allergy 76 (69%)
  - Allergic Rhinitis 73 (66%)
  - Asthma 71 (64%)
  - Urticaria 34 (31%)
  - Conjunctivitis 22 (20%)
  - Episodic Esophagitis 19 (17%)

- Mental Health N [%]
  - ADHD/ADHD 15 (14%)
  - Other 37 (33%)
  *Anxiety, depression, obsessive-compulsive disorder, oppositional defiant disorder

- N=117 children

Adverse Events

- N=61 year olds: N=25 (26%)
- widest weight-based dosage range: 12 (48%) received the adult maintenance dose

- Mean duration of treatment: 9 mo (range 1-19 mo)
- # doses 1-72 (mean 16.5)
- Modified IGA (5-point scale) available for 80 patients
- Baseline: moderate 29% (23); severe 71% (57)
- Follow-up improvement:
  - <70% 62-point IGA
  - 22.5% (18) 1 point
  - 7.5% (6) no improvement
- of the 3 non-responders received ≥2 doses
- Adverse Events: resolution of longstanding molluscum and warts; improved mental health

Conclusions

- This review supports dupilumab safety and efficacy in children with mod-severe AD
- Despite off-label use, access to dupilumab was generally granted, after a delay
- Optimal pediatric dosing is under investigation
- Doses of 200 mg (1.14 ml/kg) for asthma and 300 mg (2 ml/kg) are now marketed

Proposed Dosing Guidelines:

References

5. Simpson EL, et al. Dupilumab Efficacy and Safety in Adolescents With Moderate-to-Severe Atopic Dermatitis: Results From a Multicenter, Randomized, Placebo-Controlled, Double-Blind, Parallel-Group, Phase 3 Study. Presented at the 27th annual EADV conference, Sept 12–16 2016, Paris, France
Actual VBAC success higher then predicted success among obese gravidas

Rebecca R Rimsza, MD; William M Perez, MD; Gilad A Gross, MD; Laura K Vricella, MD
Saint Louis University School of Medicine, Department of Obstetrics, Gynecology, & Women’s Health

Abstract

Background: The Maternal Fetal Medicine Units (MFMU) Network predictive model, increasing body mass index (BMI) reduces the likelihood of successful vaginal birth after cesarean (VBAC). With increasing prevalence of obesity and higher rates of cesarean deliveries, general obstetric women, we aimed to evaluate trial of labor after cesarean (TOLAC) outcomes among BMI group and determine if VBAC success may be higher than predicted using the MFMU predictive model.

Study Design: BMI > 30 was a retrospective cohort study of singletons pregnancies ≥37 weeks undergoing TOLAC at an academic, tertiary care center. Exclusion criteria were major fetal anomalies, Rh disease, and five or more previous cesareans. Data were collected via individual chart review: any model analyzed by maternal BMI category at delivery: 1st < 25.0 kg/m², overweight (25.0-29.9 kg/m²), class I obese (30.0-34.9 kg/m²), class II obese (35.0-39.9 kg/m²), class III obese (>40.0 kg/m²). Preterm deliveries were analyzed using the published MFMU calculator and our observed VBAC success rate. Secondary outcomes were adverse maternal and neonatal outcomes. Groups were compared using student’s t test, chi squared, and ANOVA. P < 0.05 was considered significant. Secondary analysis of patient with BMI > 50 kg/m² among significant variables for predictive factors of VBAC success.

Results: Of 1397 VBAC attempts undertaken between 2011-2018, 1393 met study criteria and were analyzed. 514 (37%) were < 25, 215 (16%) were overweight, and 105 (10%) class III obese. BMI groups had similar rates of prior cesarean for arrest of labor (p = 1). Hypertension, prepregnancy diabetes, and black race increased with BMI (p < 0.001 for all). VBAC success decreased with increasing BMI (p = 0.001). Observed and predicted VBAC success were similar for lean and overweight women (p = 0.6). Observed success was higher than predicted for Class I, II, and III obese women (p = 0.05). Uterine rupture rate was 0% overall. Maternal adverse outcomes including uterine rupture, ICU admission, and hysterectomy were similar among BMI groups as were neonatal outcomes and NICU admission. 5 minute APGAR score ≤7 and umbilical artery pH ≤7.0 were 0% (p = 0.001 for all). Secondary analysis of Class III obesity demonstrated gestational diabetes, primary cesarean for arrest of labor, maternal BMI > 50 and induced labor negatively predicted VBAC success in contrast to previous vaginal delivery or prior VBAC associated with higher success (OR 3.42 (1.6-6.96)) and (6.50 (2.37-17.85)) respectively.

Conclusions: While VBAC success decreased with increasing maternal BMI, obese women had greater success than predicted. The impact of obesity on VBAC success may be lower than predicted by the MFMU model.

Table 3: Potential Contributors to VBAC Success in Class III Obesity

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR (95% CI)</th>
<th>aOR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>1.05 (.5-5.6)</td>
<td>1.05 (.5-5.6)</td>
</tr>
<tr>
<td>Hypertensive Disorder</td>
<td>1.75 (1.7-18.8)</td>
<td>1.75 (1.7-18.8)</td>
</tr>
<tr>
<td>Chronic</td>
<td>2.37 (.2-7.8)</td>
<td>2.37 (.2-7.8)</td>
</tr>
<tr>
<td>Pregnancy-related Diabetes</td>
<td>1.2 (1.2-18.5)</td>
<td>1.2 (1.2-18.5)</td>
</tr>
<tr>
<td>Gestational</td>
<td>1.3 (1.3-13.5)</td>
<td>1.3 (1.3-13.5)</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>1.5 (.5-4.9)</td>
<td>1.5 (.5-4.9)</td>
</tr>
<tr>
<td>Chronic</td>
<td>2.37 (.2-7.8)</td>
<td>2.37 (.2-7.8)</td>
</tr>
<tr>
<td>Induced Labour</td>
<td>1.1 (1.0-2.7)</td>
<td>1.1 (1.0-2.7)</td>
</tr>
<tr>
<td>Oxytocin Use</td>
<td>1.0 (1.0-3.0)</td>
<td>1.0 (1.0-3.0)</td>
</tr>
</tbody>
</table>

References

Prior vaginal delivery in trial of labor after cesarean: Is there a dose response?
Rebecca R Rimsza, MD; William M Perez, MD; Laura K Vricella, MD, Gilad A Gross, MD
Saint Louis University School of Medicine, Department of Obstetrics, Gynecology, & Women’s Health

Abstract

Objective: Prior vaginal delivery is associated with successful vaginal birth after cesarean (VBAC). However, whether vaginal parity has a dichotomous or continuous relationship with VBAC success is less well described. We sought to evaluate the effect of the number of previous vaginal deliveries on VBAC success rates and whether this finding was applicable to patients with more than one prior cesarean delivery.

Study Design: A retrospective cohort study of patients undergoing TOLAC at an academic tertiary institution between 2011 and 2017. Exclusion criteria included fetal demise and gestational age <37 weeks. Data were collected via individual chart review and analyzed by comparison groups determined by number of prior vaginal deliveries. Primary outcome was TOLAC success. Secondary outcomes included composite maternal morbidity (uterine rupture, hysterectomy, and intensive care unit admission) and neonatal composite morbidity (unilateral Apgar <7, NICU admission, and 5-minute Apgar <7). Chi-Squared and ANOVA were performed for analysis. A p value <.05 was considered significant.

Results: A total of 1192 patients met inclusion criteria including 1041 with one prior cesarean and 151 with two or more prior cesareans. With one previous cesarean, TOLAC success increased significantly with increasing numbers of prior vaginal deliveries for no prior vaginal delivery, one, two, and three or more prior vaginal deliveries, p < .001 (Table 1). Composite maternal morbidity was similar among groups, p = .3. Composite neonatal morbidity decreased with increasing vaginal parity, p < .001. Among patients with two previous cesarean deliveries there was a trend toward significant increase in TOLAC success from 64% with no vaginal parity to 68% with one previous vaginal delivery. 87% with two previous, and 90% with three or more, p = .2. Both maternal and neonatal morbidity were non-significant in patients with two or more prior cesarean deliveries.

Conclusion: The positive influence of previous vaginal delivery on VBAC was confirmed. A dose-response relationship between number of prior vaginal deliveries and successful VBAC was observed. For patients with one prior cesarean delivery, maximum benefit of vaginal parity was observed after two prior deliveries. A similar, yet non-significant relationship was seen in patients with multiple prior cesarean deliveries.

Background

Prior vaginal delivery is associated with higher VBAC success.

The Eunice Kennedy Shriver Maternal Fetal Medicine Units (MFMU) VBAC predictive model identified prior vaginal delivery as a predictor of successful VBAC in a dichotomous fashion

The influence of increasing number of prior vaginal deliveries on VBAC success is not known

The established protective effect of prior vaginal parity is reassuring after one cesarean delivery but whether that extends to two or more prior cesarean deliveries is less clear

Study Design

- Retrospective cohort study
- All patients undergoing TOLAC between 2011-2017
- Exclusion criteria
  - Fetal demise, gestational age <37 weeks
  - Comparison groups: Vaginal parity*
    - None
    - One prior
    - Two prior
    - Three or more prior vaginal deliveries
*Vaginal parity defined as number of previous vaginal deliveries

Table 1: TOLAC outcomes according to previous vaginal deliveries

<table>
<thead>
<tr>
<th>Previous Vaginal Delivery</th>
<th>One Previous Cesarean Delivery</th>
<th>Two Previous Cesarean Delivery</th>
<th>Three or more Previous Cesarean Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>546</td>
<td>234</td>
<td>120</td>
</tr>
<tr>
<td>VBAC Success</td>
<td>361 (66)</td>
<td>190 (80)</td>
<td>105 (87)</td>
</tr>
<tr>
<td>Uterine Rupture</td>
<td>12 (2)</td>
<td>3 (1)</td>
<td>1 (0.8)</td>
</tr>
<tr>
<td>Composite maternal morbidity</td>
<td>6 (1)</td>
<td>3 (1)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Composite neonatal morbidity</td>
<td>61 (11)</td>
<td>11 (5)</td>
<td>4 (3)</td>
</tr>
</tbody>
</table>

| Two or More Previous Cesarean Deliveries |
|--------------------------------|--------------------------------|
| N                             | 89                            |
| VBAC Success                  | 57 (64)                       |
| Uterine Rupture               | 2 (2)                         |
| Composite maternal morbidity  | 2 (2)                         |
| Composite neonatal morbidity  | 14 (16)                       |

Table 2: Maternal Demographics by parity vaginal success

<table>
<thead>
<tr>
<th>Prior Vaginal Delivery</th>
<th>None</th>
<th>One</th>
<th>Two</th>
<th>Three or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total, N = 1193</td>
<td>635</td>
<td>272</td>
<td>135</td>
<td>151</td>
</tr>
<tr>
<td>Age (years)</td>
<td>27 ± 5</td>
<td>29 ± 5</td>
<td>30 ± 5</td>
<td>33 ± 5</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>35 ± 6</td>
<td>34 ± 7</td>
<td>35 ± 7</td>
<td>35 ± 8</td>
</tr>
<tr>
<td>VBAC Success</td>
<td>417 (66)</td>
<td>212 (70)</td>
<td>117 (87)</td>
<td>131 (87)</td>
</tr>
<tr>
<td>&gt;1 previous CD</td>
<td>89 (14)</td>
<td>37 (14)</td>
<td>15 (11)</td>
<td>10 (1)</td>
</tr>
<tr>
<td>Race</td>
<td>395 (62)</td>
<td>342 (56)</td>
<td>182 (67)</td>
<td>99 (73)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>188 (30)</td>
<td>74 (27)</td>
<td>24 (18)</td>
<td>23 (15)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>22 (3)</td>
<td>4 (1)</td>
<td>3 (2)</td>
<td>7 (5)</td>
</tr>
<tr>
<td>Asian</td>
<td>10 (2)</td>
<td>3 (1)</td>
<td>1 (1)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Other</td>
<td>20 (3)</td>
<td>9 (3)</td>
<td>8 (6)</td>
<td>6 (5)</td>
</tr>
<tr>
<td>Tocolytic Use</td>
<td>243 (38)</td>
<td>102 (38)</td>
<td>55 (41)</td>
<td>72 (48)</td>
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<tr>
<td>Hypertensive</td>
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<tr>
<td>Chronic</td>
<td>94 (15)</td>
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<td>19 (14)</td>
<td>28 (15)</td>
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<tr>
<td>Pregnancy Related</td>
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<tr>
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<tr>
<td>Pregestational</td>
<td>161 (25)</td>
<td>111 (41)</td>
<td>46 (34)</td>
<td>47 (31)</td>
</tr>
<tr>
<td>Initial Dilatation &gt; 3</td>
<td>238 (37)</td>
<td>153 (50)</td>
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</tr>
</tbody>
</table>

Data presented as N/N or Mean ± SD

Conclusion

Increasing vaginal parity was associated with higher rates of VBAC success.

After one prior cesarean delivery there was no significant difference between two and three or more prior vaginal deliveries.

Increasing number of prior vaginal delivery in women with one prior cesarean is associated progressively lower composite neonatal morbidity.

In the setting of 2 and 3 prior vaginal deliveries, women 2 or more prior cesareans experience VBAC success similar to women with 1 prior cesarean.

The number of prior cesarean deliveries and the number of vaginal deliveries should be considered integral parts of decision making in

References

2. Lamont EA et al. The VBAC Cesarean Regency: affecting the success of trial of labor after previous cesarean. ACOG 2009.see, 1361 - 37: 2161 - 8
Three-Dimensional Printing in Pediatric Medicine and Surgery

Caitlin A. Françoisse, MD1; Anne Sescleifer, BS1; Alexander Lin, MD, FACS1,2

1Division of Plastic Surgery, Department of Surgery, Saint Louis University School of Medicine
2St. Louis Cleft-Craniofacial Center in SSM Health Cardinal Glennon Children’s Hospital at SLU

INTRODUCTION

Three-Dimensional Printing (3DP)
- Manufacture of an object by adding thin layers of material in succession to create desired shape
- Allows for rapid, low cost production of high fidelity models

Why 3DP in Pediatrics?
- Pediatric patients have compact anatomy that require higher degree of surgical precision
- Can have unique congenital anomalies not always captured on limited views provided by imaging
- Patients less tolerant of anesthesia or blood loss
- Allows parents to understand a child’s illness without the ability to read medical imaging

PURPOSE
1. Describe most common manufacturing variables
2. Classify 3DP items into categories of use
3. Describe which specialties are using 3DP and how

PATIENT-SPECIFIC CLINICAL UTILIZATION OF 3D PRINTING

DESCRIPTIVE STATISTICS

<table>
<thead>
<tr>
<th>Number of Patients (n)</th>
<th>Total for all studies</th>
<th>Average per study</th>
<th>Range of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>508</td>
<td>3.6</td>
<td>1 - 50</td>
</tr>
</tbody>
</table>

Age of Patients
- Average of all studies: 7.6 years
- Range: 7 days – 18 years

Imaging (%)
- Computer Tomography: 64%
- Three-Dimensional Photographic Scanner: 9.4%
- Magnetic Resonance Imaging: 8.6%

Modeling Software (%)
- Materialise, Leuven, Belgium: 36%
- 3D Systems, Rock Hill, SC: 4.8%
- Cybermed Co, Seoul, Korea: 3.4%

Printer (%)
- Stratasys: 15%
- 3D Systems: 9.4%
- Z Corp: 6.5%
- Makerbot: 3.6%

Production Time (hours)
- Average: 7 days – 18 years
- Range: 14.4

Cost (USD)
- Average: $895.80
- Range: $20.75 - $4043

3DP Use by Specialty

Cardiothoracic
- Congenital Heart Disease
- Coarctation of Aorta
- Double Outlet Right Ventricle
- Heart Transplant
- Pulmonary Atresia
- Transposition of the Great Arteries
- Truncus Arteriosus
- Tumor Resection

Craniofacial
- Microtia Repair/Auricular Prosthesis
- Nasal Alveolar-Maxillary/Odontoplasty
- Ocular Reconstruction
- Reconstruction following trauma
- Reconstruction following tumor
- Scalp flap coverage
- Skull base defect
- Temporomandibular joint implant
- Trauma

Gastrointestinal & Abdominal
- Adena lention
- Liver Transplant
- Peptic Ulcer
- Tumor Resection

Genitourinary System
- Congenital Malformation
- Tumor Resection

Neurological System
- Spinal Fusion
- Scoliosis

ORTHO FUSION
Hearing Hypernasality: Online Crowdsourcing of Cleft Speech
Anne Sescleifer, BS1; Janna Webber, SLP-CCC2; Caitlin Francoisse, MD1; Joy Baltz, BSN3; Jeffrey Rector, MA3; Alexander Lin, MD, FACS1,2
1Division of Plastic Surgery, Department of Surgery, Saint Louis University School of Medicine
2St. Louis Cleft-Craniofacial Center in SSM Health Cardinal Glennon Children’s Hospital at SLU
3Department of Psychology, University of California Davis

INTRODUCTION

• Cleft palate is a structural defect that results in an opening between the roof of the mouth and nose (Fig. 1). This prevents the palate and pharyngeal muscles from restricting air flow to the nasal cavity during speech (velopharyngeal insufficiency), which is difficult to understand and socially stigmatizing.1

• Speech-language pathologists (SLPs) conduct clinical speech evaluations that are rapid, consistent, low-cost, and widely accessible to cleft patients.5

• Online crowdsourcing of perceptual speech outcomes may present a solution to the immediate need for speech assessments, provide speech benchmarks throughout treatment, and work with children post-operatively to correct compensatory misarticulations.2-3

• The demand for SLPs exceeds the supply, disadvantaging populations limited socioeconomically or geographically.4

• Online crowdsourcing of perceptual speech outcomes may present a solution to the immediate need for speech evaluations that are rapid, consistent, low-cost, and widely accessible to cleft patients.9

• HYPOTHESIS: Online crowdsourced lay ratings of cleft speech for hypernasality will be highly concordant with SLP ratings.

METHODS

Patient Recruitment. In our IRB-approved study, patients with history of cleft palate repair were recruited.

Voice Recordings. Speech phrases collected at previous clinic visits were recorded using videonasendoscopy (VNE). Specific phrases selected for hypernasal speech were extracted from VNEs using QuickTime Player (Table 1). Speech expert ratings based on the Pittsburgh Weighted Speech Score (PWSS) were collected from medical records.

Crowdsourced Ratings. Speech samples were provided to internet raters using the online crowdsourcing platform Amazon Mechanical Turk. Sound clips were rated on a Likert scale, corresponding to the hypernasal component of the PWSS (scale 0-4). The survey page had clickable “gold standard” samples for lay raters to reference.

Data Analysis. Both sentence-specific and overall mean and standard deviation of crowd ratings were compared with SLP expert rating. Tukey post-hoc analysis was conducted to identify differences between speech phrases.

RESULTS

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Data Analysis. Both sentence-specific and overall mean and standard deviation of crowd ratings were compared with SLP expert rating. Tukey post-hoc analysis was conducted to identify differences between speech phrases.

Table 1. Specific cleft-challenging phrases were identified in the videonasendoscopy recordings, and provided to internet raters for evaluation.

<table>
<thead>
<tr>
<th>Code</th>
<th>Phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>KC</td>
<td>Katie likes cookies.</td>
</tr>
<tr>
<td>TT</td>
<td>Tell Ted to try.</td>
</tr>
<tr>
<td>WD</td>
<td>Should I wash the dishes?</td>
</tr>
<tr>
<td>PP</td>
<td>Peter has a puppy.</td>
</tr>
<tr>
<td>SS</td>
<td>Sissy, sissy, sissy.</td>
</tr>
<tr>
<td>ZC</td>
<td>Zipper is easy to close.</td>
</tr>
</tbody>
</table>

Figure 1. Cleft palate is a structural defect resulting in an opening between the roof of the mouth and the nasal cavity, allowing air escape during speech.

Figure 2. The phrase accuracy of each phrase was displayed. Phrases represented varying levels of accuracy when compared with SLP scores.

Table 2. Demographics. SLP score, and MTurk mean for each of the patients recruited in this study. For each patient, MTurk mean was consistent with SLP score when rounded to the nearest whole number.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age, Sex</th>
<th>Post-op Followup</th>
<th>SLP Score</th>
<th>MTurk Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>4 yrs, F</td>
<td>2 years</td>
<td>2.3</td>
<td>2.62</td>
</tr>
<tr>
<td>P2</td>
<td>9 yrs, M</td>
<td>6.5 years</td>
<td>2</td>
<td>1.76</td>
</tr>
<tr>
<td>P3</td>
<td>5 yrs, M</td>
<td>Pre-op</td>
<td>3</td>
<td>2.66</td>
</tr>
</tbody>
</table>

Table 3. The mean MTurk rating of each specific cleft-challenging phrase, along with standard deviation, is displayed. Phrases represented varying levels of accuracy, when compared with SLP scores.

<table>
<thead>
<tr>
<th>Patient</th>
<th>SLP Score</th>
<th>KC mean (SD)</th>
<th>TT mean (SD)</th>
<th>WD mean (SD)</th>
<th>PP mean (SD)</th>
<th>SS mean (SD)</th>
<th>ZC mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>2-3</td>
<td>2.25 (0.92)</td>
<td>2.97 (0.99)</td>
<td>2.93 (0.94)</td>
<td>2.19 (1.03)</td>
<td>2.75 (1.23)</td>
<td>---</td>
</tr>
<tr>
<td>P2</td>
<td>2</td>
<td>1.56 (1.28)</td>
<td>---</td>
<td>1.49 (1.09)</td>
<td>1.38 (1.18)</td>
<td>1.40 (1.10)</td>
<td>2.97 (1.08)</td>
</tr>
<tr>
<td>P3</td>
<td>3</td>
<td>2.15 (0.90)</td>
<td>3.32 (0.88)</td>
<td>3.24 (0.95)</td>
<td>3.49 (0.80)</td>
<td>1.96 (1.16)</td>
<td>1.79 (1.21)</td>
</tr>
</tbody>
</table>

CONCLUSION

• Online crowdsourced ratings of cleft speech for hypernasality are highly consistent with speech-language pathologist (SLP) ratings, and predicted SLP ratings in all three patients.

• Individual phrases had different layperson accuracies: WD=PP>ZC>TT(SS=KC).

• This novel technology had immediate translation in clinical speech assessments, especially for centers without SLPs or requiring further clinical corroboration.
A Case of Persistent Left Superior Vena Cava Found on Transthoracic Echocardiogram

Plot J. Horbal, DO1, Steven Smart, MD2

1) Department of Internal Medicine, Saint Louis University School of Medicine 2) Department of Cardiovascular Medicine, Saint Louis University School of Medicine

Background

- Persistent left superior vena cava (PLSVC) is a congenital defect in 0.3-0.5% of the general population.
- PLSVC is a thoracic vein anomaly which can drain into the left atrium (shunt) or coronary sinus.
- Most often an incidental finding through echocardiography or interventional procedures including pacemaker insertion and central line placement.
- Often patients are asymptomatic if there are no further congenital cardiac or thoracic defects.
- Common findings include dilated coronary sinus and arrhythmias due to ectopic pacemaker cells located within the anomaly.
- Intervention via the PLSVC can prevent to cardiogenic hypotension and further arrhythmogenic findings.
- Therefore, the understanding of such patients must be aware to interventional specialists to limit adverse effects.

Case

- 56 year-old female presented with an abscess on the right hand following accidental burn-trauma.
- Underwent induction and drainage (I&D) and transitioned to oral Cephalexin on first discharge.
- Re-admitted with clinical non-progression and underwent TTE and started on IV ceftriaxone, stabilized and discharged on PO antibiotics.
- Follow-up with Plastic Surgery resulted in admission for worsening wound closure.
- During this third admission patient noted to have elevated Creatinine and lower extremity edema for which transthoracic echocardiogram (TTE) was obtained.
- TTE showed dilated coronary sinus and negative bubble study consistent with PLSVC, followed by confirmatory CT angiography of the finding.
- Patient underwent amputation of affected limb with pathology showing osteomyelitis of the first proximal phalanx.
- PICC line placed through right brachial vein.
- Discharged on 6 weeks of IV Ceftriaxone.

Discussion

- During embryogenesis the sinus venosus is the reservoir for the anterior/posterior cardinal, vitelline and umbilical veins which drain the venous blood, connect to yolk sac and carry oxygenated blood from the placenta, respectively.
- PLSVC formation occurs prior to the eighth week of embryogenesis whereby the distal left posterior cardinal vein fails to degenerate into the Ligament of Marshall.
- The left anterior cardinal vein becomes the internal jugular, while the right common cardinal vein and anterior cardinal vein form the SVC.
- There are three types of PLSVC depending on the proximity of degeneration of the distal left posterior cardinal vein including direct drainage into the right atrium through the CS or left atrial shunt formation through an unroofed CS.
- Becomes directly clinically significant with the right-to-left atrial shunt and patient undergoing interventions involving the left subclavian vein where a central line or pacemaker lead may be placed in the wrong location.
- Related pathology includes arrhythmias, syncope, cyanosis and other cardiac congenital deformities including septal defects, coarctation of the aorta and bicuspid aortic valve.
- Most often found as an asymptomatic incidental finding on echocardiography, angiography during intervention or non-invasive imaging (CT, MRI).
- Treatment in symptomatic patients with cardiac shunt through grafting and closure of defect.

Conclusions

- This case presents a PLSVC in an asymptomatic patient during an echocardiography study.
- PLSVC can lead to right-to-left cardiac shunt, arrhythmias, syncope and may co-exist with other cardiac deformities.
- This anomaly is pertinent when performing interventions including central line and pacemaker placement.
Appropriate Use Of Telemetry: Indication Versus Gratification

Julien Feghaly, MD1; Zachary Oman, DO1; Ariana Mooradian, MD1

1Department of Internal Medicine, Saint Louis University School of Medicine

Introduction

- Physicians are often in a dilemma in determining the appropriateness of starting continuous cardiac telemetry monitoring on a variety of patients presenting to the hospital.
- Most physicians would agree that telemetry monitoring is warranted for patients with syncope, arrhythmias, myocardial infarction, or following cardiac surgery.
- However, other situations are less clear such as patients with abdominal pain, stable pulmonary embolism, atypical chest pain, or rate controlled atrial fibrillation.

Case

- A 75-year-old male with past medical history of end stage renal disease (ESRD) on hemodialysis, heart failure with reduced ejection fraction status-post implantable cardiac defibrillator (ICD), coronary artery disease with one drug eluting stent in his right coronary artery, chronic atrial fibrillation, and colon cancer status post left hemicolectomy presented with a 3-day history of nausea, epigastric and umbilical abdominal pain, with reported black stool following dialysis.
- On admission he was found to have celiac artery stenosis with an elevated lactate acid of 16.6 mmol/L but was deemed too high risk for surgical intervention given his complex comorbidities.
- He was not started on telemetry as there was no concern for acute heart failure, despite his history of chronic hypotension (average: 90/50 mmHg) secondary to ESRD and chronic heart failure with reduced ejection fraction (25-30%) & severely decreased left ventricular systolic function.
- On day 3 of the admission, he was found unresponsive and pulseless in bed. Cardiopulmonary resuscitation was performed with successful return of spontaneous circulation after 12-minutes.
- Further ICD interrogation revealed that he was in ventricular fibrillation at 170 bpm pre-arrest, however, the defibrillator threshold was set at 180 bpm.
- Unfortunately, he remained in critical condition and expired one day later.

Discussion

- This case highlights the difficulty in determining appropriate telemetry use in certain cases.
- While our patient appeared to be hemodynamically stable, continuous telemetry monitoring may have been able to prevent this poor outcome.
- While the American Heart Association (AHA) has outlined a guidance for the appropriate use of cardiac monitoring, its final use is determined by the physician's clinical judgement.
- Based on the AHA, patients are classified into class I (monitoring indicated), class II (monitoring may be of benefit), and class III (monitoring not indicated).
- Despite our patient's extensive medical and cardiac history, he did not have class I or II indications such as typical chest pain, newly diagnosed coronary lesion, undergoing coronary angiography or ablation, pacemaker or defibrillator placement, acute heart failure or syncope.

Conclusion

- Physicians need to use clinical judgement when assessing for appropriate use of cardiac monitoring while at the same time preventing over use.
- Cardiac monitoring may aid in early detection of cardiac arrest, however, current medical research has yet to reveal any changes in outcomes for such cases.

REFERENCES


Tables

Table 1: Class I Indications for Cardiac Arrhythmia Monitoring

<table>
<thead>
<tr>
<th>Monitoring</th>
<th>Time Frame of Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patients resuscitated from cardiac arrest</td>
<td>Until ICD implanted</td>
</tr>
<tr>
<td>2. Patients in the early phase of acute coronary syndrome</td>
<td>Minimum 24 h, until complications resolved</td>
</tr>
<tr>
<td>3. Patients with newly diagnosed high-risk coronary lesions</td>
<td>Until PCI</td>
</tr>
<tr>
<td>4. Adults who have undergone cardiac surgery</td>
<td>Minimum 48-72 hour or discharge</td>
</tr>
<tr>
<td>5. Patients who have undergone nonurgent PCI with complications</td>
<td>Minimum 24 h</td>
</tr>
<tr>
<td>6. Patients who have undergone implantation of an ICD lead or a pacemaker lead and are considered pacemaker dependent</td>
<td>12-24 h</td>
</tr>
<tr>
<td>7. Patients with a temporary pacemaker or transcutaneous pads</td>
<td>Until pacing no longer necessary or replaced with a permanent device</td>
</tr>
<tr>
<td>8. Patients with AV block</td>
<td>Until permanent pacemaker</td>
</tr>
<tr>
<td>9. Patients with arrhythmias complicating WPW syndrome with rapid anterograde conduction over an accessory pathway</td>
<td>Until RFA</td>
</tr>
<tr>
<td>10. Patients with long QT syndrome and associated ventricular arrhythmias</td>
<td>Until proarrhythmic drug is discontinued</td>
</tr>
<tr>
<td>11. Patients receiving IABP</td>
<td>Until weaned from IABP</td>
</tr>
<tr>
<td>12. Patients with acute heart failure or pulmonary edema</td>
<td>24 h after symptoms resolved</td>
</tr>
<tr>
<td>13. Patients with indications for intensive care</td>
<td>Until hemodynamically and respiratorystable</td>
</tr>
<tr>
<td>14. Patients undergoing diagnostic or therapeutic procedures requiring conscious sedation or anesthesia</td>
<td>Until awake and hemodynamically stable</td>
</tr>
</tbody>
</table>

Table 2: Class II Indications for Cardiac Arrhythmia Monitoring

<table>
<thead>
<tr>
<th>Monitoring</th>
<th>Time Frame of Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patients with post acute MI</td>
<td>24-48 h</td>
</tr>
<tr>
<td>2. Patients with chest pain syndromes</td>
<td>12-24 h or until negative biomarkers</td>
</tr>
<tr>
<td>3. Patients with uncomplicated nonurgent PCI</td>
<td>12-24 h</td>
</tr>
<tr>
<td>4. Patients who are administered an antiarrhythmic drug or who require adjustment of drugs for rate control with chronic atrial tachycardia</td>
<td>With antiarrhythmic drugs and high risk of pro-arrhythmia; consider class I indication</td>
</tr>
<tr>
<td>5. Patients who have undergone implantation of a pacemaker lead and are not pacemaker dependent</td>
<td>12-24 h</td>
</tr>
<tr>
<td>6. Patients who have undergone uncomplicated ablation</td>
<td>Normally not necessary; 12-24 h with incessant rapid tachycardia or AV junction ablation with pacemaker implantation</td>
</tr>
<tr>
<td>7. Patients who have undergone routine coronary angiography</td>
<td>Normally not necessary, only for observation for symptomatic bradyarrhythmias</td>
</tr>
<tr>
<td>8. Patients with subacute heart failure</td>
<td>In subacute phase, when therapy is adjusted</td>
</tr>
<tr>
<td>9. Patients who are being evaluated for syncope</td>
<td>24-48 h with unknown origin</td>
</tr>
<tr>
<td>10. Patients with do-not-resuscitate orders with arrhythmias that cause discomfort</td>
<td>Until optimum rate control is achieved</td>
</tr>
</tbody>
</table>

AV block: atrioventricular block; IABP: intra-aortic balloon counter pulsation; ICD: implantable cardioverter defibrillator; MI: myocardial infarction; PCI: percutaneous coronary intervention; RFA: radiofrequency ablation; WPW: Wolff-Parkinson-White syndrome.
Diagnostic Approach To Acute Rheumatic Fever Presenting As Polyarthritis

Julien Feghaly, MD1; Ariana Mooradian, MD1

1Department of Internal Medicine, Saint Louis University School of Medicine

Introduction

Acute rheumatic fever (ARF) is a delayed inflammatory response secondary to Group A streptococcal pharyngitis, with an average onset of 2-3 weeks following infection. ARF is estimated to affect 33 million people worldwide, with approximately 470,000 new cases & 275,000 deaths annually.1

The majority of cases of acute rheumatic fever occur in children ages 5 to 15 years old and in low to middle income countries.1 The delayed response may manifest in several ways which include arthritis, carditis, chorea, subcutaneous nodules or erythema marginatum.

Case

A 52-year-old male with a previous medical history significant for gout, hypertension, and alcohol abuse, presented with nine-day history of worsening arthralgia of his right wrist, right elbow and bilateral toes, ankles & knees. He was treated with indomethacin & colchicine for a possible gout flare, with no improvement.

Additionally, receiving antibiotics for concern of septic arthritis, having had a temperature of 101.9°F. X-ray imaging of all the involved joints revealed soft tissue swelling and no degenerative or erosive changes. Cardiac examination followed by echocardiography is highly recommended to assess for carditis once acute rheumatic fever is diagnosed.

Supporting evidence of Group A Streptococcal infection

- Positive throat culture
- Positive Rapid Streptococcal antigen test
- Elevated or rising Streptococcal antibody titer

Discussion

The diagnosis of acute rheumatic fever is guided by the modified Jones criteria, which aims to direct clinicians in the diagnosis of acute rheumatic fever and to help minimize over diagnosis. The criteria require the presence of a preceding GAS infection, in addition to the presence of two major criteria or one major with two minor criteria (Table 1).

Further, supported by evidence of a GAS infection by throat culture, rapid streptococcal antigen test, or elevated or rising streptococcal antibody titer.

- Table 1. Modified Jones Criteria1

<table>
<thead>
<tr>
<th>Major criteria</th>
<th>Minor criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyarthritis</td>
<td>Fever</td>
</tr>
<tr>
<td>Carditis</td>
<td>Arthralgias</td>
</tr>
<tr>
<td>Subcutaneous nodules</td>
<td>Elevated acute phase reactants (CRP, ESR)</td>
</tr>
<tr>
<td>Erythema marginatum</td>
<td>Prolonged PR interval</td>
</tr>
<tr>
<td>Chorea</td>
<td></td>
</tr>
</tbody>
</table>

Supporting evidence of Group A Streptococcal infection

- Positive throat culture
- Positive Rapid Streptococcal antigen test
- Elevated or rising Streptococcal antibody titer

In the process of testing for GAS, throat culture is the standard for the diagnosis of GAS pharyngitis; however, only a quarter of ARF patients will have a positive throat culture. This promptly performed by clinical examination, auscultating for new murmurs, and echocardiography, assessing for mitral or aortic regurgitation.

Additionally, distant heart sounds can be auscultated with left ventricular volume overload in setting of MR/AR secondary to myocarditis or a pericardial effusion in the setting of pericarditis.

Table 2. Serologic evidence diagnostic value in testing for ARF

<table>
<thead>
<tr>
<th>Anti-streptolysin O (ASO) titer</th>
<th>Anti-DNase B titer</th>
<th>Combined ASO &amp; Anti-DNase B titer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>Specifity</td>
<td></td>
</tr>
<tr>
<td>72.7%</td>
<td>92.3%</td>
<td></td>
</tr>
<tr>
<td>70.5%</td>
<td>93.2%</td>
<td></td>
</tr>
<tr>
<td>95.5%</td>
<td>88.6%</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions

- Acute rheumatic fever may have varying presentation and needs to be considered when assessing polyarthritis.
- Various diagnostic testing can be used for diagnosis of Group A streptococcal infection.
- The combined measurement of ASO and anti-DNase B titer demonstrates the highest sensitivity.

REFERENCES

Evaluation of the timeliness and accuracy of inpatient dermatology pathology reports at Saint Louis University Hospital

Tim Galperin DO, and Mallory Abate MD
Department of Dermatology, St. Louis University, St. Louis, MO

Background
An increased number of patients are being admitted to the hospital for dermatologic conditions. Studies have shown that dermatologic conditions are frequently misdiagnosed by non-dermatologists. Dermatology consultations often result in changes in both the diagnosis and management of hospitalized patients, and thus play a critical role for the inpatient. The most common conditions seen by dermatology consult services are cutaneous infections, dermatitis, and drug eruptions. The majority of consult requests come from the internal medicine service.

In the inpatient setting, obtaining pathology results in a timely manner is imperative for patient care. Biopsies aid in the medical decision making process, and any delay in the diagnosis, and subsequent treatment, can delay care and prolong the hospital stay.

Methods
A retrospective study was designed to identify how many days, on average, it takes to receive a biopsy readout by the general pathology service for inpatient dermatology biopsies. We also wanted to identify how many days it took to receive pathology slides to the dermatopathology lab if an official dermatopathology consult was requested by the inpatient dermatology team, and to identify the discordance rate in the diagnosis between the general pathology report and the dermatopathology report. All of the inpatient dermatology consult biopsy data was collected for evaluation from July to December 2017 at Saint Louis University Hospital.

Results
There were a total of 23 patient biopsies performed during the study period, of which 7 were in the ICU or in the hematology ward. The average time to receive a biopsy readout was 3 days, but if specimens were rushed, the average read out time was reduced to 1.7 days. If a dermatopathology consult was requested, it took an average of 7 days to receive the specimen in the dermatopathology lab. There was a 50% discordance rate between general pathology and dermatopathology.

<table>
<thead>
<tr>
<th>Description</th>
<th>Average Time (Days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Time for Bx Read Out (Days)</td>
<td>3</td>
</tr>
<tr>
<td>Avg Time for Bx Read Out (Days)-Rushed</td>
<td>1.7</td>
</tr>
<tr>
<td>ICU/Hem Patient Non-rushed Avg Read Out Time (Days)</td>
<td>4</td>
</tr>
<tr>
<td>ICU/Hem Patient Rushed Avg Read Out Time (Days)</td>
<td>2.5</td>
</tr>
<tr>
<td>Avg Days to Receive Consult Slides from Pathology</td>
<td>7</td>
</tr>
<tr>
<td>Discordance Rate Between Pathology and Dermatopathology</td>
<td>50%</td>
</tr>
</tbody>
</table>

Discussion
Placing a rush on biopsy specimens when necessary, decreased the read out time by nearly 50%. The read out time for biopsies of patients in the ICU or on the hematology service took longer than the general floor patients, which could have been related to the underlying disease complexity. Despite a low number of cases and a short study duration, there was evidence that the timeliness of inpatient biopsy read outs needed to improve for enhanced patient care.

References
Acute retroviral syndrome (ARS) presenting as severe mucositis and pseudoangioedema

Peter Boor MD, Umar Sheikh BS, Anastasia Kurta DO, Mallory Abate MD

Background

Painful mucocutaneous ulcers are one of the most distinctive manifestations of acute HIV infection. These ulcers may develop in the mouth, esophagus, anus, or on the genitalia. Estimates of the incidence of oral ulcerations in acute HIV range from about 9-30% of cases. The differential for individuals presenting with new onset mucosal ulceration, facial/lip edema, systemic symptoms, and truncal morbilliform exanthem is broad and can include severe drug eruptions such as SJS, autoimmune blistering disorders, and infectious etiologies, making the diagnosis of ARS quite difficult unless there is a high index of clinical suspicion for recently acquired HIV.

Case Presentation

A 67-year-old African American woman with history significant for COPD, CHF, and HTN presented to the ED 3 times within one week with complaints of painful, sloughing, ulcerations to her lips associated with severe lip swelling, sore throat, red eyes, and pruritic rash of her face and trunk that began a week ago after eating tropical fruit. Clinical impression each time was angioedema, and patient was repeatedly discharged with oral corticosteroids and antihistamines without any improvement. On subsequent presentation, dermatology was consulted, at which time physical exam revealed innumerable shallow and punched-out erosions of the oral mucosa and associated soft tissue swelling as well as a morbilliform and petechial eruption of the trunk and extremities. Differential diagnosis at that time included HSV, Stevens-Johnson syndrome, MIRM, atypical HFM or other viral etiology. Further history revealed she had not disclosed that she had an HIV positive fiancé. HIV IgG Ag/Ab returned positive. Viral cx: HSV PCR, mycoplasma IgG/M, hepatitis screen were all negative. Lip biopsy was non-specific and did not show evidence of viral cytopathic change consistent with HSV.

Discussion

Acute retroviral syndrome (ARS) typically presents 2-4 weeks after acquiring HIV and presents with fever, LAD, myalgias, sore throat, diarrhea, rash (most often maculopapular), weight loss, and headache. Although not seen in the majority of cases, painful mucocutaneous ulcers are a distinctive and helpful feature in diagnosis. This case was challenging due to the profound reactive soft tissue edema that accompanied these mucosal ulcers, leading to a wrongful diagnosis of angioedema on 3 separate occasions in the ED. The (primarily labial) mucositis was also quite extensive, leading us to consider diagnoses such as SJS and severe HSV. Dermatologists should be aware that mucosal ulcerations are a helpful finding in ARS and can be fairly extensive. ARS should be considered in the differential diagnosis of mucosal ulcerations and rash, warranting HIV testing, even in patients without a known history.

References

5. Quinn TC. Acute primary HIV infection. JAMA 1997; 278:58.
CASE REPORT

A 76 year old male non-diabetic former smoker with a PMH significant for HTN, presented to an OSH with a 1 month history of back/flank pain and subjective fevers/chills and malaise. He denied any specific illness when this started. Further work-up revealed blood cultures positive for group B streptococcus and CT imaging with aortic ulceration and aneurysm with associated fat stranding. The patient was then transferred to St. Louis University hospital for further care.

On arrival, the patient was found to be afebrile with a leukocytosis to 13.3. His exam was fairly unremarkable. He was started on IV antibiotics and cardiology was called in preparation to go to the operating room. He underwent a TEE and was found to have a mitral valve vegetation. He was considered high risk from cardiology to undergo open procedure.

The patient continued to complain of pain even though the leukocytosis was resolving. He underwent repeat CTA six days after the first CT. The ulceration and pseudoaneurysm were noted to have enlarged. From the right groin both renal arteries were selected and PTFE self expanding covered stents were placed. A thoracic endograft component was used as the main body. The main body was deployed at the same time as the visceral stents. Final angiogram showed exclusion of the aneurysm and no endoleak.

After the surgery he did well. He was discharged on POD3. He has had 2 follow up appointments since that time with CT scans that show exclusion of the aneurysm and no endoleak.

RESULTS

- The patient was taken to the hybrid cath lab. Both his groins and right arm were prepped. The celiac and supermesenteric arteries were selected from above and self expanding covered stents were placed. From the right groin both renal arteries were selected and PTFE self expanding covered stents were placed. A thoracic endograft component was used as the main body. The main body was deployed at the same time as the visceral stents. Final angiogram showed exclusion of the aneurysm and no endoleak.

DISCUSSION

Ch-EVAR is a feasible option for patients with mycotic aortic aneurysms given the morbidity and mortality of an open procedure. Ch-EVAR is achieved in a relatively shorter timeframe than FEVAR given that grafts either have to be custom made or back table modified. Endovascular treatment compared to open showed a decreased mortality rate of 9% vs 20-40%, as well as an increased long term survival rate of 55% at 5 years vs 35%. Duration and antibiotic choice is still up for debate.

REFERENCES

Induction decreases vaginal birth after cesarean delivery (VBAC) success; does indication matter?

Samantha J. Mullan, MD, William M. Perez, MD, Laura K. Vricella, MD, Elena Kraus, MD, PhD, Jennifer M. Jacobson, MD, MPH, Kathryn C. Renner, MD, Gilad A. Gross, MD

Saint Louis University School of Medicine, Department of Obstetrics, Gynecology, & Women's Health

Abstract

Objective: Vaginal birth after cesarean delivery (VBAC) is a proposed means of decreasing the cesarean delivery rate. There is evidence that induction decreases the chances of successful VBAC, however the effect of delivery indication in patients undergoing trial of labor after cesarean (TOLAC) is unknown. We aimed to determine whether VBAC success after labor induction differs according to delivery indication.

Study Design: This was a single-center, retrospective cohort study of patients with a history of prior cesarean delivery undergoing induction of labor. Exclusion criteria included delivery <37 weeks, augmentation of labor, and premature rupture of membranes. Maternal and fetal data were collected including maternal demographics and maternal and neonatal outcomes. Data was stratified into the following induction groups: elective, post-dates, fetal inductions (including non-reassuring fetal testing, fetal growth restriction, or oligohydramnios), and maternal indications (hypertension, diabetes mellitus).

Results: A total of 517 patients in the study underwent labor induction for TOLAC and neonatal induction criteria. There were statistically significant differences in race and gestational age at delivery between groups (p<0.05 and p<0.01, respectively). The groups were similar with respect to age, body-mass index, prior vaginal delivery, prior VBAC and induction for prior cesarean delivery being arrest of dilation or descent. The overall VBAC success rate for the cohort was 63.2% (range: 60.2%-65.9%). There were no significant differences in VBAC success rate between delivery indications (Figure 1, p=0.5). There were no significant differences in maternal or neonatal morbidity and mortality between groups (p>0.05 and p>0.75 for maternal and neonatal composite, respectively). There were no differences in uterine rupture between groups (p=0.86). There were no differences between induction indications in cesarean sections done for fetal indications (p>0.92) or arrest of dilation or descent (p>0.86).

Conclusions: We found no significant differences in rates of VBAC success between the induction indications. There were also no differences in maternal or neonatal morbidity or mortality, although the total numbers of individual outcomes such as uterine rupture were low.

Study Design

Exclusion criteria:
- History of prior cesarean delivery
- Undergoing induction of labor

Maternal characteristics and obstetric history in women undergoing TOLAC

Table 1 — Odds of successful VBAC by delivery indication

<table>
<thead>
<tr>
<th>Delivery indication</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective induction</td>
<td>1.37 (0.87-2.16)</td>
</tr>
<tr>
<td>Post-dates</td>
<td>1.00 (0.62-1.61)</td>
</tr>
<tr>
<td>Fetal indications</td>
<td>3.03 (0.67-1.58)</td>
</tr>
<tr>
<td>Maternal indications</td>
<td>0.8 (0.16-1.15)</td>
</tr>
</tbody>
</table>

Table 2 — Maternal characteristics and obstetric history in women undergoing TOLAC based on delivery indication

<table>
<thead>
<tr>
<th>Variables (%)</th>
<th>Elective (106)</th>
<th>Post-dates (97)</th>
<th>Fetal Indications (113)</th>
<th>Maternal Indications (115)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>28 (26-33)</td>
<td>28 (26-33)</td>
<td>28 (25-33)</td>
<td>28 (26-34)</td>
<td>0.3</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>39 (36.3)</td>
<td>24 (25.7)</td>
<td>27 (23.5)</td>
<td>42 (35.9)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Black</td>
<td>10 (9.1)</td>
<td>5 (5.2)</td>
<td>5 (4.4)</td>
<td>14 (12.1)</td>
<td>0.03</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1 (0.9)</td>
<td>1 (1.0)</td>
<td>4 (3.6)</td>
<td>10 (8.7)</td>
<td>0.3</td>
</tr>
<tr>
<td>Other</td>
<td>7 (6.5)</td>
<td>5 (5.2)</td>
<td>1 (0.9)</td>
<td>5 (4.2)</td>
<td>0.2</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>25 (23-26)</td>
<td>25 (23-26)</td>
<td>30 (23-26)</td>
<td>31 (27-29)</td>
<td>0.1</td>
</tr>
<tr>
<td>Neonatal history</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior vaginal delivery</td>
<td>49 (46.2)</td>
<td>37 (38.5)</td>
<td>50 (44.2)</td>
<td>106 (92.0)</td>
<td>0.6</td>
</tr>
<tr>
<td>Prior VBAC</td>
<td>34 (32.2)</td>
<td>21 (21.7)</td>
<td>30 (26.5)</td>
<td>52 (44.6)</td>
<td>0.6</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>22 (20.9)</td>
<td>21 (21.4)</td>
<td>31 (26.3)</td>
<td>62 (53.4)</td>
<td>0.8</td>
</tr>
<tr>
<td>Gestational age &lt; 37 weeks</td>
<td>32 (30.3)</td>
<td>30 (30.8)</td>
<td>34 (29.9)</td>
<td>69 (59.8)</td>
<td>0.4</td>
</tr>
<tr>
<td>Post-dates</td>
<td>84 (80.3)</td>
<td>152 (149.7)</td>
<td>104 (91.8)</td>
<td>220 (195.4)</td>
<td>0.2</td>
</tr>
<tr>
<td>Maternal death</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 — Maternal outcomes based on delivery indication in women undergoing TOLAC

<table>
<thead>
<tr>
<th>Indication for delivery</th>
<th>Odds of successful VBAC success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective induction</td>
<td>42 (39.9)</td>
</tr>
<tr>
<td>Post-dates</td>
<td>41 (38.8)</td>
</tr>
<tr>
<td>Fetal indications</td>
<td>37 (33.9)</td>
</tr>
<tr>
<td>Maternal indications</td>
<td>41 (37.9)</td>
</tr>
</tbody>
</table>

Figure 1 — Rates of VBAC success based on delivery indication

Conclusions

In terms of women with 1 or 2 prior cesarean deliveries attempting induced labor at term, we found:
- No observed differences in VBAC success rates between delivery indications
- No observed differences in maternal/neonatal morbidity and mortality, although overall numbers of outcomes such as uterine rupture were low
- Indication for induction of labor should not be considered a contraindication to TOLAC

References


Does gestational weight gain affect TOLAC success?
Megan L. Lawlor, MD, William M. Perez, MD, Elena Kraus, MD, PhD, Jenny Jacobson, MD, MPH, Kate Renner MD, Laura K. Vricella, MD
Saint Louis University School of Medicine, Department of Obstetrics, Gynecology, & Women’s Health

Abstract
Objective: Although maternal obesity reduces the likelihood of vaginal birth after cesarean (VBAC) success in published predictive models, the impact of gestational weight gain has not been described. The Institute of Medicine (IOM) recommends targets for gestational weight gain according to pre-pregnancy body mass index (BMI). We aimed to study VBAC success in women who met or exceeded IOM gestational weight gain guidelines.

Primary Objective: Describe relationship between VBAC success and gestational weight gain in reference to IOM guidelines, based on pre-pregnancy BMI.

Secondary Objective: Investigate relationship between gestational weight gain and maternal or neonatal outcomes following TOLAC.

Study Design: This was a retrospective cohort study of all women attempting trial of labor after cesarean delivery (TOLAC) at an academic tertiary care institution from 2011-2018. Singleton, viable, non-anomalous pregnancies ≥37 weeks were included. Pre-pregnancy weight was defined as last measured weight in the 6 months preceding pregnancy or the earliest weight recorded in pregnancy before 14 weeks gestation. Delivery weight was recorded on admission for delivery. Women without a recorded pre-pregnancy or delivery weight were excluded. Gestational weight gain was the difference between delivery and pre-pregnancy weights. The cohort was analyzed according to VBAC success. BMI classes were compared according to whether they met or exceeded IOM gestational weight gain recommendations. Statistical analysis included chi-squared, Fisher’s exact test and Mann-Whitney U test. P < 0.05 was significant.

Results: Of 1,395 women undergoing TOLAC, 1,189 met study criteria (87.5% of total). Although pre-pregnancy BMI was higher in women with failed TOLAC (32 [26-39] kg/m²) than successful VBAC (29 [25-35] kg/m², p < 0.001), gestational weight gain was similar in both groups (18 [10-33]) in both (p = 1). When VBAC success was evaluated according to BMI category, women who exceeded IOM guidelines for weight gain had lower VBAC rates (Figure). Women with gestational weight gain exceeding IOM guidelines had decreased odds of successful VBAC in BMI categories of BMI 25-29.9 (OR 0.542, 95% CI 0.318-0.923, p<0.02) and 35-39.9 (OR 0.492, 95% CI 0.254-0.945, p<0.03). This difference was not significant for other BMI categories. Conclusion: Although increasing delivery BMI was associated with lower VBAC success, gestational weight gain was similar in both failed TOLAC and successful VBAC. Exceeding IOM gestational weight gain recommendations predicted lower VBAC success for some but not all BMI categories. Further study is needed to characterize the relationship between VBAC success and gestational weight gain.

Background
Maternal obesity reduces the likelihood of VBAC success in published predictive models. The IOM recommends targets for gestational weight gain according to pre-pregnancy BMI. IOM Recommendations for Gestational Weight Gain by Pre-Pregnancy BMI:

<table>
<thead>
<tr>
<th>Pre-pregnancy Weight Category</th>
<th>Recommended Range of Total Weight Gain (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt; 18.5</td>
</tr>
<tr>
<td>Normal weight</td>
<td>18.5-24.9</td>
</tr>
<tr>
<td>Overweight</td>
<td>≥ 25-29</td>
</tr>
<tr>
<td>Obese (includes all classes)</td>
<td>≥ 30</td>
</tr>
</tbody>
</table>

Study Design
- Retrospective cohort study of all women attempting TOLAC at an academic tertiary care institution from January 2011 to May 2018
- Inclusion criteria: Singleton gestation, non-anomalous, viable pregnancy
- Exclusion criteria: Preterm delivery ≤ 37 weeks of gestation, prior-fetal gestations, women without a recorded pre-pregnancy or delivery weight
- Data analysis: Pearson chi-squared, Fisher’s exact, independent sample t-test, univariate regression analysis

Maternal and Neonatal Outcomes

<table>
<thead>
<tr>
<th>Maternal and Neonatal Outcomes</th>
<th>Successful VBAC (n=875)</th>
<th>Cesarean Delivery (n=314)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age</td>
<td>29 [23-34]</td>
<td>28 [23-33]</td>
<td>.004</td>
</tr>
<tr>
<td>Race</td>
<td>Black: 63</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td></td>
<td>White: 28</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other: 9</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Pre-pregnancy BMI (median)</td>
<td>BMI ≤ 18.5</td>
<td>7 [11]</td>
<td>&lt;0001</td>
</tr>
<tr>
<td></td>
<td>BMI 18.5-24.9</td>
<td>15 [20]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BMI 25.0-28.9</td>
<td>26 [30]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BMI 30.0-33.6</td>
<td>23 [27]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BMI 35.0-39.9</td>
<td>11 [12]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BMI ≥ 40</td>
<td>10 [12]</td>
<td></td>
</tr>
<tr>
<td>BMI at delivery (median)</td>
<td>33 [29-38]</td>
<td>30 [31-42]</td>
<td>&lt;0001</td>
</tr>
<tr>
<td></td>
<td>BMI 18.5-24.9</td>
<td>7 [11]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BMI 25.0-28.9</td>
<td>24 [27]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BMI 30.0-33.6</td>
<td>20 [22]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BMI 35.0-39.9</td>
<td>10 [10]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BMI ≥ 40</td>
<td>10 [10]</td>
<td></td>
</tr>
</tbody>
</table>

Table data presented as median (interquartile range) in N (%); OR, Odds ratio; CI, Confidence interval

<table>
<thead>
<tr>
<th>Demographic and Obstetric Characteristics Associated with VBAC Success</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age</td>
<td>.004</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>.004</td>
</tr>
<tr>
<td>White</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>.004</td>
</tr>
<tr>
<td>Pre-pregnancy BMI (median)</td>
<td>&lt;0001</td>
</tr>
<tr>
<td>BMI ≤ 18.5</td>
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<tr>
<td>BMI 18.5-24.9</td>
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<tr>
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<tr>
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<tr>
<td>BMI 18.5-24.9</td>
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<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>BMI ≥ 40</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions
- Although pre-pregnancy BMI was higher in women with failed TOLAC than successful VBAC, gestational weight gain was similar in both groups.
- Overall, women who exceeded IOM guidelines for weight gain had lower VBAC rates.
- Women with gestational weight gain exceeding IOM guidelines had decreased odds of successful VBAC in BMI categories of BMI 25-29.9 (OR 0.542, 95% CI 0.318-0.923, p<0.02) and 35-39.9 (OR 0.492, 95% CI 0.254-0.945, p<0.03). This difference was not significant for other BMI categories.
- Maternal and neonatal morbidity complications were higher in women with gestational weight gain exceeding IOM guidelines.

Summary
- Although pre-pregnancy BMI was associated with lower VBAC success, gestational weight gain was similar in failed TOLAC and successful VBAC. Exceeding IOM gestational weight gain recommendations predicted lower VBAC success for overweight and Class II obesity categories.
- Maternal and neonatal morbidity complications were higher in women with gestational weight gain exceeding IOM guidelines.
Diabetic Ketoacidosis with Normal Blood Glucose

Yibing Li, MD
Saint Louis University Family Medicine Residency

Clinical Presentation

29 year old man with type 1 diabetes mellitus arrives in the emergency department with nausea/vomiting/diarrhea and generalized abdominal pain of one day duration. He has an insulin pump, lost some of the pump for his pump off of Craighead. He does not check his blood glucose because he "can't afford test strips." Outpatient follow-up with his PCP has been inconsistent and he had not been seen by endocrinology for several years. His average hemoglobin A1c over the past three years has been 9.3. There was a previous admission for DKA about 6 months prior to presentation.

Initial Workup and Treatment

In the ED, patient's HR was 110, WBC of 23.3, BG of 346, initial bicarbonate of 16, borderline anion gap of 13. The ED also obtained a CT abdomen/pelvis w/ contrast that was normal. Physical exam significant for tachycardia, dry mucous membranes, and slight tenderness to palpation in all abdominal quadrants. Per hospital DKA protocol, patient received IV fluids, IV insulin, and supplemental potassium until electrolytes and blood glucose normalized, and anion gap closed. Patient's DKA resolved within 12 hours of presentation and was transitioned to a subcutaneous insulin regimen of Lanux 20 U qhs and medium-dose sliding scale insulin with meals.

Hospital Course

HD 1: Initial presentation

HD 2: AG, closed, blood glucose normalized. Transitioned to subcutaneous insulin of Lanux 20 U qhs and medium-dose sliding scale insulin with meals. Tolerating some po intake. Nausea/vomiting still present.

HD 3: No po intake that entire day. Patient still endorsing significant nausea/vomiting.

HD 4: Restarted D5 1/2 NS @ 100 mL/hr and started scheduling anti-emetics. Patient continues to have nausea/vomiting with very little po intake.

HD 5: Patient was able to engage in some crackers and water throughout the day. Fluids changed to 1/2 NS @ 100 mL/hr.

HD 6: Patient continues to vomit. IV fluids continued. GI consulted and started patient on a regimen of metoclopramide, and stating patient's continued nausea was most likely due to gastritis vs viral gastroenteritis.

HD 7: Bicarb dropped to a low of 9 that afternoon. Anion gap of 18. Ketonuria. Normal BG. Patient was placed on D5/1NS @ 100 mL/hr subcutaneous insulin was switched back to an insulin drip, and q1hr BG checks were reinstated.

HD 8: By morning, patient's anion gap had closed. D5/1NS was continued @ 100 mL/hr with q1hr BG checks. Patient was transitioned back from the drip to subcutaneous insulin.

HD 9: D5/1NS was continued as well as subcut q1hr BG checks. An EGD showed gastritis and esophagitis. Patient tolerated breakfast and lunch without vomiting.

HD 10: Patient's po intake continued to increase. IV fluids were stopped.

HD 11: Patient continued to tolerate po intake without vomiting. Patient felt much better and asked to leave. He was discharged later that evening.

Final Treatment and Resolution

Patient was placed back on an insulin drip with 1 hr BG checks and a D5 1/2NS infusion. His euglycemic diabetic ketoacidosis began to resolve.

Patient's po intake increased significantly over the last two days of hospitalization as nausea and vomiting rapidly improved.

Trend Graphs

Dietary management will minimize morbidity and mortality. Excessive ketone body production in a euglycemic state

Discussion

Euglycemic Diabetic Ketoacidosis

- Increased anion gap metabolic acidosis
- Ketonuria/ketononcetonuria
- Normal blood glucose levels < 200 mg/dL

Mechanisms of euglycemic diabetic ketoacidosis:

- Increased urinary excretion of glucose due to excess counter-regulatory hormones
- Most likely, decreased hepatic production of glucose during fasting states

So a type 1 diabetic patient...

Exposure to a triggering factor for DKA (infection, MI, stroke, etc)

State of fasting while continuing regular insulin treatment (glycogen has long been depleted)

Proposed mechanism that glycoegenolysis is impaired in type 1 diabetes under fasting states

- Excessive ketone body production in a euglycemic state

Existing case reports of euglycemic diabetic ketoacidosis:

- A 36 yo F w/ T2DM on an insulin pump, had not eaten for the past 14 hours, pump had stopped working sometime over the past two days
- A 36 yo F w/ hx of alcoholism and Hx of brandy daily for years presented with epigastric pain and 1 week of nausea/vomiting and poor po intake. Besides indications of severe pancreatitis on CT, patient was found to be in a ketoacidotic state
- A 57 yo F w/ hx of diabetes, noncompliant with insulin regimen over the past week, was in usual state of health 2 days prior to presentation. Came to the ER w/ altered mental status, nausea/vomiting, and abdominal pain. Urine and serum drug screen were positive for cocaine and patient was found to be in a euglycemic ketogenic state

References


Conclusion

A high clinical index of suspicion is required to diagnose euglycemic diabetic ketoacidosis. Knowledge of the possible triggers of this condition in susceptible patients will serve to hasten diagnosis. At the same time, other forms of ketoadasis and causes of increased anion gap metabolic acidosis still need to be ruled out. Once euglycemic diabetic ketoacidosis has been diagnosed, the treatment is very similar to the treatment of DKA: rapid rehydration using intravenous fluids, and use of an insulin drip, followed by normalization of insulin therapy and careful observation until the anion gap and bicarbonate levels normalize. Early and aggressive management will minimize morbidity and mortality.
Background

There are a number of factors which affect patient compliance. Compliance issues with treatment regimens can lead to frustration (or both the patient and the physician.

One of the most important factors in determining patient adherence is the ability to understand and follow instructions.

Additionally, lower levels of healthcare literacy among patients is associated with decreased patient participation in the healthcare decision-making process.

The consequence of this is decreased patient satisfaction and worse patient outcomes. This represents a significant obstacle in providing optimal patient care.

Physicians' accurate assessment of their patient population's healthcare literacy is critical to ensuring effective communication, patient participation, patient compliance, and optimal patient outcomes.

Methods

IRB-approved survey.

We selected the Newest Vital Sign survey as it has been previously vetted in a number of studies for its ability to measure healthcare literacy in ~5 minutes.

Over 8 weeks (Feb – Mar 2018), the Newest Vital Sign survey was administered by our nursing staff to Mohs micrographic surgery patients. The survey was conducted immediately after each patient had their 1st Mohs layer taken.

Patients also were asked to provide limited demographic information.

Results

N=118 surveys distributed, 92 completed (78%).

Demographics:

• Average / median age: 65.6 / 66.5.
• Race: 98.9% white.
• Language: 100% listed English as primary language.
• Education: 28.3% high school, 18.5% some college, 31.5% 4-year degree, 21.7% graduate degree.
• Housing: 22.6% rural, 53.3% suburban, 23.9% urban.

9.8% of patients demonstrated a high risk of limited literacy.

20.7% of patients were identified as potentially having limited literacy.

There was no association between the area in which a patient lived and their score.

There was an association between age and health literacy scores. Patients with lower scores tended to be older.

Conclusions

31.5% of patients identified as potentially having limited literacy (9.8% had high likelihood).

Trend towards higher average scores with increasing levels of education.

Not quite statistically significant and education not necessarily predictive of literacy (some patients with high education had low literacy and vice versa).

There was an association between increasing age and risk of limited healthcare literacy.

Our results closely model those of the 2003 National Assessment of Adult Healthcare Literacy:

• Theirs: 36%
• Ours: ~32%, identified as having basic or below-basic literacy.

We should pay special attention to at-risk patients and rethink how we communicate with them.

References

Perianal Plaques In a Five-Month Old Infant

Kesha Baxi, DO (Pediatrics PGY-2); Lisa Akiyama, MD (Pediatric Neurology PGY-3)

Faculty Contributors: Dr. Elaine Siegfried (Pediatric Dermatology); Dr. Aaron Miller (Pediatric Infectious Disease)

St. Louis University-Cardinal Glennon Children’s Hospital

Introduction

Up to 30% of patients seen in pediatric clinics have a skin-related complaint. In many cases, history and skin exam is sufficient to establish a diagnosis and recommend treatment. The differential diagnosis of skin lesions presenting in infancy is different than other age groups. Although the decision to pursue additional evaluation in infants is heavily impacted by the need for invasive tests, in some cases, invasive testing is indicated to prevent disease sequelae.

Case History

• A five-month old term male infant was seen in an outpatient clinic for a two month history of gradually enlarging, friable, perianal lesions.
• The lesions failed to improve after an empiric course of nystatin ointment. The patient had received no other medications.

Physical Examination

• General: alert, calm, no distress
• HEENT: anterior fontanelle soft, no bulge.
• Skin: no jaundice, no rash on palms or soles, no bleeding noted
• Neuro: symmetrical face, PERRL, moves at extremes, normal tone
• Fast Medical History

Inpatient Evaluation

Additional Testing

- Labs:
  - CBC: WBC 25.9 (8% N, 67% L; 4% E, 14% Atypical), Hgb/Hct 9.2/9, MCV 70; platelets 345K
  - CMP: unremarkable
  - UA: normal

- Additional testing yielded low suspicion of sexual abuse

Inpatient Evaluation

Figure 1: Perianal plaques seen at the Pediatric Dermatology evaluation

- He was referred to Pediatric Dermatology for further evaluation. At that time, rhinorrhea was noted. A punch biopsy was performed. Histologic features prompted Infectious Diseases consultation and hospitalization.
- Past Medical History
  - Born SGA at 38w2d via NSVD to a 24 year old mother
  - Family History: sickle cell trait in mother and father

Discussion

The rate of congenital syphilis cases in the US increased 38% between 2012-2014 (Figure 3). This rapid increase mirrors the rise of this infection in women. In Saint Louis (STL) County, the incidence of syphilis in women increased 420% between 2011 and 2017 (from 1.0 case to 4.6 cases per 100,000 women). 88% of these female cases were diagnosed in women of childbearing age. In 2017, three cases of congenital syphilis were diagnosed among infants born in STL, a resurgence after the last reported case in 2012. Standard-of-care includes one nontreponemal screening test (VDRL or RPR) for syphilis during the first prenatal visit. This type of test is very cost-effective, quick, and can provide a good marker for therapeutic response. However, the tests with more specificity or the confirmatory tests are the treponemal tests (such as FTA-ABS or T. pallidum enzyme immunoassay). As evidenced by our case, the one time screening approach may fail to detect the infection.

This case illustrates the value of consultation with pediatric subspecialists; pediatric dermatology for atypical skin lesions that do not improve or resolve following recommended treatment (especially in infants who are not otherwise healthy and growing well), and pediatric infectious diseases for diagnosis and management of unusual suspected and confirmed infections.

Figure 2: Femoral Films Left (L) and Right (R)

Figure 3: CDC Congenital Syphilis Cases

References:

2. Amended response to a recent report by the Institute of Medicine (IOM) on a previous report on the safety of vaccines, 2015. (http://www.cdc.gov/vaccines/recommendations/VRs/vaccine-safety.html.)
Nonoperative management of acute appendicitis is associated with increased mortality

Christopher B. Horn, MD,1 Dajun Tian, MS,2 Grant V. Bochicchio, MD, MPH,3 Isaiah R. Turnbull, MD, PhD3
1. Department of Surgery, St. Louis University
2. Institute for Informatics, Washington University in St. Louis
3. Department of Surgery, Washington University in St. Louis

**Background:**
- Appendicitis is the most common indication for emergent surgery
- In recent years prospective trials have demonstrated the feasibility of a nonoperative approach
- There has been no large scale analysis of practice and associated outcomes of appendicitis

**Methods:**
- National inpatient sample (NIS) from 1998-2014 queried for cases of appendicitis
- Cases with associated abscesses, elective admissions, minors excluded
- Elixhauser/van Walraven comorbidity indices applied
- Trends in management of appendicitis in last 17 years tested via Cochrane-Armitage
- Demographics of patients managed operatively compared to patients managed non-operatively via Student's T or \( \chi^2 \)
- Multivariate logistic regression used to identify predictors of mortality
- Case matching performed on all independent predictors and outcomes of compared

**Results:**
- 477,680 cases of appendicitis were identified
- There is a significant trend increased in nonoperative management (2.3% vs 4.9% in 2014, \( p<.001 \))
- 135,856 patients with appendicitis were identified from 2010 to 2014; 4694 (3.3%) were treated nonoperatively

**Discussion:**
- There is a significant trend towards nonoperative management of appendicitis
- Nonoperative management is more common in older, sicker patients
- Nonoperative management remains an independent predictor of mortality after logistic regression and case matching
Altered Vaginal Cytokine Expression in Patient's Receiving Pessary for Treatment of Short Cervix

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Saint Louis University School of Medicine, Department of Obstetrics, Gynecology, & Women's Health, Molecular Microbiology and Immunology

Abstract

Objective: Vaginal pessaries are a treatment for gravid patients with short cervix. Increased discharge has been a consistent finding in multiple prior investigations and it's etiology has not been elucidated. We aimed to explore variation in cytokine expression following placement of a vaginal pessary in patients with short funneled cervix. We hypothesize that the cytokine expression profile will differ as a consequence of pessary use.

Study Design: This is a prospective cohort study of patients who received Miles' Antiflatulential pessaries for short cervix. Gestational age-matched controls without cervical shortening served as the control group. Following consent, pessary group and control patients underwent collection of sterile vaginal lavage for baseline specimen. Both arms were followed longitudinally and underwent vaginal lavage collection a week later and then monthly. Multiplexed ELISA analyzed 20 cytokines with a broad survey panel. Cytokine levels were compared longitudinally within each arm, between baseline experimental subjects and controls. Longitudinal cytokine concentration was compared between the two arms. Pair-wise comparisons were performed using Mann-Whitney U test.

Results: Most of the 20 cytokines were below the level of detection. Granulocyte-colony stimulating factor (G-CSF) demonstrated significant differences between pre- and post-pessary arm (p<0.001) and baseline pessary arm and baseline control arm (p<0.003). Interleukin-4 (IL-4) likewise was significantly different between baseline specimens in each arm (p=0.01) and pre- and post-pessary arms (p<0.001). Interleukin-6 was expressed differently in pre- and post-pessary arms (p=0.006), baseline pessary and baseline control arms (p=0.013), and longitudinal pessary and control arms (p=0.003). Interleukin-1α (IL-1α) was variably expressed between baseline arms (p<0.001).

Conclusions: Significant variation in cytokine expression was noted in pessary patients compared with controls for G-CSF, IL-4, IL-6, and IL-1α. Reduced cytokine expression of IL-4, IL-6, and G-CSF were noted in patients with underestimation pessary placement. However, IL-6 is higher in premature patients relative to gestational age-matched controls. Alteration in cytokine expression following pessary placement in gravid patients is expected. However, the allergic-like response is surprising. Additionally, the reduced immune response prior to pessary placement is a novel finding.

Study Design

• Prospective cohort
• Inclusion:
  • Singleton + short cervix + having pessary placed
  • Gestational age matched controls
• Exclusion: active vaginal infection
• Collection:
  • Samples were collected by lavage and swab of vagina prior to pessary and approximately 1 month after pessary placement
  • The lavage and swabs were frozen and stored at -70°C
• Sample analysis:
  • Samples were thawed rapidly in 37°C and then spun at 15k g for 15 minutes
  • Cytokines my multiplexed ELISA (32 plex) and microbiome analysis
• Data Analysis: Mann-Whitney U, Chi-squared and independent samples T-test
• 3 comparison groups:
  • Pre-pessary short cervix vs baseline control
  • Pre-pessary short cervix vs post pessary short cervix
  • Post pessary short cervix vs follow up control

Results

Table 1. Demographics and Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Age (mean)</th>
<th>Race (AA)</th>
<th>Race (White)</th>
<th>Tobacco use</th>
<th>BMI (avg.)</th>
<th>Parity (avg.)</th>
<th>Delivery GIA (p=0.007)</th>
<th>Birth weight (gm)</th>
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<td>Pessary</td>
<td>25.8</td>
<td>10, 5</td>
<td>66% 33%</td>
<td>26% 29</td>
<td>0.4</td>
<td>0.4</td>
<td>34.4 2324</td>
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<td>Group</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Control</td>
<td>27.8</td>
<td>7, 4</td>
<td>63% 36%</td>
<td>27% 35</td>
<td>2</td>
<td>0.3</td>
<td>37.0 2822</td>
<td></td>
</tr>
<tr>
<td>(11)</td>
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</tbody>
</table>

Figure 1. Microbiome dominance

Figure 2. Cytokine levels

G-CSF

IL-6

IL-1α

Conclusions

• Women with a short cervix have baseline differences in cytokine expression and microbiome vs. gestational age matched controls
• Reduced cytokine expression of IL-1α and G-CSF is noted in women with a short cervix
• Following pessary placement, differences in cytokine expression can be detected which previously were associated with allergic response
• Following pessary placement, changes in the microbiome in women with a short cervix approximates controls
Expression of α-Synuclein in the Dysplastic Neurons of Pediatric Conventional Gangliogliomas; a Diagnostic Tool in Challenging Cases

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Background

**Alpha-synuclein (α-synuclein)**
- Pre-synaptic cytoplasmic protein found abundantly in neural tissue
- Coincidentally, synaptophysin, known to show cytoplasmonic positivity in gangliogliomas, is located in synaptic vesicles
- While function remains unknown, possible role in synaptic plasticity & memory (syneif in: avian homologue that modulates song-learning circuit of juvenile male zebra-finches)
- Widely known for its presence in neurodegenerative disorders

**Gangliogliomas**
- Benign (WHO grade I) glioneuronal tumors of the central nervous system (CNS) characterized by dysplastic ganglion cells and neoplastic glial components
- Have been described to exhibit neurodegenerative findings
- Can be challenging to distinguish conventional gangliogliomas from tumors with ganglioneuronal differentiation
- Highlighted by recent recategorization of classic gangliogliomas and pilocytic astrocytomas with gangliocytic differentiation
- Distinctive immunostaining is therefore essential for definitive identification

We hypothesize that α-synuclein expression can be used to highlight dysmorphic neurons present in classic gangliogliomas and thus aid in the diagnosis of challenging cases

**Design**
- α-Synuclein stain was performed on a retrospective cohort of CNS entities diagnosed at our institution:
  - 19 classic gangliogliomas (study group)
  - 6 pilocytic astrocytomas
  - 1 dysembryoplastic neuroepithelial tumor (DNET)
  - 1 atypical extraventricular neurocytoma
  - 1 subependymal giant cell astrocytoma (SEGA)
  - 1 case of cortical dysplasia
  - 3 cases of reactive gliosis
  - 3 cases of astrocytoma, WHO grade II
- Specimens were examined for eligibility, & stained with human alpha-synuclein Ab-2 (clone syn21.1, 1/250, Thermo Scientific, MS-1572).
- A blinded evaluation was performed independently by two reviewers.
- Cytoplasmic α-synuclein staining in >5% of lesional cells was considered positive

**Results**

- Immunoreactivity of α-synuclein showed nearly universal positivity within the classic gangliogliomas tested
- Highlighted cytoplasm of dysmorphic ganglion cells (>5% lesional cells) in 18 of 19 cases
- In our study, there was a statistically significant association between positivity of α-synuclein immunohistochemistry and a diagnosis of classic ganglioglioma with a sensitivity of 94.7% and specificity of 95.2%
- Pearson chi-square testing was used to assess the association between the positivity of α-synuclein and ganglioglioma diagnosis
- p-values <0.05 were considered statistically significant
- 1 of 1 SEGA was also positive

Cytoplasmic α-synuclein was negative in the 20 other neoplasms and processes tested.
- Staining within neurites of pilocytic astrocytomas, gangliogliomas, and SEGA
- While the positive ratio of α-synuclein immunoreactivity within gangliogliomas is not as high as that of synaptophysin, this study suggests α-synuclein may show a higher positive ratio than studies have demonstrated for either neurofilament or chromogranin A.

**Conclusion**

Demonstrates that α-synuclein is a useful neuronal marker, and may give the pathologist an extra tool (to be used in addition to the established IHC panel) to assist in challenging cases, helping to distinguish gangliogliomas from astrocytic derived neoplasms

Future aims: validation of our findings in a cohort from another institution; additional study utilizing an increased number of low grade glioneuronal tumors and pilocytic astrocytomas with ganglioglional differentiation.
Igniting Culture Change: Tackling Barriers to Attending Noon Conference

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Introduction
- Noon conference is a vital educational opportunity for our residents
- Conferences were poorly attended, and resident satisfaction was low
- Surveys showed top barriers to attending conference included:
  - Patient care obligations
  - Pages during conference
  - Prolonged rounds
- We designed a multi-pronged approach to improving the quality and participation in noon conference

Methods

Participants
- Internal Medicine Residents

Goals
- Identify Barriers
- Establish attendance expectations

Data
- Pre-Survey
- 6 Month and 1 Year Post-Survey

Results

Resident Free Responses to Improving Noon-Conferences

Word cloud diagrams show the relative frequency of words used in the comments of the survey. Larger words were used more often.

Inpatient rotations
- During noon conference 60% of the time or more
- When I am at SLUH, I want to go to noon-conference
- During noon conference at SLUH, the speaker keeps my attention
- When I am on service at SLUH more than 40% of the attendings encourage me to go to conference
- Resident and Intern Report occur frequently enough at SLUH

Discussion
- Attendance and interest in noon conference have improved following our interventions
- Patient care, pages during conference, and long rounds remain top barriers to attending conference
- Attendings are not holding pagers during conference
- Comments from the surveys reveal continued desire for attending engagement, relief from pages, and a diversity of topical content

Conclusion
- Limitations:
  - Pending End of The Year Post-Survey Data
  - Minimal participation in surveys by PGY-2
  - Low 6-Month Survey Response rate; resident survey fatigue?
- Need to strategize noon-conference goals
- Need to combine expectations of residents and attendings
- By focusing conferences to resident interest, we may improve enthusiasm and engagement

Future Directives
- Attending buy-in
  - Attending noon conference page reminders
  - Affirm rounding-end times
  - Encourage attending attendance
- Utilize noon conference evaluations to improve conference

Higher purpose. Greater good.
A Peculiar Case of a Right Atrial Mass in a Patient with Bacteremia

Amber Bokhari MD, Infectious Disease Fellow
Department of Infectious Disease, St. Louis University School of Medicine, St. Louis, MO

Introduction
The differential is very broad in a patient with bacteremia and Right atrial mass on Echocardiography. The patient had a routine endovascular workup with TTE, TEE, CT chest abdomen and pelvis, daily blood cultures and cultures of the catheter tip when removed. However, the index of suspicion for an endovascular source of infection helped in diagnosing a rare yet possibly fatal condition if undiagnosed.

Case Presentation
55 year-old male presented to MICU with fever, abdominal pain and septic shock due to Staph epidermidis bacteremia. He was hypoxic and was intubated. Lactate 6.4, Cr 1.4, WBC 48.5 (Abs N 0.24, L 89%), procalcitonin 361.03. He was started on vancomycin, cefepime and flagyl with levophed and steroids. Antibiotics were later switched to Vancomycin, Meropenem and Micafungin. PICC line was removed and sent for culture which came back positive for Staph epidermidis. After removal of line, bacteremia resolved. Deescalated therapy and discontinued Piperacillin, Tazobactam and Micafungin and continued on vancomycin.

Physical Examination:
There was a PICC line and a suprapubic catheter in place at admission. The rest of the physical examination was benign.

Workup:
- Blood cultures and catheter tip grew Staph epidermidis.
- TTE showed no vegetation but incident RA mass measuring 1.9 x 3.5 cm, confirmed on TEE.
- Subsequent blood cultures remained negative.
- Vasculitis carotid duplex showed no significant obstructive lesions or stenosis. Non-occlusive thrombus seen in right internal jugular vein.
- CT angiography negative for pulmonary emboli.
- CT Chest Abdomen Pelvis showed no abscess or septic emboli.
- Panorex was benign.
- Urine culture was negative, no growth.

Course of Illness:
Cardiothoracic surgery removed the right atrial mass and placed four chest tubes and U midline. Tissue sent for pathology and cultures. After few days all chest tubes were removed. Fever de-escalivated and white count came back to normal. Pathology finalized the tissue sent as 'organized thrombus'.

Treatment:
Patient completed recommended duration of appropriate therapy for Staph epidermidis bacteremia with Vancomycin for 7 days.

Past Medical History:
- HTN: Major Depressive Disorder with suicidal ideation.
- Crohn's disease (with frequent flares, 2 per month x 7 bowel resections). One month ago, Crohn's flare was treated with immunosuppressants, prednisone and started on TPN/PID and PICC line placed.
- Unrelated stricture since birth (due to previous stent implantation, suprapubic catheter in place for last 3 months, last changed one month ago by his Urologist).
- One week ago he was treated for possible cysts with PO Ciprofloxacin for 7 days and sent home.

Discussion
- TTE showing a very large pedunculated right atrial mass attached to the atrial wall near SVC and RA junction (2.54 x 2.44 cm). Mass has multipe projections raising a concern for high risk of embolization.
- Right atrial mass removed by cardiothoracic surgery and tissue sent for Histopathology and cultures to rule out atrial Myxoma.
- Microscopic view showing no tumor cells or pathogens but an organized thrombus.

Pertinent Images

Differential Diagnosis
1. Anatomical variants (Pectinate muscles, Orbits terminalis, Paracardial cysts list, Mitral annular calcification, Atrial septal anomaly)
2. Implanted devices (Pacemaker Cardiomyopathy-defibrillator leads, Right heart catheters, Occluder devices, Prosthetic valves/capsules. Foreign bodies)
3. Thrombus
4. Vegetations
5. Tumors (Primary, Metastatic)
6. Artifacts

Conclusion
Our patient improved dramatically after removal of right atrial mass. Broad spectrum antibiotics were narrowed to one week of IV Nafcillin for transient bacteremia with Staph epidermidis. There was no evidence of endocarditis on TEE. The leukocytosis and fever resolved after surgery.

The teaching point is that though atrial thrombi are rare, it is important to look for them as a possible source of bacteremia and also for the complication of pulmonary embolism associated with large atrial thrombus. They are associated with indwelling catheters and our patient had a PICC line in place and had a right Internal Jugular Thrombus on Carotid Artery Doppler. He had a timely diagnosis of the thrombus and thus had a benign clinical course. It is also pertinent to remember that final diagnosis hinges on Histopathology of the mass.

References
Case Presentation

Patient is a 26 year-old male with PMH of Anxiety, insomnia, depression and VUD (used methamphetamine 3 weeks prior, history of needle sharing). He presented with worsening weakness in bilateral lower extremities over past 2 weeks. He was also having difficulty in urination and clenching buttocks. Denied fevers, chills, trauma or falls. Neurosurgery evaluated him and started Decadron. Vancomycin and Ceftriaxone which was switched to Vancomycin, Ceftazidime and Flagyl.

Physical Examination:
Neurologic examination revealed bilateral lower extremity strength 4/5. Physical examination was otherwise benign.

Workup:
- MRI of Cervical/Torso/Lumbo spine showed 3 separate intraspinal masses. One on left of midline at T5-6; second behind T8 (9.5 x 6 x 9 mm) and a third to the right of midline at T9-10 (Figure 2).
- MRI brain and CT head obtained. (See Figure 1 A,B and C).
- CSF WBCs 91 (80% lymphocytes). CSF protein 242 (high), glucose 34 (low, blood glucose 155). Bacterial, fungal and mycobacterial cultures no growth.
- CSF Cryptococcal antigen positive 1:80.
- CSF HSV 1+2 negative. Toxoplasma PCR negative.
- CSF Flow cytometry: No evidence of non-Hodgkin lymphoma or high-grade meningioma.

Neurologic examination:
- There is cord edema from T5-6 down through T11. There are 3 separate intraspinal masses. The first is to the left of midline at T5-6. The second is behind T8 and is anterior to the left measuring about 9.5 x 6 x 9 mm. The third is to the right of midline at T9-10.
- There is cord edema from T5-6 down through T11. There are 3 separate intraspinal masses. The first is to the left of midline at T5-6. The second is behind T8 and is anterior to the left measuring about 9.5 x 6 x 9 mm. The third is to the right of midline at T9-10.

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Discussion

- C. gattii infection is associated with exposure to certain trees and soil debris. In particular, two species of Australian eucalyptus (Eucalyptus calophylla and Eucalyptus leucoma) have been associated with outbreaks of human disease.
- HIV infection, organ transplantation, various malignancies, and receipt of glucocorticoids increase the risk for C. gattii disease.
- Idiopathic CD4+ lymphopenia in the absence of HIV infection is a known risk factor for cryptococcosis due to C. neoformans and C. gattii infection.
- Host factors may also increase the risk for C. gattii infection. A proportion of patients with this infection in North America had a history of chronic lung disease associated with smoking.
- Cryptococcosis is more common in immunocompromised patients with C. gattii infection than in those with C. neoformans.
- Our patient did not have any obvious cause of immunosuppression, however he was a smoker and may have exposure to eucalyptus or soil debris which he used methamphetamine 3 weeks prior.

References

Background

• $12 billion spent annually on scar-related expenditures
• Advancement of scar assessment tools
• Vancouver Scar Scale
• No incorporation of patient perspective
• Patient Observer Scar Assessment Scale (POSAS)
• Greater reliability and less variability than VSS
• Utilized in numerous scar evaluation studies

Methods

• IRB-approved survey
• Patient identification
• Inclusion criteria:
  • Facial MMS with single stage repair
  • ≥ 18 years old
  • ≥ 12 weeks removed from procedure date
• Exclusion criteria:
  • Multistage repair
  • < 12 weeks removed from procedure date
• Cross-sectional survey
• Data analysis

Results

• N=125 surveys distributed, 52 completed (42%).
• Participant information:
  • Repairs
    • Linear: 27
    • Flap: 16
    • Graft/second intent: 9
  • Age
    • Range: 39 to 93 years old
    • Mean: 70.1 years old

• 9.6% (n=5) patients reported a score of 9 or 10 on any POSAS item
• Highest POSAS score observed for Q5 (thickness)
• Mean: 3.4
• No significant difference between closure type (p=0.19)
• No statistically significant difference in mean POSAS scores between women and men (17.4 vs 13.2, respectively)

Conclusions

• Time heals
• Lowest mean POSAS scores seen >160 days
• No association between closure type and mean POSAS scores
• Only 5 patients (9.6%) reported a score of 9 or 10 on any POSAS item
• Within the 117-142 post-operative day window

References

Addressing Child Maltreatment
Bystander Intervention model
Presented by: Iesha Draper, DO, PGY3

Background
- My toddler sons who is full of energy and my frustration with opinions on how to discipline him was my inspiration.
- Rates of child maltreatment and neglect in Missouri have steadily increased since 2012 to an estimate of 4 per 1,000 children in 2015.1
- Children from families in St. Louis City have the greatest risk factors for maltreatment: the lowest median income, highest poverty, highest SNAP food stamp eligibility, and highest rate of unemployment.2
- Bystander approaches have been successful in changing bystander attitudes and behaviors to prevent sexual violence and abuse1,3 but few initiatives have applied bystander principles to the prevention of child abuse and neglect.4
- Focus groups found that being uncertain about how to intervene, lack of personal responsibility for child abuse, and fear of negative consequences inhibit engagement and intervention.
- 3 years of Research developing Bystander Intervention model prior to my pairing team

Objectives
- Support Over Silence for KIDS
  - Reduce participants barriers to intervening
    - Increase participants understanding and positive intention to intervene
    - Increase participants knowledge of assessment and reaction to a variety of situations
    - Increase how often bystanders provide support to caregivers and their children
  - Personal
    - Provide medical students with insight of frequency and forms of child maltreatment, barriers to intervening, and methods to overcome those barriers
    - Get future providers thinking of how we could best intervene in a supporting manner that doesn’t infringe the ongoing relationships with families

Methods
- Focus groups. 19 groups of individuals composed of community members, Cardinal Glennon Children’s Hospital personnel and parents of children with traumatic backgrounds.
- Developed Training manual based on focus group qualitative data, components from successful sexual violence prevention program and systematic review of bystander intervention programs.
- Training consists of 7 modules to be completed over a 2 hour session
  - Pre & Post evaluations
  - Role Play Scenarios
  - Call to Action
  - Establish a personal plan
- Developed Brand Name that includes acronym for ways to respond
- Saint Louis University Graduate students and community members underwent training separately. Data collected and used to fine tune components from successful sexual violence prevention program and systematic review of bystander intervention programs.
- I personally trained 4 Saint Louis University 3rd year Medical Students using Support Over Silence for KIDS training material

Continuum of Child Maltreatment:
- Unchanged using focus group data

Results
- Data entry from medical student training in process
- Areas of interest
  - Types of interventions used before training
  - Most common perceived barriers
  - Compare/Contrast Comfort of intervening with witnessed threatening/yelling vs. physical harm
  - Did training change participants attitudes about their role in the community
- Qualitative data regarding benefit of training

Discussion/Next steps
As a parent and health care provider who experiences and witness stressful parent/child interactions it was important for me to have methods to provide support. There will always be perceived barriers to intervening and every interaction will not end as planned. However, "we are aiming to promote and support social norms that create a sense of ‘I got your back, you have support; among community members and hospital personnel when they engage with parents and children in instances of aggressive/neglectful parenting behavior." Recognizing these interactions does not make the person a "bad parent" but rather reflects a bad moment in time, can help individuals intervene in non-judgmental manner. It is our responsibility to keep children safe as they cannot always speak for themselves. The qualitative data gathered from trainings will be used to guide adaptations for future training. The goal is to develop a policy & culture at Cardinal Glennon Children’s Hospital pertaining to child maltreatment and have all personnel trained, by Support over Silence for KIDS, to intervene in an appropriate and effective manner.

Acknowledgments:
- Partnering Organizations

References
West Nile Fever and Encephalitis West of the Mississippi in an Elderly Patient

Debapriya Das, MD; Sandeep Thummalra, MD; Andrea Gomez-Ramirez, MD; Rachna Rawal, MD; Keniesha O. Thompson, MD
Department of Internal Medicine, Saint Louis University School of Medicine

Introduction

- Recognize West Nile Disease as a cause of acute febrile encephalopathy in the geriatric population.
- West Nile virus was not identified in the United States until 1999; now with increasing documented cases over the last decade.
- 80% of infections are asymptomatic.
- 20% develop an influenza-like illness lasting three to six days.

Case

- 86-year-old woman presented for altered mental status in September.
- The patient was independent with all activities of daily living.
- A week prior developed a cough and slow mentation.

Physical Exam and Initial Results:
BP 155/58, Pulse 95, Temp 103.5°F, Resp 28, SpO2 88% on RA
- AAOS0, inability to follow commands, right sided gaze
- Initial labs and CT Head were unremarkable.
- Urine Culture growing K. pneumoniae

Discussion

- Less than 1% of West Nile infections result in neurologic sequelae, with mortality increasing with age independent of medical comorbidities.
- There is a 20-fold increase in risk for neurologic involvement in patients over 60 years.
- Increased susceptibility in the elderly is due to increased permeability of the blood-brain barrier due to effects of aging.
- Mortality of neuroinvasive disease may be as high as 25%.
- Confirmation of diagnosis by molecular or serologic testing can take days.
- Bilateral coarse upper extremity tremors and changes in periventricular, subcortical, and meningeal hyperintensities on MRI may suggest the presence of neuroinvasive West Nile prior to serological confirmation.
- There are currently no therapeutic treatments available for treatment or prevention of West Nile Disease.
- Supportive care and rehabilitation post-discharge result in functional and cognitive recovery in up to 88% of patients.
- Retained neurological deficits were more likely in patients greater than 75 years old.

Conclusions

- West Nile disease can present in the elderly as febrile with acute encephalopathy, especially in months with mosquito activity.
- Patients may be initially misdiagnosed due to other confounding factors.
- In patients with unexplained encephalopathy, it is important to consider West Nile virus in your differential.

References

[Provide references here if available]
Failure to Tolerate PO: Incubating Tricuspid Endocarditis During Treatment with Oral Antibiotics

Debapriya Das, MD, Sandeep Tummala, MD, Rachna Rawal, MD
Department of Internal Medicine, Saint Louis University School of Medicine

Background

- Right sided infective endocarditis makes up to 10% of total endocarditis cases and is associated with an overall mortality up to 15%.
- Tricuspid valve infective endocarditis (TVIE) is associated with IV drug use (40%).
- S. aureus is the causative agent in 70% of cases.
- Most TVIE cases are treated medically with IV antibiotics with 4% requiring surgery.
- The POET trial demonstrated that after clinical stabilization with at least 10 days of IV antibiotics in left sided endocarditis, continuing medical therapy with oral antibiotics was a non-inferior treatment option.

Case

Chief Complaint: 28-year-old female presents with severe right upper back and right lower chest pain with dyspnea beginning morning of presentation.

Medical history: IV methamphetamine use

Additional History: Was discharged with 3 weeks of Dicloxacillin 13 days prior for continued treatment of MSSA tricuspid endocarditis after 3 weeks of IV antibiotics. Patient endorses medical compliance.

Physical Exam:
- BP 110/70; Pulse 113; Temp 98.7; Resp 24; SpO2 96% on RA
- Significant for diffuse tenderness to palpation along right chest wall and back.

Labs: HCO2 31, WBC 13.2, Hgb 10.9

Microbiology: No growth in blood cultures.

Clinical Course:
- Started on Naftifin and completed 4 week course.
- Discharged with planned follow up for moderate tricuspid regurgitation and monitoring of pulmonary artery pseudoaneurysm.

Images/Tables

Figure 1.
A) CTA: Mycotic pulmonary artery pseudoaneurysm with pleural effusion.
B) CTA: Mycotic pseudoaneurysm with thrombus, pulmonary infarction with pleural effusion.

Figure 2.
A) Admission TTE: Highly mobile tricuspid valve vegetation measuring 17mm x 12mm with moderate tricuspid regurgitation.
B) Final TEE: Vegetation measuring 16mm x 12mm on the posterior leaflet of the tricuspid valve with moderate tricuspid regurgitation.

Discussion

- Embolic events are more frequent in patients with IV drug abuse and right-sided infective endocarditis.
- Vegetations which are >10mm or noted to have severe mobility are associated with increased embolic risk especially in S. aureus and S. bovis infections.
- Vegetations >15mm are a predictor for 1-year mortality.
- Tricuspid vegetations can often be larger and are more mobile compared to left sided vegetations due to low pressures in the right heart.
- Was there potential harm from using oral antibiotics from applying the results of the POET trial to our patient?
  - While the POET trial showed that oral antibiotics were noninferior when comparing embolic outcomes, the trial focused on patients with left sided infective endocarditis of which only 45% had vegetations >8mm.
  - Tricuspid vegetations >10mm have been shown to be safely treated with IV antibiotics if no other surgical indication is present, however there is a lack in data displaying outcomes of early surgery in right sided endocarditis.
  - Development of an embolic event in infective endocarditis after 14 days of appropriate antibiotic treatment is uncommon.

Conclusions

- There is a lack of data on use of oral antibiotics and early surgery on outcomes in TVIE.
- There is increased risk of embolic events due to large vegetation size in both left and right sided endocarditis.
- Our patient does not fit the criteria tested in the POET trial.
- We recommend using caution when considering switching to oral antibiotics in patients with large vegetations.
Safety of Periocular Mohs Reconstruction: A Two-Center Retrospective Study
Matthew Clark, MD, Diana Kneiber, BS, Donald Neal, BA, Eric Armbrrecht, PhD, Jeremy Etzkorn, MD, Ian Maher, MD
Department of Dermatology, Saint Louis University; Department of Dermatology, University of Pennsylvania

Background
- 5-10% of skin cancers occur in the periocular region
- Mohs micrographic surgery (MMS) is considered the treatment of choice for periocular tumors
- Repair of periocular defects poses unique challenges
- Complication rates of periocular defects repaired by oculoplastic surgeons ranges from 16-42%
- Data on the safety of periocular repairs by Mohs surgeons is limited

Disclosure
- The authors have no relevant financial disclosures

Objectives
- Analyze the frequency and types of post-reconstruction complications for periocular repairs performed by Mohs surgeons
- Identify risk factors associated with complications
- Enumerate interventions for complications encountered

Methods
- IRB-approved retrospective two-center study
- Periocular reconstructions by Mohs surgeons between 07/2013–06/2016 were identified
- Patient demographics and tumor/surgical details were recorded
- Follow-up visit notes were reviewed for postoperative complications and interventions
- Complication rates in relation to patient demographics and defect characteristics were analyzed

Results
- 210 patients included in the analysis
- Average defect size was 2.2cm²
- Repair types included linear repair (41%), advancement flaps (27%), transposition flaps (18%), rotation flaps (7%), second intent (3%) and full-thickness skin grafts (3%)
- 30 complications observed in total (14.3%)
- Most common locations post-reconstruction complications were the medial canthus (17/30, or 56.7%) and lower eyelid (11/30 or 36.7%), accounting for 93% of all complication locations
- Eight patients (28%) with complications declined treatment or were managed conservatively. The most common post-operative intervention was intralesional triamcinolone, utilized in 43.3% of complication cases. Scar revision was performed in a total of 5 cases (2.4% of all cases).

Post-Operative Complications and Interventions

<table>
<thead>
<tr>
<th>Case</th>
<th>Sex</th>
<th>Race</th>
<th>Age</th>
<th>Tumor Site</th>
<th>Tumor Type</th>
<th>Repair Type</th>
<th>Complication</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>No</td>
<td>47</td>
<td>Lower lid</td>
<td>basal cell</td>
<td>advancement flap</td>
<td>Ectropion</td>
<td>Declined</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>No</td>
<td>62</td>
<td>Lower lid</td>
<td>basal cell</td>
<td>advancement flap</td>
<td>Ectropion</td>
<td>Declined</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>No</td>
<td>65</td>
<td>Lower lid</td>
<td>basal cell</td>
<td>advancement flap</td>
<td>Ectropion</td>
<td>Declined</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>No</td>
<td>55</td>
<td>Lower lid</td>
<td>basal cell</td>
<td>advancement flap</td>
<td>Ectropion</td>
<td>Declined</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>No</td>
<td>70</td>
<td>Lower lid</td>
<td>basal cell</td>
<td>advancement flap</td>
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<td>Declined</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>No</td>
<td>57</td>
<td>Lower lid</td>
<td>basal cell</td>
<td>advancement flap</td>
<td>Ectropion</td>
<td>Declined</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>No</td>
<td>58</td>
<td>Lower lid</td>
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<td>advancement flap</td>
<td>Ectropion</td>
<td>Declined</td>
</tr>
<tr>
<td>8</td>
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<td>basal cell</td>
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<td>Ectropion</td>
<td>Declined</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>No</td>
<td>59</td>
<td>Lower lid</td>
<td>basal cell</td>
<td>advancement flap</td>
<td>Ectropion</td>
<td>Declined</td>
</tr>
</tbody>
</table>


Conclusions
- Similar defect size, location, and repair types as those reported in the oculoplastics literature
- Similar to previous studies, the most common locations for periocular tumors in our study were the lower eyelid (42%) and medial canthus (33%)
- The overall complication rate of 14.3% is lower than complication rates of 16-42% reported in the oculoplastics literature
- Majority of complications were managed conservatively with scar massage or intralesional steroids

Limitations
- Retrospective study
- Lack of data for patients lost to follow up
- Selection bias – ? larger or more involved cases referred to oculoplastic surgeons
- Limited to repairs performed by a small number of Mohs surgeons working at academic institutions

References
Assessment of Sunscreen Knowledge Among Lifeguards

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Saint Louis University (SLU) Department of Dermatology, Saint Louis, Missouri

Background
- Ultraviolet radiation (UVR) is a major risk factor in the development of skin cancer.
- Sunscreens are designed to block and/or absorb UVR, however sunscreens are often used incorrectly by the public, possibly due to lack of knowledge regarding sunscreen terminology, proper use, and/or overall benefits.
- Lifeguards are at an increased risk for excessive UVR exposure, thus it is crucial they have a high level of sunscreen knowledge.
- Previous studies have examined patterns of sunscreen use, sun protection habits, and sunburn frequency of lifeguards, but information regarding sunscreen knowledge is lacking.

Objectives
- Our goal was to assess basic sunscreen knowledge among new and returning lifeguards at local lifeguard training classes.
- By determining gaps in sunscreen knowledge among lifeguards, we can better design sun protection education programs for lifeguard training classes in the future.

Methods
- New and returning lifeguards attending local lifeguard certification classes were asked to complete a 10 question survey testing basic sunscreen knowledge.
- Demographic information, personal/family history of skin cancer, and years of lifeguard experience were also collected.
- Correct answers were summed to create a total sunscreen knowledge score (i.e., # out of 10).
- The American Academy of Dermatology sunscreen guidelines were used in creating survey questions.
- T-tests and analysis of variance were used for data analysis.
- This study was approved by the SLU Institutional Review Board.

Results

Demographics
- 118 lifeguards completed the survey (97 new, 21 returning)
- Mean age 17 (range 15-45), 67% female, Fitzpatrick types I-V (47% type III)
- 2% with personal history of skin cancer, 24% family history of skin cancer

Survey Response Summary
- Average Total Sunscreen Knowledge Score = 3.5/10 (range 0/10 - 8/10)
- 93% of responders knew SPF was important when choosing a sunscreen, but only 31% knew the minimum recommended SPF value (30)
- 27% thought the minimum SPF was less than 30 (or didn’t know)
- 10% knew how SPF # related to time spent in the sun without burning
- 57% knew to apply sunscreen 15-30 mins before going outside
- 31% thought one could apply sunscreen =15 mins before (or didn’t know)
- 42% of survey responders knew to reapply sunscreen every 2 hrs
- 30% thought sunscreen could be reapplied > every 2 hrs (or didn’t know)
- 48% knew 1 ounce of sunscreen is needed to cover an average size adult
- 35% thought only 1 teaspoon of sunscreen was needed (or didn’t know)
- 50% knew what the term "water-resistant" means on sunscreen labels
- 61% knew what the term "broad spectrum" means on sunscreen labels

Differences by Demographics
- Older age and more years of lifeguard experience were correlated with higher average total knowledge scores (p=0.001 and p=0.037 respectively)
- New lifeguards = 3.4/10; Return lifeguards = 4.5/10
- Gender, Fitzpatrick type, & skin cancer history were not statistically significant.

Returning lifeguards who reported applying sunscreen more often before and during shifts had higher average total knowledge scores.

Graphs:
- Knowledge Score of Experienced Lifeguard Versus New Lifeguard

Conclusions
- Overall sunscreen knowledge scores for new and returning lifeguards were low based on survey responses.
- Thus, many lifeguards could be at risk for excessive UVR exposure and ultimately skin cancer.
- Returning lifeguards who reported applying sunscreen more often before and during shifts had higher average total scores.
- Knowledge likely influences behavior but behavior may also reinforce knowledge.
- Improved educational programs focusing on sunscreen and sun protection at lifeguard training classes could help bridge the gap in basic sunscreen knowledge among lifeguards.

Limitations
- Sample size (118 surveys collected)
- Lifeguard classes located in one metropolitan area (St. Louis)
- Lack of validation of survey prior to study

References
**SGLT2 Inhibitors** are novel anti-glycemics including canagliflozin (2013), empagliflozin (2014), dapagliflozin (2014), and erlotiflozin (2016) that reduce blood glucose levels by selectively blocking glucose reuptake in the proximal tubules in the kidney.

In 2015, the FDA released a warning regarding the association between SGLT-2 inhibitors and *euglycemic ketoacidosis* (euglycemic ketoacidosis).

### Case

A 53-year-old man with a history of insulin-dependent type 2 diabetes presents to an outside hospital with abdominal pain, emesis, and poor oral intake for 3 days and is diagnosed with non-obstructive nephrolithiasis. Metformin, empagliflozin, and sliding scale insulin are started on admission. On day 3 of hospitalization, he becomes somnolent and oriented only to speech. He is transferred to our institution for further evaluation.

On presentation, he awoke to physical stimulus, was oriented to speech, and reported significant abdominal pain. Vital signs were significant only for blood pressure of 195/110. Initial labs revealed glucose 135, AG 20, bicarbonate 13, arterial pH 7.31.

Medication review revealed an association between SGLT-2 inhibitors and euglycemic ketoacidosis (euglycemic ketoacidosis) with serum glucose < 250 mg/dL, elevated anion gap, elevated serum ketones, serum bicarbonate < 14 mmol/L, and arterial pH < 7.3.

Treatment should focus on closing the anion gap using an insulin drip, aggressive fluid replacement with dextrose replacement to keep serum glucose between 150-200 mg/dL, potassium supplementation, and as needed bicarbonate supplementation.

### Discussion

Low-glucose states induced by SGLT2 inhibitors lead to increased lipolysis, gluconeogenesis, and a mild ketogenic state. Periods of reduced oral intake, ketogenic or low-carbohydrate diets, and infectious/inflammatory states can exacerbate these effects and lead to a state of euglycemic ketoacidosis. Euglycemic ketoacidosis (euglycemic ketoacidosis) is diagnosed with serum glucose < 250 mg/dL, elevated anion gap, elevated serum ketones, serum bicarbonate < 14 mmol/L, and arterial pH < 7.3.

### Conclusions

Hospitalists should be aware of the risks associated with continuing SGLT-2 inhibitors with poor oral intake and must consider discontinuing these medications during acute hospitalization.

Patients should be counseled on the risk of SGLT-2 Inhibitor use and restrictive diets.
A Good Run of Bad Luck: A case of osteomyelitis of the pubic symphysis in a young athlete

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Department of Internal Medicine, Saint Louis University School of Medicine

I. Osteomyelitis pubis is a rare infection involving the pubic symphysis and its joint.
- It accounts for less than 1% of cases of osteomyelitis.
- The most common organism isolated is Staphylococcus aureus, followed by gram-negative bacilli, and polymicrobial infection in recent pelvic surgery.

Case
- A 20-year-old female with no significant past medical history presented with groin pain and fever (102°F).
- She is a college athlete who runs ten miles daily.
- Had recently gone zip-lining; wore a groin harness.
- No trauma, lesions, abrasions.
- 2 weeks of progressive bilateral inguinal pain worse with ambulation.
- Significant Labs: WBC 126 (72% neutrophils), Lactic acid of 1.2, ESR of 90 (N is 0-20 MM/HR) and CRP 6.1 (N is <0.5mg/dl).

Course of Medical Illness
- MRI showed localized collection and switched to Ciproflaxin.
- Fluid and blood cultures positive for MSSA and switched to Ciproflaxin.
- CT abdomen showed unchanged pelvic abscess and TEE was negative for vegetation.
- Patient discharged on 5-week course of oral amoxicillin with follow-up with trauma doctor.

Discussion
- Osteitis pubis occurs in 3-5% of athlete related injuries.
- Osteomyelitis pubis is a progression of osteitis pubis.
- The pathogenesis is attributed to micro trauma with repetitive movement during sports that makes it susceptible to seeding.
- Osteomyelitis pubis presents with fever and pubic pain which radiates to the genitals and increases when the hip is mobilized, producing gait claudication.
- Diagnosis is based on clinical presentation, supported by culture results and imaging.
- MRI is the most reliable method of detection.
- A large case series determined that diagnosis early in the course of osteitis pubis allows early on conservative management treatment: resulting in return to play faster without progression to osteomyelitis pubis.

Conservative therapy for osteitis pubis includes: rest, non-steroidal anti-inflammatory drugs, physical therapy and compression shorts.
- Once progressed to osteomyelitis pubis, management changes to drainage, antibiotics and in rare causes even surgery.

Conclusions
- Osteomyelitis pubis should be suspected in a patient with acute onset of pubic symphysis pain, fever and symptoms of systemic involvement.
- The standard treatment is a prolonged course of intravenous and oral antibiotics and abscess drainage if possible.
- Awareness and early recognition of osteitis pubis can prevent disease progression and unnecessary invasive treatment.
BACKGROUND
Ever since Émile Durkheim published his seminal work on the association of religious affiliation and social integration with suicide, religiosity has been considered a protective factor against suicidal thoughts and behavior.

Religiosity's protective effect against suicide is believed to stem from the impact it exerts over a person's belief system and the promotion of community connectedness. Religious affiliation and participation can be protective against attempted suicide; prayer can however be a risk factor.

Prior research suggests there is an inverse relationship between religiosity and crime, as religiosity has been generally found to inhibit youth delinquency and adult crime.

Different causal mechanisms have been proposed, including that religiosity promotes social conformity and fear of punishment.

The association of religiosity and crime has not been thoroughly re-examined in the literature, and most published studies rely on ecological designs.

OBJECTIVES
To understand the impact of religiosity on self-directed and other-directed violence.
To explore the association of certain aspects of religiosity with violence and crime.

KNOWLEDGE GAP
Does religiosity maintain a protective effect against violence and crime when accounting for confounding factors?
Are composite measures of religiosity more strongly correlated to violence and crime than unidimensional measures?

RESULTS

<table>
<thead>
<tr>
<th>Past-Year Suicide Attempt</th>
<th>Past-Year Physical Assault</th>
<th>Past-Year Attempted Suicidality</th>
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</thead>
<tbody>
<tr>
<td>Importance</td>
<td>29.4%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Non-Religious</td>
<td>16.6%</td>
<td>21.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Past-Year Attempted Suicide</th>
<th>Importance</th>
<th>Decisions</th>
<th>Friends</th>
<th>High Service Attendance</th>
<th>Religious</th>
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</thead>
<tbody>
<tr>
<td>Past-Year Attempted Suicide</td>
<td>64.4%</td>
<td>61.2%</td>
<td>79.6%</td>
<td>63.7%</td>
<td>61.3%</td>
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</table>

<table>
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<th>Past-Year Arrest</th>
<th>Importance</th>
<th>Decisions</th>
<th>Friends</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past-Year Arrest</td>
<td>57.7%</td>
<td>62.2%</td>
<td>71.7%</td>
<td>55.4%</td>
</tr>
</tbody>
</table>

METHODS
- Data: publicly-available cross-sectional surveys of the National Survey on Drug Use and Health (NSDUH) from 2008 through 2014, N = 270277 adults
- Dependent Variables
  - Self-report of attempting suicide and preparing a physical assault over the past year
  - Self-report of being arrested over the past year
  - Religious Questions
  - Religious beliefs are very important in life
  - Religious beliefs influence decisions
  - It is important that religious beliefs are shared with friends
  - Self-report of number of religious services attended over the past year
- Independent Variable
  - Non-religious
  - Disagreed with all statements and did not attend religious services over the past year
  - Religious Agreement
  - Agreed with any statement or attended at least one religious service over the past year

Analyses
- Adjusted F tests for bivariate analyses, with Bonferroni adjustment for multiple testing
- Multiple logistic regression models to determine odds ratios of attempting suicide, physically assaulting another person and getting arrested over the past year

CONCLUSIONS
- Importance of religious beliefs in life and decision-making are inversely correlated to violence.
- High attendance in religious services is associated with decreased odds of getting arrested.
- Composite measure of religiosity is associated with decreased odds of attempting suicide but are not associated with perpetrating physical assault.
- Composite measure of religiosity is not associated with getting arrested.
- Prospective studies are needed to gauge the performance of religiosity as a predictive factor of future violence and/or crime.

REFERENCES
- NSDUH data was retrieved from the Inter-university Consortium for Political and Social Research (ICPSR) data repository.
TRENDS IN UTILIZATION OF TREATMENT MODALITY FOR CLINICAL T1 RENAL CELL CARCINOMA IN OCTOGENARIANS: ANALYSIS OF THE NATIONAL CANCER DATABASE

Caleb Miller, John Syed, Zachary Hamilton, Sameer Siddiqui.
Division of Urology, Saint Louis University Hospital, St. Louis MO

INTRODUCTION

- Treatment of small (T1) renal cell carcinoma (RCC) has evolved.
- Less invasive approaches like percutaneous ablative therapy (PAT) have been emphasized especially in elderly population, compared to radical nephrectomy (RN) or partial nephrectomy (PN).
- Aim: To evaluate the proportion of treatment modalities over time and survival outcomes for octogenarians utilizing the National Cancer Database (NCDB).

METHODS

- Data was derived from the NCDB Participant User Files for RCC from 2004 to 2015.
- Included patients:
  - clinical stage 1 tumor; tumor size ≤7cm, and age 80-89 years
- Treatment modality was categorized as RN, PN and PAT.
- Primary outcome: treatment utilization over time.
- Secondary outcomes were all-cause mortality and 30 day readmission. Linear regression and Cox regression were performed for analysis.

RESULTS

- 12101 octogenarians identified
- Treatment modality: RN = 6761, PAT = 2924 and PN = 2416

- All-cause mortality rate was 39.6% overall.
- RN had the highest overall mortality rate, however 30 day and 90 mortality rates were statistically insignificant among treatment modalities.

CONCLUSION

- There is an increasing trend at utilization of PAT and PN compared to RN for the management of cT1 renal masses in octogenarians.
- PN is associated with improvements in survival, while PAT is associated with decreased risk of 30 day readmission.
IMPLICATIONS OF HEALTHCARE REFORMS ON INCIDENCE OF KIDNEY CANCER: A POPULATION BASED ANALYSIS

S. Johar Raza, Sameer Siddiqui, Zachary Hamilton.
Division of Urology, Saint Louis University Hospital, St. Louis MO

INTRODUCTION

Healthcare reforms were introduced with the introduction of Affordable Care Act, to increase insurance coverage for the public.

This study aims to determine the impact of ACA on incidence of kidney cancer utilizing a nationwide cancer database.

METHODS

- National cancer database was queried to identify new cases of kidney cancers before and after the introduction of the ACA (2004-2010 and 2011-2015, respectively).
- Temporal trends in incidence of Stage I-IV kidney cancer were determined.
- Regression analyses were performed to assess if changes in incidence were related to ACA.
- Data was analyzed using SPSS v24 with p<0.05 denoting significance.

RESULTS

- 296,395 patients were identified with kidney cancer over the study period.
- Incidence of stage III, IV and metastatic kidney cancer decreased between 2004 and 2015, with a similar increase noted for stage I disease. Similar trend was noted on linear regression model.
- Logistic regression and Cox regression analysis revealed that diagnosis of kidney cancer after the ACA was less likely to be associated with mortality and clinically metastatic disease (OR 0.90 CI 0.89-0.91, p<0.001 and HR 0.87 CI 0.86-0.89, p<0.001, respectively).

CONCLUSION

Incidence of kidney cancer with advanced and metastatic disease has declined after the implementation of the ACA across United States.

Longer duration of follow up is necessary to ascertain the long term effects of health care reforms in outcomes of kidney cancer.
Underutilization of Esophageal Biopsies in Evaluation of Dysphagia May Contribute to Underdiagnosis of Eosinophilic Esophagitis

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1Division of Gastroenterology and Hepatology; 2Department of Internal Medicine, Saint Louis University School of Medicine, Saint Louis, MO

Introduction
Eosinophilic esophagitis (EoE) is an increasingly recognized chronic immune-mediated condition that can present with esophageal dysphagia. We hypothesized that the regional differences in EoE prevalence are related in part to the regional differences in obtaining esophageal biopsies in patients with endoscopically unexplained dysphagia.

Methods
- We utilized the national inpatient sample database for the years 2008-2013, using ICD-9 codes.
- We identified 4073 hospitalized adult patients with EoE as well as 112,534 hospitalized adult patients with dysphagia with no explanation on upper endoscopy (EGD).
- Weighted multivariate logistic regression models were used to examine the regional differences in EoE hospitalizations and in the rates of obtaining esophageal biopsies during EGD for patients hospitalized with dysphagia.

Results
- An increase in the number of annual hospitalizations for EoE was noted over the study period (figure 1).
- Among hospitalized EoE patients, the majority of patients were in 18-44 age group (49.7%), male (60%), white ethnicity (80.3%), and were admitted to a teaching hospital (67.6%) in the South (30.7%, figure 3).
- Among adult patients hospitalized with endoscopically unexplained dysphagia, only 53% underwent esophageal biopsies during EGD (figure 2).

Conclusion
- Esophageal biopsies may be underutilized in evaluation of patients with endoscopically unexplained esophageal dysphagia.
- Regional differences in EoE prevalence could be explained in part by the regional variation in the rates of obtaining esophageal biopsies during upper endoscopic evaluation of patients with dysphagia.
Not Every Non-Alcoholic Fatty Liver is Non-alcoholic Fatty Liver Disease

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1Division of Gastroenterology and Hepatology, Department of Internal Medicine, Saint Louis University School of Medicine, St Louis, MO. 2Washington University School of Medicine, St Louis, MO.

Introduction

Non-alcoholic fatty liver disease (NAFLD) is defined as hepatic steatosis in the absence of 2ry causes of hepatic steatosis.

NAFLD is the most common cause of chronic liver disease and is strongly associated with metabolic syndrome.

Cases

34 year-old man was referred to our clinic for evaluation of non-alcoholic steatohepatitis (NASH).

Past medical history was notable for celiac disease controlled with gluten free diet. Never used alcohol. No family history of liver disease.

Physical exam was unremarkable besides BMI 31.9 kg/m².

Labs as noted in the table. Workup for chronic liver disease was unremarkable.

Liver biopsy showed NASH with stage 2 fibrosis.

Genetic Sequencing of ApoB gene showed heterozygosity for a splicing mutation.

Lab Test | Result | Reference Range
--- | --- | ---
CBC | Within normal limits |  
BMP, INR, AKP, and PT | Within normal limits |  
ALT | 116 mg/dL | 9.46 mg/dL | 9-46 mg/dL |  
AST | 62 mg/dL | 9.42 mg/dL |  
Total cholesterol | 17 mg/dL | 125-200 mg/dL |  
Triglyceride | 73 mg/dL | < 150 mg/dL |  
LDL | 13 mg/dL | < 130 mg/dL |  
HDL | 25 mg/dL | 40-59 mg/dL |  
Apo B100 level | <30 mg/dL | 52-109 mg/dL |   

Discussion

- Familial hypobetalipoproteinemia (FHBL) is autosomal codominant disorder that results from mutations of the Apo B gene (figure 1) which plays an important role in lipid metabolism (figure 2).

- Patients are usually asymptomatic although some may develop hepatic steatosis (or more advanced chronic liver disease), intestinal fat malabsorption and resultant fat-soluble vitamin deficiencies.

- FHBL is usually suspected by the finding of low cholesterol levels in patients with hepatic steatosis.

Conclusion

- Patients with evidence of hepatic steatosis and low cholesterol levels should be tested for familial hypobetalipoproteinemia.

- Patients who test positive should be referred for genetic counseling and testing of family members to identify those who may be at future risk for chronic liver disease.
INTRODUCTION
- Acute rhinosinusitis is fairly common in the pediatric population, accounting for approximately 1.6 million office visits per year, or 1% of all visits for patients 0-20 years.
- Pediatricians are well equipped to recognize the presenting signs of sinusitis, including facial pain, rhinorrhea, congestion, and headache, as well as treatment with antibiotics.

HISTORY
A previously healthy 9-year-old Caucasian female presents with a 7-week history of bilateral nasal congestion, worse on the right side, frontal headache, and purulent rhinorrhea. Her symptoms started shortly after returning from vacation in Tennessee where she swam frequently in the hotel's pool. Despite multiple completed antibiotic regimens, including amoxicillin-clavulanate and cefadroxil, symptoms progressively worsened. She presented to our hospital with new onset right-sided diplopia for the past week, along with development of partial ageusia, facial pain, and pressure.

PHYSICAL EXAM
Vitals: BP-92/58, Pulse-64, Temp-97.6 F, Resp-16, Wt-28.3 (39%ile)
Physical exam was unremarkable except for right maxillary tenderness with overlying erythema and swelling, right nasal congestion, decreased hearing in the right ear, and inability to abduct the right eye.

HOSPITAL COURSE
- Facial CT from OSH revealed maxillary sinus congestion, with possible neoplastic vs infectious mass and patient was started on antibiotics.
- Ophthalmology consulted and diagnosed patient with isolated sixth nerve palsy.
- ENT consulted and recommended orbital and brain MRI as well as a repeat CT scan, which showed solid enhancing tumor involving the entire nasopharynx extending anteriorly into the posterior aspect of the nasal cavity and inferiorly into the oropharynx.
- Patient underwent endoscopic nasal biopsy and partial tumor debulking with biopsy results preliminarily showing rhabdomyosarcoma.
- NM whole body bone scan showed no distant metastasis.
- Patient was started on a chemotherapy protocol.

DIFFERENTIAL

<table>
<thead>
<tr>
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<th>FUNGAL SINUSITIS</th>
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<tbody>
<tr>
<td>ALLERGIC RHINITIS</td>
<td>MALIGNANT NASOPHARYNGEAL TUMOR</td>
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<tr>
<td>AIRWAY FOREIGN BODY</td>
<td>MISCELLANEOUS MALIGNANCIES</td>
</tr>
<tr>
<td>RENAL NASOPHARYNGEAL ANGIOFIBROMA</td>
<td>OBSTRUCTION DISORDERS</td>
</tr>
<tr>
<td>MIGRANE</td>
<td>TENSION HEADACHES</td>
</tr>
<tr>
<td>CLUSTER HEADACHES</td>
<td>TURBINATE DYSFUNCTION</td>
</tr>
</tbody>
</table>

CONCLUSIONS
- This case shows how similarly chronic sinusitis and nasopharyngeal tumors may present, and the importance of evaluating for neurologic changes.
- A heightened suspicion of rhabdomyosarcoma is warranted during a prolonged sinusitis course as shared symptoms may lead to delayed diagnosis and treatment.

REFERENCES
The Trickle Down Effect: The Attending’s Role In Resident Lab Ordering Behavior

Paul Kunnath MD, Rachna Rawal MD, Oluwasayo Adeyemo MD MPH, Hala Saad MD, Ara Vartanyan, Jennifer M. Schmidt MD

Department of Internal Medicine, Saint Louis University School of Medicine, Saint Louis, MO

Introduction

- Overall goal: Promoting high-value care & mindful lab ordering habits among residents—need to determine current state
- Unexpected finding: Residents identified “fear of attending” as a common barrier to mindful ordering
- Project designed to promote high-value care through:
  - Attending Physician education on mindful lab ordering
  - Improve attending-resident communication

Methods

- Participants: Resident + Attending physicians on inpatient Medicine service
- Duration: 16 weeks
- Multiple concurrent interventions
- Data: Pre & Post-intervention Surveys, Post-Surveys at 6 months and 1 year

Presentations at monthly hospitalist meetings
- Data showing residents’ lab ordering practices
- Reported perceptions of attendings
- Discuss project goals, interventions

Attending messages of support to residents
- Distributed via email and team-room posters
- Weekly email reminders to other attendings to discuss lab orders
- Provide reminders in regular hospitalist meetings

Free Responses-Attending Physicians
- When we overuse labs, it causes downstream effects on the system. If we are more focused on our lab ordering, it frees up phlebotomists...to be able to run the labs that we need, when we need them. It also can allow our patients more time to sleep.
- I’m well aware that how we teach residents to practice now predicts how they will practice for the next 10-15 years. Having...great benefits for patients in the future.

Interventions

- Resident + Attending physicians on inpatient Medicine service
- Duration: 16 weeks
- Multiple concurrent interventions
- Data: Pre & Post-intervention Surveys, Post-Surveys at 6 months and 1 year

Presentation

• Data showing residents’ lab ordering practices
• Reported perceptions of attendings
• Discuss project goals, interventions

Survey Response

<table>
<thead>
<tr>
<th>Survey Response</th>
<th>Resident Response</th>
<th>Attending Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Post 16 Wk</td>
<td>46%*</td>
<td>79%</td>
</tr>
<tr>
<td>Post 6 Mo</td>
<td>61%*</td>
<td>85%</td>
</tr>
<tr>
<td>Post 1 yr</td>
<td>41%</td>
<td>71%</td>
</tr>
<tr>
<td>Pre</td>
<td>78%</td>
<td>100%</td>
</tr>
<tr>
<td>Post 16 Wk</td>
<td>78%</td>
<td>100%</td>
</tr>
<tr>
<td>Post 6 Mo</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Post 1 yr</td>
<td>89%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Results

- How do attending physicians encourage resident mindful lab ordering?
  - Resident response:
    - They look at my orders and the lab results for the day during rounds. We make decisions together to remove unnecessary tests.
    - Continued positive re-enforcement and ongoing discussion prompted by attendings
  - Attending response:
    - Remembering to have daily discussions with the resident team

Discussion

- Limitations
  - Variable survey response rates
  - New PGY-1 in post 1 year data
  - Predominantly PGY-3 rotating on inpatient medicine, skew data?
  - Discrepancy between attending/resident perception
    - Each group feels they initiate majority of discussions on labs
    - Attending perception of any discussion + attending-initiation markedly higher than residents
    - Variable expectations? Feedback phenomenon?
  - Cultural shift?
    - Fewer residents report worry of attending repercussions, increased attending encouragement
    - Increased pushback from attendings → due to increased discussion vs change in resident ordering practices
  - Sustained change?
    - Yes, cultural shift, increased discussion

Next Steps

- Incorporating reminders in attending orientations
- Increased encouragement during intern and senior boot camp to promote these discussions
- Assess culture after implementation of high-value care curriculum
High-Value Care Education for Third-Year Medical Students
Paul Kunnath MD, Rachna Rawal MD, Jennifer M. Schmidt MD
Department of Internal Medicine, Saint Louis University School of Medicine, Saint Louis, MO

Introduction
- Develop high-value care habits during training as these will set foundation for life-long habits
- What do SLU Third Year Medical Students know about high-value care?
  - 80% not familiar with “high-value care”
  - 100% had no prior education
- Help establish patient-centered practice habits

Curriculum Objectives
- Define ‘high-value care’
- Identify importance of value based healthcare
- Recognize low value care practices
- Utilize evidence based medicine to apply high value care principles
  - Specifically for lab testing
  - Apply clinical reasoning principles

Do Students Feel Comfortable Using EBM to Make Testing Decisions?*

<table>
<thead>
<tr>
<th>% of Students Who Responded ‘Yes’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
</tr>
<tr>
<td>100</td>
</tr>
</tbody>
</table>

Do Students Feel Comfortable Discussing Testing Indications with Team?**

<table>
<thead>
<tr>
<th>% of Students Who Responded ‘Yes’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
</tr>
<tr>
<td>100</td>
</tr>
</tbody>
</table>

Results
- Student responses: what are barriers to practicing high value care as a medical student?
  - Lack of knowledge of what tests are necessary and for what indications
  - Lack of experience
  - Pressure to cover all bases
  - Hard to argue against better safe than sorry, especially to a superior

Limitations
- Data is survey based
- Last clerkship group data pending
- Early recall bias
- Overall lower post-survey response rates
- 6th month and end of year surveys pending

Conclusions
- Students had minimal prior exposure to value based healthcare
  - Completed online modules but still discrepancy in knowledge
- After two didactic sessions:
  - Increased confidence in application of evidence for decision making
  - Increased engagement in high value discussions with treatment team

Next Steps
- Address student identified barriers
  - Medicine hierarchy hinders discussion
  - Reduce formal lecture based didactic
- Expand curriculum to other clerkships
- Include high-value care assessments in student presentations
- Formal evaluation of high-value care principles
  - NBME shelf examination

References
**Abstract**

Malaria is common and sometimes fatal illness endemic to sub-Saharan Africa. The disease burden of malaria in this area is increased particularly in children, making prompt diagnosis and treatment of malaria vital to improving child health. Often, limited access to medical care is a barrier in diagnosis and treatment of malaria in these areas, particularly in rural regions of sub-Saharan Africa. This retrospective chart review study of 103 children (ages birth to 18 years) presenting for acute clinic visits to a community health center located in rural Western Kenya seeks to further understand the clinical presentation and prevalence of malaria in children based on age. Of these, 103 children were diagnosed with malaria, based upon rapid antigen testing and peripheral blood smear and light microscopy. Presenting symptoms were categorized by organ system and prevalence of presenting symptoms were compared based on age. Among children diagnosed with malaria, frequency of respiratory, ear/nose/throat, and neurological complaints varied significantly by age group. In addition, number of organ systems involved in symptoms also varied by age significantly, and age in both the 2-5 year and 5-10 year age groups was found to be associated with increased risk of malaria. This study is important as it provides guidance for pediatricians working in rural Sub-Saharan Africa to be judicious in their use of limited resources in diagnostic work up for malaria, as well as providing a deeper understanding of clinical presentation and prevalence of malaria in children based on age.

**Background**

- 219 million cases of malaria worldwide in 2017
- 7 cases every second for 1 year
- 88% of malaria cases worldwide concentrated in Sub-Saharan Africa
- 435,000 deaths worldwide from malaria
- 285,000 deaths by malaria in children under age 5
- 4,000 child deaths in Kenya per year due to malaria
- 27% prevalence in children 6m-14y in Lake endemic region
- Increased risk in rural populations, poor populations
- Severity depends on species, strain, genetic factors, nutrition status, malaria-specific immunity, previous exposure to malaria drugs

- No clear clinical diagnostic algorithms or malaria, nor any clear clinical features that distinguish malaria from other serious bacterial infections
- Children may have concurrent serious bacterial infection or serious bacterial infection with asymptomatic parasitemia

**Methods**

- Retrospective chart review of patient encounters over 10 clinic days
- 585 patients total, 199 pediatric (under 18 years of age)
- Rural health clinic:
  - Patient care: exams, small inpatient ward, preventative medicine (immunizations, screening exams), HIV clinic, prenatal care, minor surgical/wound care
  - Lab: Rapid malaria testing, light microscopy, dipstick urinalysis
- All malaria cases were confirmed by SD-Biohn ROT and/or light microscopy
- Statistical Analysis with Prism Graphpad 8 Software
- Chi-Squared, Student’s T-test

**Results**

- Presence of skin symptoms in children aged greater than 10 years but less than 18 years makes Malaria less likely
- Presence of neurological symptoms in children aged greater than 10 years but less than 18 years makes Malaria more likely
- Presence of respiratory symptoms in children less than 2 years of age make Malaria less likely
- Presence of ENT symptoms in children aged greater than 10 years but less than 18 years makes Malaria less likely
- Presence of skin symptoms in children less than 2 years of age makes Malaria more likely
- Presence of ENT symptoms in children aged greater than 10 years but less than 18 years makes Malaria less likely

**Conclusions**

- The average age of children with malaria is significantly less than that of children without malaria.
- Children with malaria tend to have more systems involved in their presenting symptoms than children without malaria.
- Malaria is most likely among all age groups if fever, GI symptoms, or neurological symptoms are present, and less likely if skin or ENT symptoms are present.
- Presence of skin symptoms in children aged greater than 10 years but less than 18 years makes Malaria less likely.
- Presence of neurological symptoms in children aged greater than 10 years but less than 18 years makes Malaria more likely.
- Presence of respiratory symptoms in children less than 2 years of age make Malaria less likely.
- Presence of ENT symptoms in children aged greater than 10 years but less than 18 years makes Malaria less likely.

**References & Acknowledgements**

- Special thanks to Bonoyo’s Kenya Kivin, Kanta University of Medicine and Biosciences Global Health Program.

**Tables**

<table>
<thead>
<tr>
<th>Presenting Symptoms</th>
<th>Malaria</th>
<th>No Malaria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>45</td>
<td>20</td>
</tr>
<tr>
<td>GI</td>
<td>33</td>
<td>14</td>
</tr>
<tr>
<td>ENT</td>
<td>23</td>
<td>15</td>
</tr>
<tr>
<td>Resp</td>
<td>33</td>
<td>14</td>
</tr>
<tr>
<td>MSK</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Skin</td>
<td>26</td>
<td>12</td>
</tr>
<tr>
<td>Neuro</td>
<td>29</td>
<td>20</td>
</tr>
</tbody>
</table>

**Figure**

- Overall Presenting Symptoms in Children
- Average Age in Children With and Without Malaria
- Systems Involved in Presenting Symptoms Among Children With and Without Malaria
Clinical Presentation

15 year old with history of chronic abdominal pain presenting with worsening epigastric abdominal pain. Described as sharp, lasting 30-60 minutes 3-4 times per day, post-prandial, radiates to bilateral upper quadrants. Remainer of review of systems was unremarkable. Endorses irregular menses since Implanon placement 1 year ago. History of anxiety and on Wellbutrin for the past 2 years. Parents divorced 2 years ago. Social and family history was otherwise unremarkable.

Previous Hospitalizations:
I8 months prior: Similar symptoms and was found to have elevated lipase and treated with bowel rest and pain control for presumed pancreatitis.
I month prior: Similar symptoms, but 151b weight loss noted since first hospitalization. Basic labs and pancreatic enzymes unremarkable. CT abdomen/pelvis showed thickening of the walls of the Celiac and Superior Mesenteric Arteries. Rheumatology was consulted due to concern for vasculitis and an extensive Rheumatologic work-up was unremarkable. She was started on Prednisone and scheduled for CT Angiogram.

Physical Exam

Vital signs were within normal limits
Weight: 77kg (170 lbs, 95%ile) BMI 28
Height: 168cm (5’6”, 80%ile)
Abdomen: Non-tender, non-distended. No masses or hepatosplenomegaly. Normoadive bowel sounds. Negative Murphy’s sign.
Remainer of exam was unremarkable.

Differential Diagnosis

<table>
<thead>
<tr>
<th>Vascular</th>
<th>Thickened walls of Celiac artery and SMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Abdominal Pain</td>
<td>History of anxiety</td>
</tr>
<tr>
<td>Bowel Disease</td>
<td>Post-prandial pain</td>
</tr>
<tr>
<td>Vascular Compression</td>
<td>Abnormal imaging, post-prandial pain</td>
</tr>
</tbody>
</table>

Hospital Course

Hospiial Day (HD) 1: Started on maintenance IV fluids, resumed regular diet as tolerated. Started PRN Hyoscyamine and Cyproheptadine.

HD 2: Minimal relief with PRN medications. CT Angiogram obtained (Fig. 1, 2) and showed narrowing at the origin of the celiac artery.

HD 3: Obtained Arterial Duplex Ultrasound of the abdomen, which showed elevated flow velocity in celiac artery when supine and during exhalation, resolving with standing and inspiration. Consistent with Median Arcuate Ligament Syndrome.

HD 4: Steroids tapered. Discussed treatment strategies with family, who decided to proceed to scheduling surgical treatment.

Follow up: Underwent resection of median arcuate ligament with resolution of pain episodes.

Discussion

- Median Arcuate Ligament Syndrome (MALS): Also known as Celiac Artery Compression Syndrome.
  - MALS is a cause of chronic, recurrent abdominal pain from compression of the celiac artery from the median arcuate ligament (Fig. 3). It classically causes post-prandial abdominal pain, weight loss, and occasional abdominal bruit.
  - Diagnosis is established by CT/MR Angiography combined with duplex study with respiratory maneuvers. Systolic flow velocity is elevated during exhalation and normalized during inhalation.
  - Treatment involves celiac artery decompression via resection of the median arcuate ligament. May be done open or laparoscopic. Division of overlying celiac ganglion nerve fibers is commonly done to address potential neuropathic causes of pain. Majority of patients have immediate post-operative pain relief. Late recurrence rates are 5-10 percent.

Alain findings concerning for organic causes of abdominal pain
- History: fever, involuntary weight loss, pain with eating, bloody stools, bilious or protracted emesis, back pain, skin changes, urinary symptoms, family history of abdominal pathologies.
- Exam: poor linear growth velocity, oral ulcerations, focal abdominal pain, arthralgia.

Conclusions

- Median Arcuate Ligament Syndrome is an uncommon and possibly under-diagnosed cause of chronic abdominal pain.
- Clinician should raise index of suspicion for vascular etiologies of CAP in patients with post-prandial abdominal pain and weight loss.
- Treatment involves surgical resection of median arcuate ligament +/- celiac ganglion fibers and has good short and long-term results.

Resources

Enterococcus faecalis Tricuspid valve endocarditis from ICD lead infection

Soumojit Ghosh, MD1, Bishnu Devkota, MD2

1) Department of Internal Medicine, Saint Louis University School of Medicine 2) Division of General Internal Medicine, John Cochran Veterans Affairs Hospital

Introduction
With an increase in the number of implantable pacemakers and defibrillators, the incidence of cardiac implantable electronic device (CIED)-related infections have also increased. Early infection risk after the placement of a CIED is about 1-1.5%. However, as patients are now able to live longer after device implantation, chronic leads seem to be a nidus in the setting of sepsis from another primary source. Management of these patients proves difficult.

Case Presentation
80 year old male with a PMH of ischemic cardiomyopathy status-Frost CR1-UI pacemaker (in 2012), atrial fibrillation, and COPD who presented with subjective fevers, dyspnea, generalized weakness, and palpitations for the preceding 3 days as well as an unattended fall about 3 days ago.

• Labs significant for WBC 18.1, normocytic anemia 85, UA suspected for UTI, negative troponins, lactic acidosis, hyponatremia 129, hypokalemia 3.0.
• Physical exam revealed a large hematoma at right hip and thigh, Nasal trauma as well as an irregular, irregular rhythm and ii44 holosystolic murmur LLSB.
• Found to have CAP and E. Faecalis bacteremia 2/UTI. Antibiotic regimen unclear but was started on ceftriazone and azithromycin and at some point switched to vancomycin.
• TTE - EF 20% with no valvular abnormalities
• A TEE revealed a large (12x 10 x 8 mm), mobile vegetation attached to the arial aspect of septal tricuspid valve leaflet consistent with endocarditis. No vegetation was seen on the pacemaker lead.
• Patient was initially started on vancomycin which was then switched to amoxicillin and ceftriazone for a total of 4 weeks.
• Patient underwent emergent lead extraction after TEE.

Discussion
• Enterococcus spp. are an increasingly prevalent cause of endocarditis and can be seen in older men following genitourinary instrumentation.
• Diagnosis: TTE alone is not sensitive enough to establish the correct diagnosis. TEE is mandatory to demonstrate the presence or absence of a vegetation on a pacemaker lead and/or valve.
• Treatment: parenteral bactericidal antibiotics guided by culture and sensitivity results
  • For Enterococcus spp, usually 4-6 weeks of amoxicillin combined with gentamicin or streptomycin if susceptible, if aminoglycoside resistance, then ampicillin + ceftriazone.
  • However, in the setting of ICD leads passing through the infected cardiac valve, antibiotic duration varies on a case by case scenario. In a study, median duration of antibiotic treatment was 28 days after extraction of the lead (interquartile range 19-42 days).
• Management in patients with infective endocarditis with ICD leads
  • Prompt hardware removal and prolonged parenteral antibiotic administration decreases mortality among patient with CIED.
  • Consideration of vegetation size will play a major role in the type of lead extraction performed. It was previously thought that large vegetations (>10mm) could only be surgically removed (due to the risk of pulmonary embolism) however the presence large vegetations is not a contraindication for percutaneous lead extraction and in fact leads to fewer post removal complications than surgical removal.
  • Studies with only antibiotic therapy failed, and eventually required lead extraction.
• Early diagnosis of a pacemaker lead infection is difficult. One should be suspicious in the case of a patient with a pacemaker with persisting bacteremia and/or fever without another focus of infection. Endocarditis should be considered until proven otherwise.

References
5. Ghosh S. Pacemaker-related endocarditis: a novel treatment strategy. JACC. Jan 2015
Trial of labor after cesarean: How well can we predict success in contemporary obstetrics?

William M. Perez, MD, Laura K. Vricella, MD, Gilad A. Gross, MD, Tracy M. Tomlinson, MD, MPH
Saint Louis University School of Medicine, Department of Obstetrics, Gynecology, & Women’s Health

Background

Objectives

Hypothesis: Labor management promoting longer duration of labor may affect the validity of the MFMU VBAC calculator.

Primary Objective

Assess the validity of the model in a perinatal center employing contemporary labor management standards.

Secondary Objectives

1. Exploratory analysis of predictive of VBAC success in the contemporary era

Study Design

Retrospective cohort study: All TOLAC since 2011

Inclusion criteria:
- All singleton gestations
- ≥ 37 weeks gestation
- 1 prior low transverse CD
- Lethal fetal anomalies

Exclusion criteria:
- Contraindication to VBAC
- Prior Cesarean
- Malpresentation
- One prior low transverse CD
- Lethal fetal anomalies

Data analysis: Individual predicted VBAC success calculated using published regression formula and compared to observed success within each decade of predicted success

Model Development:

Univariate analysis:
- Maternal demographics & clinical characteristics
- Student’s t-test or Pearson χ² for continuous and categorical variables, respectively

Multivariable analysis:
- Factors with P < 0.2 on univariate analysis & those historically associated with VBAC success were incorporated using a forward stepwise approach

Accuracy of the most parsimonious new model with the greatest AUC was compared to that of the MFMU model

JMP-Pro software, version 14 (SAS Institute, Cary, NC)

Results

Table 1: Predictors of successful vaginal birth after cesarean

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>1.01 (0.99-1.02)</td>
<td>1.00 (0.98-1.01)</td>
</tr>
<tr>
<td>Black race</td>
<td>0.58 (0.41-0.80)</td>
<td>0.46 (0.33-0.64)</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>1.04 (1.02-1.06)</td>
<td>1.06 (1.04-1.09)</td>
</tr>
<tr>
<td>Intake weight (kg)</td>
<td>0.99 (0.98-1.00)</td>
<td>0.99 (0.98-1.00)</td>
</tr>
<tr>
<td>Two prior vaginal deliveries</td>
<td>3.40 (2.79-4.17)</td>
<td>3.13 (2.49-3.88)</td>
</tr>
<tr>
<td>History of tobacco use</td>
<td>0.75 (0.54-1.04)</td>
<td>0.73 (0.55-1.01)</td>
</tr>
</tbody>
</table>

Table 2: Development of Exploratory Model for Likelihood of Successful VBAC

Results

Table 3: Adverse maternal and neonatal outcomes

<table>
<thead>
<tr>
<th>Maternal Outcomes</th>
<th>n (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chемeorrhea</td>
<td>23 (0.8)</td>
<td>0.61-1.09</td>
</tr>
<tr>
<td>Endomyometritis</td>
<td>11 (0.4)</td>
<td>0.54-1.86</td>
</tr>
<tr>
<td>Postpartum hemorrhage</td>
<td>12 (0.4)</td>
<td>10.31-14.29</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>42 (1.8)</td>
<td>3.81-5.19</td>
</tr>
<tr>
<td>Urine infection</td>
<td>13 (0.5)</td>
<td>0.64-3.68</td>
</tr>
<tr>
<td>Hysterectry</td>
<td>1 (0.0)</td>
<td>0.00-0.27</td>
</tr>
<tr>
<td>Neurological Outcome</td>
<td>n (%)</td>
<td>94 (0.0)</td>
</tr>
<tr>
<td>ICU admission</td>
<td>12 (0.7)</td>
<td>0.66-13.26</td>
</tr>
<tr>
<td>5-minute APGAR score &lt; 7</td>
<td>35 (2.4)</td>
<td>2.1-4.5</td>
</tr>
<tr>
<td>Hypoxic Ischemic Encephalopathy</td>
<td>4 (0.4)</td>
<td>0.02-0.78</td>
</tr>
<tr>
<td>Neonatal death</td>
<td>n (%)</td>
<td>15 (0.8)</td>
</tr>
</tbody>
</table>

References

Outcomes Of Gastrostomy Device Placement In Congenital Heart Disease Patients

Hector Oser, MD; Armando Salim Munoz Abraham, MD, MBEE; Alice Martino; Katie Bates; Jin Sun Kim; Sakina Kazmi; Jose Greenspon, MD, FACS, FAAP; Colleen Fitzpatrick MD, FACS, FAAP; Kaveer Chatoorgoon MD, FACS, FAAP; Gustavo A. Villalona, MD, FACS, FAAP

1 Saint Louis University School of Medicine · 2 Department of Pediatric Surgery, Cardinal Glennon Children's Medical Center

Introduction

- Malnutrition and failure to thrive are common among children with congenital heart disease (CHD)

- Gastrostomy tube placement in these patients has gained wide acceptance to improve long-term nutritional status

- However, outcomes of these patients undergoing gastrostomy placement have not been established

Objective

- To determine whether type of congenital heart disease affects outcomes of gastrostomy tube placement

Hypothesis

- Non-cyanotic heart disease patients have improved outcomes when compared to cyanotic patients

Method

Study design
- Retrospective study: 2010 - 2017
- CHD: Non-cyanotic vs. cyanotic patients

Primary outcome
- 90-day complications

Definition of complication
- GERD, feeding intolerance, conversion of gastrostomy to GJ tube, wound infection, device dislodgement, peristomal bleeding, hypergranulation tissue, external gastric leak

Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Non-cyanotic</th>
<th>Cyanotic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>33 (53.2%)</td>
<td>8 (40%)</td>
<td>0.304</td>
</tr>
<tr>
<td>Female</td>
<td>29 (46.8%)</td>
<td>12 (60%)</td>
<td></td>
</tr>
<tr>
<td>Age distribution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 12 mo</td>
<td>47 (75.8%)</td>
<td>16 (80%)</td>
<td>0.324</td>
</tr>
<tr>
<td>13 - 60 mo</td>
<td>9 (14.5%)</td>
<td>4 (20%)</td>
<td></td>
</tr>
<tr>
<td>&gt; 60 mo</td>
<td>6 (9.7%)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Type of tube</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-tube</td>
<td>26 (41.9%)</td>
<td>4 (20%)</td>
<td>0.077</td>
</tr>
<tr>
<td>G-button</td>
<td>36 (58.1%)</td>
<td>16 (80%)</td>
<td></td>
</tr>
<tr>
<td>Surgical approach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laparoscopic</td>
<td>58 (93.5%)</td>
<td>18 (90%)</td>
<td>0.143</td>
</tr>
<tr>
<td>Open</td>
<td>1 (1.6%)</td>
<td>2 (10%)</td>
<td></td>
</tr>
<tr>
<td>Conversion to open</td>
<td>3 (4.8%)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Operative time (median, min)</td>
<td>49 (35.75)</td>
<td>40 (50.25)</td>
<td>0.754</td>
</tr>
</tbody>
</table>

Conclusion

- Non-cyanotic patients undergoing gastrostomy tube placement had more complications than cyanotic patients
To Button or Not To Button? Primary Gastrostomy Tubes Offer No Significant Advantage Over Buttons

Hector Osei, MD; Armando Salim Munoz-Abraham, MD, MBE²; Sakina Kazmi, MPH, MA¹; Alice Martino¹; Katherine Bates¹; Jin Sun Kim¹; Janine Myint¹; Kaveer Chatoorgoon, MD, FRCS, FACS, FAAP¹,²; Jose Greenspon, MD, FACS, FAAP¹,²; Colleen Fitzpatrick, MD, FACS, FAAP¹,²; Gustavo A. Villalona, MD, FACS, FAAP¹,²

1 Saint Louis University School of Medicine · 2 Department of Pediatric Surgery, Cardinal Glennon Children’s Medical Center

Introduction

- Gastrostomy device placements are standard practice for long-term nutritional support.
- They are offered to wide spectrum of pediatric patients.
- They are safe and provide improved quality of life to patients and parents.
- Most institutions now place gastrostomy buttons primarily.
- However, direct comparison between primary tubes and primary buttons has been established.

Objectives

To compare outcomes of patients undergoing primary tubes vs primary buttons

Hypothesis

Primary gastrostomy tube placement leads to improved outcomes and decreased complications

Methods

Study Design
- Retrospective chart review
- 2010 - 2017

Exclusion criteria
- PEG tube placement

Primary outcome
- 90-day complication
  - Minor: GERD, feeding intolerance, conversion to GJ tube, wound infection, device dislodgement, peristomal bleeding, hypergranulation tissue, external gastric leak
  - Major: complication requiring NPO/TPN and/or surgery

Results

Table 1: Study demographic characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>G-tube</th>
<th>G-button</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex, n (%)</td>
<td>60%</td>
<td>51%</td>
<td>0.159</td>
</tr>
<tr>
<td>Age distribution, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 12 mo</td>
<td>60%</td>
<td>57%</td>
<td>0.310</td>
</tr>
<tr>
<td>Weight distribution, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 10 kg</td>
<td>65%</td>
<td>65%</td>
<td>0.987</td>
</tr>
<tr>
<td>Operative time, min (SD)</td>
<td>65(43)</td>
<td>56(39)</td>
<td>0.731</td>
</tr>
<tr>
<td>Surgical approach, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>laparoscopic</td>
<td>81%</td>
<td>96%</td>
<td>0.006</td>
</tr>
<tr>
<td>open</td>
<td>10%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>lap converted to open</td>
<td>9%</td>
<td>7%</td>
<td></td>
</tr>
</tbody>
</table>

Fig 1: Flow chart of study cohort

Fig 2: Prevalence of complications between primary tubes and buttons

Discussion

- 153 (58%) of study cohorts with complications within 90 days
- 64% were infants and 72% < 10 kg
- Laparoscopic technique was the most preferred surgical approach for both devices
- Conversion to open technique was significantly higher in primary tubes
- No difference in overall or major complication rate between primary tubes and buttons

Conclusion

- Primary gastrostomy button is as safe as primary gastrostomy tube
- Laparoscopic approach should be surgical approach of choice especially in primary gastrostomy button placement
- Primary placement of either device should be based on surgeon’s preference and patient’s characteristics

Bibliography

Correlation between Postoperative Sonographic and Neonatal Lower Extremity Movement after in utero Repair for Meningomyelocele: A Day by Day Account

Chase Pribble,1 Cara Buskmiller MD,2 Joanna Kemp MD,3 Catherine Cibulsikis MD,3 Allan Fisher MD2

1. Indiana University School of Medicine, 2. Department of Neuroradiology, 3. Department of Pediatrics

Abstract

Objectives:
- Lower extremity movement (LEM) in fetuses undergoing prenatal myelomeningocele (MMC) repair is generally assessed at a neonatal evaluation (NE). Ultrasound (US) can assess LEM antenatally, but the correlation between US and NE is not firmly established, nor have differences in US findings on different postoperative days (POD) been correlated with NE.

Study Design:
- This was a prospective cohort correlation study of fetuses that underwent open repair of myelomeningocele at SSM Cardinal Glennon Fetal Care Institute, St. Louis MO between January 2011 and December 2016. Movement of the lower extremities at the toe, ankle, knee, and hip of each leg were assessed by US at the initial visit, after open repair on POD 0-5, and at 32 weeks gestation. After delivery, NE was performed by physical therapists and a neurosurgeon, with 94% occurring in the first month of life.

Results:
- 41 fetuses were included. Follow-up was 100%. Movement at the ankle at Postoperative US assessment of movement in the knee, ankle, and toe in physical therapists and a neurosurgeon, with 94% occurring in the first month of life. Movement of the lower extremities at the ankle, knee, and hip of each leg were assessed by US at the initial visit, after open repair on POD 0-5, and at 32 weeks gestation. After delivery, NE was performed by physical therapists and a neurosurgeon, with 94% occurring in the first month of life.

Conclusion:
- Postoperative US assessment of movement in the knee, ankle, and toe in fetuses undergoing open fetal MMC repair correlates with NE. POD 3 assessments at the ankles and knees are strongly associated with neonatal joint function. LEM increases between POD 1 and POD 5 in fetuses that will have neonatal function.

Background

- Myelomeningocele (MMC) is the most common neural tube defect compatible with life, with a prevalence of 5-10/10,000 pregnancies in the United States.
- Common neurological sequelae include intellectual disability, bowel and bladder incontinence, and impairment of extremity movement.
- The Management of Myelomeningocele Study (MOMS) showed that fetal MMC repair is an effective treatment option for myelomeningocele, and can serve as means to preserve neurological function.

- LEM can be seen prenatally on ultrasound (US), and lower extremity movement (LEM) is generally assessed on neonatal evaluation. The association between prenatal LEM in the perinatal period, and on neonatal evaluation, has not been clearly defined.

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# Head and neck melanoma incidence trends in the pediatric, adolescent, and young adult population of the United States and Canada, 1995-2014

Haley N Bray, MD, Matthew C Simpson, MPH, Zhansha S Zahirsha, BS, Jennifer V Brinknese, MD, Scott G Walan, MD, FRCS(Eng) 1,4, Nayaaya Osaniwa-Peters, DDS, PhD, MPH, CHES 1,5,6
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4 Saint Louis University School of Medicine, Division of Plastic and reconstructive Surgery
5 Saint Louis University, College for Public Health and Social Justice, Department of Epidemiology and Biostatistics, Saint Louis, MO

## Background
- Skin cancer is the most commonly diagnosed cancer in the United States and Canada.
- 96,480 new cases of melanoma are expected in 2019, a 54% increase over 2018.
- About 1 in 5 cases of melanoma are in the head and neck.
- The 5-year survival rate in head and neck melanoma is worse than other anatomical sites.
- There is limited information about the incidence of melanoma in the pediatric, adolescent, and young adult (PAYA) population.

## Objective
To describe melanoma incidence trends in the PAYA population in the United States and Canada.

## Methods
### Data Source, Study Population, and Study Design
- **Study Population**: Patients ages 0-39 with melanoma from 1995-2014 in the United States and Canada.
- **Study Measures**:
  - **Primary Outcome**: Melanoma diagnosis.
  - **Independent Variables**: country, age at diagnosis, race/ethnicity, gender.

### Statistical Analysis
- Age-adjusted incidence rates per 100,000 person-years (PY).
- Incidence rate ratios (RR) with 95% confidence intervals (CI).
- Joinpoint regression estimating increases/decreases in age-adjusted incidence over time for each group through average annual percent changes (AAPC).

### Results

#### Figure 1. Melanoma overall by country

<table>
<thead>
<tr>
<th>Year of Diagnosis</th>
<th>Both Countries</th>
<th>Canada</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>0.30</td>
<td>0.40</td>
<td>0.10</td>
</tr>
<tr>
<td>2000</td>
<td>0.40</td>
<td>0.50</td>
<td>0.20</td>
</tr>
<tr>
<td>2005</td>
<td>0.50</td>
<td>0.60</td>
<td>0.30</td>
</tr>
<tr>
<td>2010</td>
<td>0.60</td>
<td>0.70</td>
<td>0.40</td>
</tr>
</tbody>
</table>

#### Figure 2. Melanoma by country and sex

<table>
<thead>
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<tr>
<td>2010</td>
<td>0.60</td>
<td>0.70</td>
<td>0.40</td>
</tr>
</tbody>
</table>

#### Figure 4. Melanoma in US by Race and Ethnicity.

<table>
<thead>
<tr>
<th>Year of Diagnosis</th>
<th>Hispanic</th>
<th>Non-Hispanic White</th>
<th>Non-Hispanic Black/Other</th>
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</thead>
<tbody>
<tr>
<td>1995</td>
<td>0.30</td>
<td>0.40</td>
<td>0.10</td>
</tr>
<tr>
<td>2000</td>
<td>0.40</td>
<td>0.50</td>
<td>0.20</td>
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<tr>
<td>2005</td>
<td>0.50</td>
<td>0.60</td>
<td>0.30</td>
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<tr>
<td>2010</td>
<td>0.60</td>
<td>0.70</td>
<td>0.40</td>
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</tbody>
</table>

#### Main findings:
- 12,462 cases of head and neck melanoma were diagnosed between 1995 and 2014 with an age-adjusted incidence rate of 0.51 per 100,000 person-years.
- The incidence of head and neck melanoma in North America has increased by more than 50% in the last two decades.
- White males ages 15-39 were the main drivers of the increased incidence trend.

#### Implications:
- Most current efforts taken to reduce melanoma prevalence are focused on indoor tanning bed use and the risk in minors and young adolescent females.
- Our findings demonstrate a higher incidence of males which shows the importance of tailoring risk mitigation measures in a gender-neutral manner.

#### Limitations:
- Lack of race information for Canada.
- There were fewer than 25 cases for some trend information due to the overall low incidence of melanoma in the PAYA population.

**Contact Information**
Haley Bray, MD
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INTRODUCTION

Mesenteric venous thrombosis (MVT) is an uncommon cause of intestinal ischemia. It is important to consider MVT in the differential of small bowel obstruction.

CASE PRESENTATION

33-year-old female presented with abdominal pain, nausea, vomiting.

- No surgical history, medications (contraceptives, NSAIDs), illicit drug usage.
- Physical exam: Tachycardic, periumbilical tenderness with rigidity or guarding.
- WBC 10.8 x 10⁹/uL, Fibrinogen 9.3 g/dL, Normal lipase, urinalysis, CMP.
- Initial CT revealing enteritis with small bowel thickening with dilatation.
- Push enteroscopy unremarkable.
- Conseratively managed (bowel rest, antibiotics), but symptoms worsened.
- Push enteroscopy showed jejunal bezoar, causing near small bowel obstruction.
- Transferred to SUI for bezoar removal.
- Push enteroscopy showed multiple gastric and jejunal ulcers and foreign body mid-jejenum (Image 1), but could not be dislodged.
- Started steroids, improved abdominal pain initially, but worsened CT abdomen revealing small bowel perforation.
- Emergent lap with small bowel resection, primary anastomosis.
- Course complicated by left lower DVT.
- Small bowel bx showed mesenteric venous thrombosis (Image 2).
- 2nd review of CT scan from DSM (4 weeks ago) revealed superior mesenteric vein occlusion (Image 3).
- Started on anticoagulation and sent home.

Diagnosis: Mesenteric venous thrombosis causing small bowel obstruction complicated by small bowel perforation requiring partial small bowel resection.

DISCUSSION

- Presentation is nonspecific and may be acute, subacute, or chronic.
- Intestinal inflammatory process.
- CT angiography reveals venous filling defects or lack of flow in mesenteric veins during venous phase.
- Associated with bowel wall thickening, mesenteric stranding, ascites.
- Conservative - anticoagulation, bowel rest, IV hydration, bowel decompression.
- Surgery indicated for bowel infarction.

Our patient likely subacute superior mesenteric venous thrombosis → bowel wall edema, ischemia → bezoar formation → small bowel obstruction → perforation.

This case emphasizes the need to consider mesenteric venous thrombosis in the differential for atypical cases of small bowel obstruction.

References:


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