

# Society for Academic Emergency Medicine Western Regional Abstracts

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The following abstracts, which are published here with author permission, were presented at the Western Regional Society for Academic Emergency Medicine Research Forum in Portland, Oregon on March 16, 17, 2007. Additional abstracts from this forum will appear in the next issue.  
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## 1 Clinical Presentation of Patients Diagnosed Post-Operatively with Appendicitis at Private Hospitals in Southern Puerto Rico

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**Objective:** The goal of our study is to aid in early identification of appendicitis in Hispanics by retrospectively reviewing the initial presentation, physical examination, and laboratory values of patients diagnosed post-operatively with appendicitis.

**Method:** Data collected from medical records at private hospital emergency departments (EDs) in southern Puerto Rico between 1/1/2000 and 12/31/2005 in post-operative diagnoses of appendicitis included: 1) sex, 2) age, 3) chief complaint, 4) presence/absence of abdominal pain, fever, anorexia, nausea, vomiting, diarrhea, constipation and dysuria, 5) clinical findings of pain location, the presence/absence of guarding, rebound tenderness, psoas sign, 6) laboratory and radiological data, and 7) pathology findings. This data was compared with major reference textbooks using the chi squared test and  $\alpha=0.05$ .

**Results:** Of 899 subjects this population was found to have significantly less anorexia (26.6%,  $p<.001$ ), nausea (61.7%,  $p<.001$ ), vomiting (50.9%,  $p<.001$ ), and dysuria (4.6%,  $p<.001$ ) than reported in major reference texts. There was a significantly greater frequency of fever (30.5%,  $p<.001$ ), positive psoas sign (29.6%,  $p<.001$ ) and leukocytosis (86%,  $p<.001$ ).

**Conclusion:** The studied population varied greatly from

commonly accepted literature frequencies for signs and symptoms of appendicitis. An important finding was a decreased frequency of anorexia. Anorexia, frequently considered a major symptom in appendicitis--classically indispensable in its clinical diagnosis--was found in only 26.6% of our sample. Most textbooks describe a frequency of anorexia from 70-100%. The differences found are of great significance for the future evaluation of Hispanic patients with suspected appendicitis. The presence of certain signs and symptoms should raise the suspicion of appendicitis in a patient with abdominal pain; however, their absence, especially anorexia, should not rule out appendicitis. This is especially true in the evaluation of the Hispanic population.

## 2 Teleradiology Over-read Retrospective Observational Study (TOROS)

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**Background:** Teleradiology is a system whereby attending-level, fully licensed radiologists interpret radiographic images over the internet, usually from a distant location and at night.

**Objectives:** To determine the frequency of disagreement on CT interpretations between teleradiologists and hospital-based radiologists; to determine which subtypes of CT studies most frequently have discordant interpretations; to determine if the difference in interpretation is clinically significant to Emergency Department management.

**Methods:** We performed a retrospective observational study

at a Northern California private hospital from January 1 to January 16, 2006. All consecutive CT scans performed between 5 pm and 8 am were reviewed; scans were eligible if they were interpreted primarily by a teleradiologist and subsequently by a staff radiologist.

**Results:** A total of 240 CT scans were reviewed, of which 207 were eligible. Overall discordance rate was 4.4% (95% Confidence Interval [CI], 2.3-12.4%); the overall clinically significant discordance rate was 3.9% (95% CI, 2.2-11.3%). Both the total and clinically significant discordance rates for CT abdomen/pelvis were 3.6% (95% CI, 2.6-12.6%); for CT chest were 5.3% (95% CI, 5.1-3.1%). The total discordance rate for CT head was 5.9% (95% CI, 4.3-20.3%), with a clinically significant discordance rate of 4.4% (95% CI, 3.5-16.8%).

**Conclusion:** The overall clinically significant discordance rate between teleradiologists and hospital-based radiologists on CT scan interpretation was higher than expected. The highest significant discordance rate was for CT chest, although the total numbers of scans and misses were small. The second highest significant discordance rate was for CT head, followed by CT abdomen/pelvis.

### 3 Experience and Training Are not Associated with the Ordering Propensity of Advanced Radiographic Imaging in the Emergency Department

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**Objectives:** The use of computed tomography (CT) and magnetic resonance (MR) imaging in the emergency department (ED) has increased over time. The purpose of this retrospective observational study was to explore the CT and MR ordering habits of a group of faculty emergency medicine (EM) physicians over a 15-month period of time at the University of California San Francisco.

**Methods:** Spreadsheets from Radiology containing information on every CT and MR scan ordered by EM physicians from June 2005 to August 2006 were obtained. This dataset included patient demographics, visit number, and study type. A second dataset was extracted from the electronic charting system used in the ED. The ordering physician for each scan was identified by matching visit numbers. Physicians that rarely worked and hand-offs between physicians were accounted for. The "ordering propensity" for each physician (number of imaging studies ordered per 100 patients seen) was thus calculated. Reliability of results was examined by looking at variability in six-month blocks. Acuity was determined by review of billing reports and admission rates. Physician characteristics were obtained from ED administrative records. Analysis of variance and regression were utilized to determine associations between variables.

**Results:** Twenty-two faculty physicians were evaluated. CT or

MR imaging was ordered for approximately 20% of all patients seen during the study period by these physicians. The ordering propensity ranged from approximately 12% to 24% and was not explained by differences in patient acuity. Years since MD completion, residency training in EM, ABEM certification, gender, and work status were not associated with the ordering propensity of the individual physicians.

**Conclusions:** The CT and MR ordering propensity of a group of faculty EM physicians is variable and is not associated with experience and training in EM. There may be other variables not studied that are associated with ordering propensity.

### 4 Describing Cerebrospinal Fluid Red Blood Cell Counts in Patients with Subarachnoid Hemorrhage

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**Objectives:** It has been postulated that a decreasing red blood cell (RBC) count between the first and last tubes collected during lumbar puncture can be used to differentiate a traumatic tap from a true spontaneous subarachnoid hemorrhage (SAH). We sought to describe cerebrospinal fluid (CSF) RBC variation between tubes one and four in patients with known SAH.

**Methods:** We retrospectively identified all ED patients with a discharge diagnosis of SAH from June 1993 to November 2005. A structured chart review was performed on all patients with the additional billed procedure of "lumbar puncture," "lumbar drain," or "spinal tap." Data collected included: CSF RBC count in the first tube, CSF RBC count in the fourth tube, and an imaging study confirming the diagnosis. Patients were excluded if any of these three data points was absent.

**Results:** 1,323 patients seen in the ED were diagnosed with SAH, and 102 (7.7%) of these patients also had CSF collected. Of this group, 81 charts were located and reviewed. Thirty-five were then excluded for lack of documented RBC count in both tubes one and tube four, and 26 were excluded because of lack of documentation of an advanced imaging study. Of the remaining 20, seven (35%) were found to have an increase in RBC count between tubes one and four and 13 (65%) were found to have a decrease. Of the 13 patients who had an observed decrease in RBC counts between tubes, eight had a drop of >25%. The most dramatic case was a patient with xanthochromic CSF in whom the RBC count dropped from 453 in tube one to 0 in tube four.

**Conclusion:** In our sample of confirmed SAH cases, a drop in CSF RBC count was observed in 65% of cases, with a range spanning from 1% clearing to 100% clearing. These findings suggest that CSF RBC clearing between tube one and tube four is common in patients with SAH and thus cannot be used to rule out the diagnosis.