5 Emergency Department Series of Acute Conditions of the Scrotum

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Introduction: Acute scrotal pain comprises 0.5% of annual emergency department (ED) visits. Determining the etiology of acute scrotal pathology by history, exam and laboratory studies alone can be challenging. Radiology department-performed sonography (RDPS) is the imaging test of choice for scrotal pathology but may be time consuming and result in treatment delays and poorer outcomes. If accurate, ED-performed sonography (EDPS) may shorten time to diagnosis and treatment and result in quicker disposition and improved outcomes for scrotal pathology.
Methods: This retrospective cohort study evaluated the accuracy of EDPS for predicting the presence of scrotal pathology as established by RDPS. A composite endpoint consisting of testicular or testicular appendix torsion, epididymoorchitis, scrotal abscess or mass, varicocoele, spermatocoele, and epididymal cyst was used to define scrotal pathology. Subjects included a convenience sample of all patients presenting to our ED with acute atraumatic scrotal pain who received both EDPS and RDPS during a five-year period.
Results: During the study period 146 patients underwent EDPS, 49 of whom went on to receive RDPS. The sensitivity and specificity of EDPS for recognizing radiographic pathology as determined by RDPS were 0.93 (95% CI 0.81-0.98) and 0.33 (95% CI 0.02-0.87).
Conclusions: This study demonstrated relatively high sensitivity and low specificity for EDPS in predicting scrotal pathology. The low specificity in this study may have resulted from a selection bias affecting which patients underwent RDPS. These results indicate that all patients with abnormal EDPS should undergo RDPS. However, the low specificity of this study prevents conclusions regarding treatment of patients with negative EDPS. We conclude that EDPS is not currently accurate enough to recommend its use as a final diagnostic modality for patients presenting with a painful scrotum.

6 Availability of Standardized Chest Pain Order Sheet Improves Compliance with American College of Cardiology and American Heart Association Guidelines for the Treatment of Acute Coronary Syndromes

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Objective: The American College of Cardiology (ACC) and the American Heart Association (AHA) publish guidelines for the treatment of specific conditions within the spectrum of acute coronary syndromes (ACS). We hypothesized that, when available, implementation of a standardized chest pain order sheet for treatment of patients with ACS in our emergency department would improve adherence to the ACC/AHA guidelines.
Methods: This was an IRB-approved prospective observational study in an urban emergency department with 46,000 visits per year and an affiliated emergency medicine residency training program. The study involved three phases. During the first phase (3/04-9/04), charts of patients with the complaint of chest pain were reviewed for compliance with ACC/AHA guidelines. Two persons reviewed charts during a brief training session. To improve agreement between reviewers, five charts were reviewed in a trial run and again weekly. A third reviewer acted in cases of disagreement. In the second phase (9/04-12/04), a chest pain order sheet based on ACC/AHA guidelines was made available for physicians to use in evaluation and treatment of patients presenting with chest pain. The third phase (5/06-12/06) the chest pain order sheet was not available for physician use due to technical and logistical misadventures. In a similar fashion, charts were reviewed for compliance with guidelines. A kappa score for inter-observer agreement, Fisher's exact and Chi-Square tests were used to compare groups. In a retrospective review, charts were evaluated for continued compliance with guidelines in an analogous fashion.
Results: The kappa for inter-observer agreement was 0.91 (95% CI:0.883 to 0.990) Patients Administered Medication / Patients Eligible to Receive Medication ASA Beta-Blocker Heparin 2B, 3A GP-inhibitor Phase 1 213/221 (96%) 166/221 (75%) 55/221 (70%) 4/10 (40%) (no order sheet available) Phase 2 117/117 (100%)112/117 (96%)* 110/117 (94%)*4/6 (67%) (with use of order sheet) Phase 2 205/214 (96%) 163/214 (76%) 135/214 (63%) 3/7 (43%) (without use of order sheet) Phase 3 194/204 (95%)147/199 (74%) 138/201 (68%) 3/9 (33%) (without use of order sheet) (* P,0.001 compared to Phase 1)
Conclusions: The use of a standardized chest pain order sheet was associated with improved adherence to the ACC/AHA guidelines for administration of beta-blockers and heparin in ACS but returned to baseline when the guideline was no longer available. Limitations of this study include, but are not limited to, non-randomization and selection bias.

7 A Look at Pre-Hospital Practice Patterns Following the Introduction of Drug-Facilitated Intubation

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Objective: We conducted this study to evaluate the patterns and frequency of use of drug-facilitated intubation (DFI) by pre-hospital personnel following its introduction and availability.
Methods: This was a retrospective study of reported pre-hospital data on number of patients in which drug-facilitated intubations were performed between January 1, 2003 and July 31, 2006. For inclusion into the DFI data, the patient had to receive succinylcholine before an attempt at intubation by pre-hospital personnel and meet the indications set forth by standing orders for DFI, specifically presence of incomplete relaxation or high likelihood of losing an airway during transport. Patients in cardiac arrest were excluded from this study. The number of patients receiving DFI was compared to the total number of patients who were not in cardiac arrest that were intubated. The percentage of total non-arrest intubations that were drug facilitated was then calculated for each year between 2003 and 2006 with data through July 2006. Statistical analysis was performed using the Chi-square test. Trend analysis was performed using ANOVA and the Tukey test.
Results: The percentage of drug-facilitated intubations compared to total non-arrest intubations was 57.8%, 45.0%, 34.1%, and 71.1% for 2003, 2004, 2005, and the first 7 months of 2006 respectively. The percentage of DFI in 2003 (57.8%) compared to the percentage in 2004-2005 (38.8%) was statistically significant ($p<0.001$). The percentage of DFI in the first 7 months of 2006 (71.1%) compared to the percentage in 2004-2005 (38.8%) was also statistically significant ($p<0.0001$). ANOVA showed a significant quadratic trend in the use of DFI over time.
Conclusions: These data support the hypothesis that there was an initial peak in usage of DFI after the availability to pre-hospital personnel in 2003, and that after a decline the rates were increasing as users became more familiar and comfortable with its use.

8 Pre-Hospital Time Measures for Acute Stroke Patients

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Introduction: Poor rates of thrombolysis for acute stroke partially result from lack of recognition and delayed hospital arrival by patients. Even though EMS transports reduce time to hospital arrival, acute strokes missed by both emergency medical dispatchers (EMD) and paramedics may result in prolonged transport times.
Objectives: We sought to determine pre-hospital time delays for acute strokes in a large urban EMS system.
Methods: Retrospective study of patients >18 years identified as having acute stroke by EMD, city paramedics or stroke neurologists transported to hospitals by EMS personnel from 1/1/2005 to 12/31/2005. Data were acquired from a computer-assisted dispatch, a computerized paramedic, stroke team databases and ICD-9 codes. The final diagnosis of stroke/not stroke was identified from stroke team diagnosis or ICD-9 codes. Paramedic time to scene (TS), scene time (ST) and total run time (RT) were compared between missed and true strokes. Time intervals were calculated when EMS personnel had diagnostic agreement/disagreement using a Mann-Whitney U test for nonparametric data; medians and Inter Quartile Ranges are reported.
Results: A total of 1067 patients were eligible for the study, of which 22 were excluded for missing data. The stroke team identified 440 (41%) of which EMD missed 73 (16.6%) and paramedics missed 247 (56.1%). For true strokes, EMS personnel were in agreement 27.3% of the time. ST and RT were significantly different when EMS personnel were in agreement on stroke (ST=19 min.; IQR=16,24 and RT=39 min.; IQR=33,45) compared to not inagreement (ST=18 min.; IQR=14,22 and RT=36.5 min.; IQR=30,43 p's<0.001). Time measures did not differ between true and missed strokes (p's>0.05).
Conclusions: Pre-hospital scene time and run times for acute strokes are less when there is diagnostic concordance between dispatchers and paramedics. Future efforts should focus on improving the stroke recognition by all levels of pre-hospital providers.

9 Utilization of Computed Tomography Angiography in the Evaluation of Acute Pulmonary Embolus

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Objectives: To assess the appropriate use of computed tomography angiography (CTA) in the diagnostic evaluation of acute pulmonary embolism (PE).
Methods: Review of 580 inpatient (45%), emergency department (ED) (41%) and outpatient (14%) CTAs to evaluate for acute PE performed at a large teaching hospital from January 2004 through March 2005. Based on chart review blinded to final diagnoses, PE pretest probability using Wells criteria was retrospectively assigned. D-dimer values (if obtained) were also reviewed.
Results: Of the 580 patients scanned, only three were high probability; two of these had PE (67%). Of the remaining 577, 48% were intermediate and 51% were low probability. The overall positivity rate for PE was 10%; inpatient 12%, ED 8%, and outpatient 1%. Of the high, intermediate and low probability groups, 67%, 14% and 5% had PE, respectively.