269 Analysis of Lawsuits Filed Against Emergency Physicians Over Bedside Emergency Ultrasound Examination Performance or Interpretation Over a 20-Year Period
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Study Objectives: Recent increase in ultrasound (US) use by emergency physicians has led to concern regarding litigation from missed diagnosis on bedside emergency US. We sought to define the extent of lawsuits filed against emergency physicians over bedside emergency US performance and interpretation during the last 20 years nationwide.

Methods: We performed a nationwide search of the WESTLAW legal database for filled law suits involving emergency physicians and US. WESTLAW covers all state and federal lawsuits dating back to 1939. Using an electronic search feature all states were searched using emergency and US as key words. The database automatically accounts for different variants on US such as sonography. An attorney who is also boarded in and practices emergency medicine as well as an emergency US expert reviewed returned cases. Instances where radiologists were being sued along with emergency physicians involving US and an emergency physician did not perform the US examination were excluded. Descriptive statistics were utilized to evaluate the data.

Results: Using the search criteria and excluding obvious radiology suits, 659 cases were returned and individually reviewed. There were no cases of emergency physicians being sued for performance or interpretation of their own US. There was one case of litigation alleging the emergency physician failed to perform their own US and diagnose an ectopic before it ruptured several days later. This case was won by the defense. There were no cases against emergency physicians for common causes of radiology and obstetric litigation: sexual assault during endovaginal US. Cases of missed testicular torsion were frequent in the emergency setting but none linked the emergency physician to US performance or failure to perform their own US.

Conclusion: Despite persistent unverified, anecdotal cases discussed among emergency physicians using US and fears in the emergency physician community only one case filed against emergency physicians over the last two decades over bedside emergency US was identified, and was related to failure to perform interpretation error. Most frequent sources of litigation against radiologists and obstetricians are unlikely to be duplicated in the ED setting because emergency physicians do not typically evaluate 2nd and 3rd trimester pregnancy, have a chaperone for endovaginal examinations and relatively few perform their own testicular US examinations. Future litigation may also come from failure to perform emergency physician US to expedite care or detect pathology as witnessed in one case.

270 Ultrasound-Guided Peripheral Venous Access by Emergency Medical Technicians in Patients With Difficult Access
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Study Objectives: To assess the feasibility of emergency medical technician (EMT) use of Ultrasound (US) guided peripheral IV (PIV) placement for patients in the emergency department (ED) with difficult access.

Methods: This study was conducted at an urban Level 1 ACS certified trauma center with an annual census of approximately 35,000 patients.

Five study EMTs underwent a two-hour didactic and practical course in placing PIVs with US prior to study initiation. Each EMT had performed in excess of 50 US guided PIVs prior to beginning the study. EMT training level varied from EMT-Basic to EMT-Paramedic. US guided PIV placement by EMTs was restricted to a patient’s upper extremity superficial venous system. Patients meeting institutional trauma and stroke activation criteria were not included in this study.

The study protocol allowed for US guided PIV placement by study EMTs if standard blind attempts were unsuccessful (including blind attempts by out-of-hospital EMS personnel/ED nursing staff/non-study EMTs) or if the patient had characteristics that would make IV access difficult (obesity, history of/or current IV drug abuse, end stage renal disease, h/o difficult PIV access, and cancer patients). Patient demographics, time to place PIV, and patient satisfaction scores (rated on a Likert scale 1-10) were recorded.

Results: A total of 45 ED patients were enrolled in the study. The mean age of participating patients was 45.1 ± 19.4 years. Eleven of 43 (25.6%) patients were male and 27 of 43 (62.8%) were female. The average time spent acquiring PIV access was 14.95 ± 7.45 minutes. 43 of the 45 (95.6%) patients were considered to have difficult access issues.

22.2% (10 of 45) of patients had one blind PIV attempt prior to US use, 24.4% (11 of 45) had two attempts, and 40% (18 of 45) had three attempts prior to US use. 13.3% (6 of 45) of patients received multiple (>3 blind attempts) prior to US use. On average patients had 2.73 ± 1.97 attempts prior to the use of US.

The success rate using US guided PIV’s by study EMTs in the same patients was: 75.6% (34 of 45) success with the first attempt, and 95.6% (43 of 45) successful by the second attempt. On average patients had 1.29 ± 0.56 attempts with the use of US. EMTs were not able to place US guided PIVs in two patients. There were no complications for US-guided PIV placement.

Patient satisfaction with blind PIV attempts was 4.0 ± 2.5 (on a scale of 1-10) compared to a satisfaction score of 8.9 ± 2.5 for PIV placed under US guidance (p<0.001).

Conclusion: EMTs can be easily and safely trained to place PIV under ultrasound guidance. The use of US increases the success rate of PIV placement, even in patients who have difficult access. US guided PIV access is obtained with less attempts/patient than blind attempts, and its use is associated with increased patient satisfaction.

271 Can the Degree of Hydronephrosis on Focused Emergency Ultrasound Predict Kidney Stone Size?
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Study Objective: Symptomatic nephrolithiasis is a common emergency department (ED) complaint. Non-contrast computed axial tomography (CT) is often obtained as a diagnostic test to evaluate for the presence and size of stones. Since renal ultrasound is non-invasive and readily performed by emergency physicians, the objective of the study was to determine if the degree of hydronephrosis on focused renal ultrasound as performed by emergency physicians correlated with size of ureteral calculi on CT.

Methods: A retrospective review was performed of all adult patients (18 years and older) seen in the ED of an academic hospital from March 2004 to March 2007 who had both a complete bedside renal ultrasound performed by an emergency physician (resident or attending) and documented ureterolithiasis on non-contrast helical CT performed during the ED visit. The presence of hydronephrosis on the ultrasound was determined and graded by the performing physician as mild, moderate, or severe according to standard definitions: mild hydronephrosis - enlargement of the calices with preservation of renal papilla, moderate hydronephrosis - rounding of the calices with obliteration of renal papilla, and severe hydronephrosis - caliceal ballooning with cortical thinning. Hydronephrosis findings were collapsed into two categories: none/mild hydronephrosis and moderate/severe hydronephrosis. Ureteral stones on CT were grouped into those more likely to pass spontaneously (<5 mm) and those more likely to require intervention (>5 mm). Data was analyzed by Pearson chi-squared testing using SPSS.

Results: One hundred twenty-four ultrasound were performed in the ED on patients with CT confirmed ureteral calculi. Eighty-seven patients (70%) had none/mild hydronephrosis. One hundred twelve patients (90%) had calculi >5 mm. As shown in the table, patients with none/mild hydronephrosis were less likely to have larger stones than those with moderate/severe hydronephrosis (5.7% versus 18.9%, p=0.023).

Conclusion: Our results demonstrate a statistically significant relationship between degree of hydronephrosis and stone size; patients with less severe hydronephrosis were less likely to have stones greater than 5 mm. This study suggests that ultrasound can help identify many, but not all, patients who are at lower risk for having larger ureteral calculi. This raises the possibility that an ED ultrasound can obviate the need for ED CT in patients with none/mild hydronephrosis. Further study is needed to determine the short-term outcome of these patients and validation of such a diagnostic paradigm.

<table>
<thead>
<tr>
<th>Degree of Hydronephrosis and Kidney Stone Size</th>
<th>Stone &lt;5 mm</th>
<th>Stone &gt;5 mm</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>None/Mild Hydronephrosis</td>
<td>62 (94.9%)</td>
<td>5 (5.1%)</td>
<td>67</td>
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<tr>
<td>Moderate/Severe Hydronephrosis</td>
<td>30 (81.1%)</td>
<td>7 (18.9%)</td>
<td>37</td>
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<tr>
<td>Total</td>
<td>92 (80.3%)</td>
<td>12 (9.7%)</td>
<td>104</td>
</tr>
</tbody>
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