BACKGROUND

- Apparent Life Threatening Event (ALTE) is relatively common, occurring in 0.6 to 2.46 per thousand live births
- Significant intracranial abnormality, including Abusive Head Trauma (AHT) can present as an ALTE
- Current recommendations for ALTE evaluation vary greatly, with large inter-hospital variability
- Head computed tomography (CT) is not routinely recommended in ALTE evaluation
- A standardized ALTE evaluation protocol that includes head CT has been in place at our institution since 2008

OBJECTIVE

To evaluate the diagnostic utility of empiric head CT in ALTE

METHODS

Design:
- A retrospective chart review of children < 12 months of age presenting to the Emergency Department (ED) of an urban, free-standing children's hospital and its suburban site was performed
- ED and subsequent inpatient records were reviewed from October 2009 to December 2012

Identification of ALTE cases:
- Diagnosis of ALTE (CDC-9 799.82)
- Constellation of studies performed consistent with our institutional protocol for ALTE evaluation: CBC, head CT, LCR
- Exclusion criteria were known trauma and cases lacking an identifiable ALTE feature upon review

Data collection:
- Patient demographics (age, race, gender)
- Vital signs
- Physical exam
- Diagnoses rendered
- Diagnostic tests ordered and results
- Head CT (including official read)
- Procedures provided
- Disposition (including hospital discharge information if admitted)

Table 1 – Case Description

<table>
<thead>
<tr>
<th>Case</th>
<th>Age (months)</th>
<th>Presenting Story</th>
<th>ALTE Features</th>
<th>Medical History</th>
<th>Physical Exam</th>
<th>911 Call</th>
<th>Head CT</th>
<th>CXR</th>
<th>Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>Prolonged apnea, while sleeping</td>
<td>Central apnea, color change</td>
<td>None</td>
<td>Normal</td>
<td>Yes</td>
<td>Multiple intracranial calcifications</td>
<td>Normal</td>
<td>Intensive care admission</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2 episodes of semi-consciousness, poor feeding, vomiting</td>
<td>Decreased tone</td>
<td>GERD</td>
<td>Normal</td>
<td>No</td>
<td>Subdural hematoma</td>
<td>Normal</td>
<td>Inpatient admission</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Episodic apnea, Impairment while sleeping</td>
<td>Central apnea, color change, decreased tone</td>
<td>GERD</td>
<td>Normal</td>
<td>Yes</td>
<td>Subdural hematoma</td>
<td>Normal</td>
<td>Intensive care admission</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Blue lips, vomit, single shaking episode, EMS reported pulse 70s en route to ED</td>
<td>Color change, cyanosis, increased tone</td>
<td>31 week GA birth, NICU stay with ventilator use, GERD</td>
<td>Left temporal bruise</td>
<td>Yes</td>
<td>Subdural hematoma</td>
<td>Mild CCL</td>
<td>Intensive care admission</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>Personal cyanosis noted by mother, referred from outside hospital ED</td>
<td>Color change, cyanosis</td>
<td>34 week GA</td>
<td>Normal</td>
<td>No</td>
<td>Grade III intraventricular hemorrhage, hydrocephalus</td>
<td>Diffuse hazy opacity</td>
<td>Intensive care admission</td>
</tr>
</tbody>
</table>

Data Analysis:
- Demographics were compared via Pearson’s χ² test using Statistical Analysis Software version 5.0
- The proportion of cases with abnormal head CT findings and with occult head CT findings was determined along with 95% exact binomial Clopper-Pearson confidence intervals for each proportion

RESULTS

- 617 ALTE encounters met inclusion criteria
- 399 ALTE diagnosis (239 also with Evaluation Constellation)
- 232 with Evaluation Constellation Alone

- Table 2 – Demographics of Identified ALTE Cases

CONCLUSIONS

- The rate of clinically important occult head CT findings in ALTE evaluation was relatively uncommon, at 0.9%. Given the severe consequences of missing these cases, these data establish a role for empiric head CT in the evaluation of ALTE, even if there is no historical, physical exam, or other laboratory or radiologic findings that raise concern for intracranial pathology

REFERENCES