Cervical Spine Evaluation in Obtunded Trauma Patients: When to Omit the CS-MRI.

Ahmad Othman, M.D.; Komola Azimova, Christopher Dodoo, M.S.; Jayanta Gupta, M.D.; Joshua P. Herzog, M.D.; Alan H. Tyrer, M.D.

INTRODUCTION
Cervical Spine (CS) clearance in trauma patients has been well studied but controversy still exists regarding its evaluation in obtunded trauma patients. We hypothesize that a 64-slice CT of the cervical spine in the appropriate clinical setting is adequate to clear the cervical collar in the obtunded trauma patients.

METHODS AND PROCEDURES
We used the trauma registry at our level one trauma center to identify obtunded trauma patients (GCS 3-14) that underwent both 64-slice CS-CT and CS-MRI between January 2011 and March 2015. We compared results of CS-CT & CS-MRI and assessed all variables that would affect CS-CT adequacy in clearing the cervical spine.

Continuous variables were described using mean and standard deviation. Categorical variables were described using frequencies and proportions. McNemar test was used to assess concordance between CT and MRI results. Spearman’s correlation coefficient was used to assess the association between time of MRI scan and GCS at time of MRI. P values less than 0.05 were considered statistically significant. All analyses were performed using SAS V9.3.

RESULTS
113 patients were included in the final analysis. 81 patients (72%) were male. The mean age was 48. The mean timing for CS-MRI was hospital day 3. Mean GCS at the time CS-MRI was obtained was 9.

29 patients (26%) had false negative CS-CT. The CS-MRI changed the management in 2 (1.7%) of these patients. The most common missed injury was soft tissue injury in 15 patients (42%). Other injuries that were missed included ligamentous injuries in 10 patients (28%) and intra-spinal hemorrhage (SDH/EPH) in 4 patients (11%).

CS-CT quality was inadequate in 3 patients (2.6%) but the results were concordant with CS-MRI in identifying an injury.

5 patients (4.4%) required extended C-Collar placement. 4 patients (3.5%) had concordant results between their 64-slice CS-CT and CS-MRI. 1 patient (0.9%) had a normal CS-CT but required extended C-collar placement due to severe ligamentous injury identified on CS-MRI.

10 patients (9%) required surgical intervention of the cervical spine. 9 patients (8%) had concordant results between their 64-slice CS-CT and CS-MRI. 1 patient (0.9%) had a normal CS-CT but required surgical intervention due to spinal cord edema identified on CS-MRI.

| Table: Concordance between CS-CT and CS-MRI |
|-------------------------------|-----------------|-----------------|-----------|
| MRI Result                        | CT Result       | Negative   | Positive  | P value |
|-------------------------------|-----------------|-----------------|-----------|
| Negative                       | 49 (96.08)      | 29 (46.77)     | <0.001    |
| Positive                       | 2 (3.92)        | 33 (53.23)     |           |

CONCLUSION
64-slice CT of the cervical spine is not adequate to clear the cervical collar in the obtunded trauma patients. Although eliminating the CS-MRI would result in large cost savings and earlier cervical spine clearance, further studies are needed to define when the CS-MRI can be omitted.

Pediatric Snakebites: Experience from a South-Western-Texas Trauma Center

Samara Lewis, Pranit Chotai, MD, Thomas Pyo, Amr Abdelgawad, MD

INTRODUCTION
Snakebites are responsible for considerable morbidity and mortality, with an estimated average of 421,000 envenomation and 20,000 deaths per year, worldwide. In the United States (US) however, snakebites remain only a minor problem, averaging 9000 reported cases of bites and approximately 5 deaths per year. Pit vipers, from the crotalidae family, are responsible for most of the snakebites in the US. 80% of crotalidae bites result in enveno-