Reduction in cervical spine immobilization is not associated with missed injuries

Jennifer Gibson Chambers, DO, MS
Michael O’Brien, MD
Brian Clemency, DO, MBA

DISCLOSURES

- No disclosures

BACKGROUND

- EMS providers can correctly determine which patients have cervical spine injuries
- Patients arriving via EMS without a cervical collar rarely have serious cervical spine injuries
- Local protocol changed from spinal immobilization to spinal motion restriction (SMR)
- SMR protocol associated with decreased cervical collar use
**STUDY AIM**

- Is decreased cervical collar use associated with an increase in serious cervical injuries among patients transported without cervical collars?

**METHODS**

- Secondary analysis of a retrospective chart review
- Adult patients transported by a single EMS agency with a dispatch for motor vehicle collision to one of 3 hospitals
  - Electronic screening of EMS agency PCR
  - Matching hospital record
- 6 month period before (Jan-June 2015) and a 6 month period after (Jan-June 2016) the SMR protocol change

**METHODS**

- Fisher exact test and t-test used for statistical comparison between time periods
- Serious cervical spine injuries identified on CT
  - Operative intervention
  - Discharge in an immobilization collar
  - Cervical spine injuries present in patients who died as a result of traumatic injuries
  - Initial screening of CT reports and hospital records by trained research associates, verified by attending physician review
RESULTS

- Cervical collar use decreased from 66.8% to 59.3% (p=0.002)
- No significant difference
  - Proportion of male patients
  - Average age
  - Subtype of motor vehicle accident
- Increase in transport to trauma center
- No significant change was observed in the rate of CT cervical spine imaging (51.0% before and 52.5% after, p=0.55)
RESULTS

- Serious cervical spine injuries were identified in 2.2% before and 2.4% of imaged patients after SMR (p=0.99).
- All patients with serious cervical spine injury were placed in cervical collars by EMS providers, a sensitivity of 100%.
- Specificity was 14.0% before and 18.7% after SMR (p=0.10).

LIMITATIONS

- Single mechanism of injury evaluated
- Single EMS system
- CT-identified injuries

CONCLUSIONS

- Overall decrease in use of cervical collars with Spinal Motion Restriction protocol
- No motor vehicle accident patients with serious cervical injuries transported without a cervical collar in either period