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Mismanagement of a Cervical Spine Fracture by Multiple Healthcare Providers in a High School Football Player

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Case Report: Mismanagement of a Cervical Spine Fracture by Multiple Healthcare Providers in a High School Football Player

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Describe role of Submitting/Presenting Trainee in this project (limit 150 words):

The trainee reviewed medical documentation of the patient case, performed a literature search, and wrote the case report.

Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words

Background:

About 50% of all high school football injuries occur when tackling or being tackled, and about 10 to 15% of football players at all levels are estimated to experience a cervical spine injury. The most common cervical spine injury in football players are “stingers”, or neurapraxia of the nerve roots or brachial plexus. This has been estimated to occur in as many as 65% of all college football players. Because of their prevalence, more serious cervical injuries, such as cervical fractures, may be misdiagnosed as stingers. We present a case of a 16-year-old previously healthy male football player who sustained an unstable cervical fracture that was missed by both his athletic trainer, chiropractor, and primary care physician. Seven days after the initial injury, he was evaluated at the Children’s Mercy Sports Medicine clinic. There, his case was discussed with the on-call neurosurgeon who recommended same day surgery. A CT of the cervical spine without contrast was obtained which showed a flexion teardrop fracture of C6 due to a flexion compression injury. He underwent anterior cervical corpectomy of C6 and C5-C7 anterior cervical discectomy and autologous iliac crest fusion.

Objectives/Goal:

- Review the literature on proper clearing of C-spine
- Review the literature on how to distinguish neurapraxia from serious cervical injuries
- Review the dangers of spear tackling

Methods/Design:

I reviewed the medical documentation for the patient of this case report, including sport medicine clinic, neurosurgery, and neurology documentation in the Children’s Mercy Hospital EMR. I then conducted a pubmed search on the available literature for C-spine clearance in the pediatric and adult population, cervical spine injuries in football players, and neurapraxia.

Results:

29 articles were reviewed through my pubmed search, of which 16 were cited.

Conclusions:

To date, the Canadian C-spine Rule and the NEXUS Criteria for C-spine imaging remain the most widely studied guidelines for clearing the cervical spine, without clear evidence of one being superior to the other. Our patient illustrates the importance of applying the NEXUS and Canadian C-spine rules effectively on the sideline. Specifically, for the Canadian C-spine rules, the patient met criteria for a “dangerous mechanism” of injury given the significant axial load injury sustained in a spear tackle. The patient also failed the NEXUS criteria of a focal neurologic deficit, as he had bilateral upper extremity weakness. This case also highlights the importance of understanding the differences in symptomatology between stingers and cervical cord injuries. While stingers often present as unilateral stinging, burning, or paresis, bilateral symptoms are a red flag for cervical cord injury. Finally, this case highlights the importance of educating football players to avoid spear tackling and to practice proper tackling form.