



Post Traumatic Cervical Nerve Root Avulsion with Epidural Hematoma

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Introduction

Cervical nerve root avulsion after trauma is a well-known occurrence. Cervical root avulsions are associated with traction injuries to the brachial plexus, commonly after high-speed motor vehicle collisions (MVCs). Traumatic nerve root avulsion occurs when traction forces pull the nerve root sleeve into the intervertebral foramen with associated tearing of the meninges. The proximal nerve root retracts, and the neural foramen fills with cerebrospinal fluid and eventually forms a pseudomeningocele. While imaging characteristics often include nerve root edema and pseudomeningoceles, there has only been one description of associated epidural hematoma in the literature.

Methods

This is a single patient case review based on an admission to Children's Hospital of Pittsburgh and a review of the literature.



Case

3 year-old female restrained passenger in a rear car seat presented to the Emergency Department after high-speed MVC. She was found lying unconscious on the front passenger side floor. After arrival to Children's Hospital of Pittsburgh, she was had 0/5 strength and absent sensation in her left upper extremity, 3/5 strength in her right upper extremity, and full strength in her lower extremities. CT cervical spine was negative for acute fractures. MRI cervical spine demonstrated a noncompressive epidural hematoma from C5-T10 and MRI brachial plexus demonstrated diffuse left cervical nerve root edema and C6-C8 nerve root avulsion with pseudomeningoceles. The patient was managed conservatively for her brachial plexus injury.

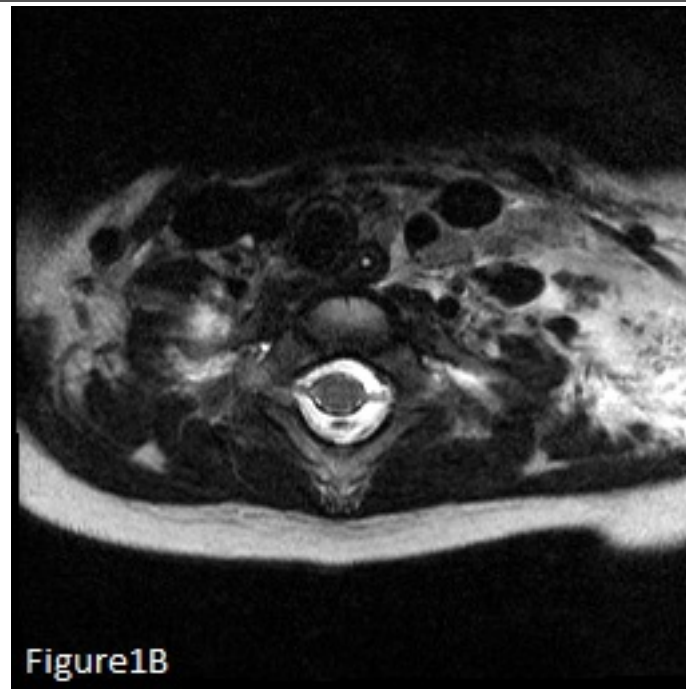


Figure 1: (A) Sagittal and (B) axial T2-weighted MRI Cervical Spine without contrast demonstrating noncompressive epidural hematoma extending from C5 to the upper thoracic spine. Also seen is prevertebral fluid edema extending from the odontoid tip down to C3 with anterior displacement of the anterior longitudinal ligament.

Conclusions

Although pseudomeningocele formation after cervical nerve root avulsion is commonly cited, associated epidural hematomas are not well described. It is important to consider this etiology in patients with asymmetric examinations and epidural hematomas prior to surgical evacuation.

Learning Objectives

1. Cervical spine brachial plexus injuries can have associated epidural hematomas.
2. Ordering an MRI brachial plexus should be considered on trauma patients with asymmetric upper extremity clinical examinations and epidural hematomas.
3. Surgical evacuation of these epidural hematomas is not warranted for noncompressive lesions when patients are able to move their lower extremities.

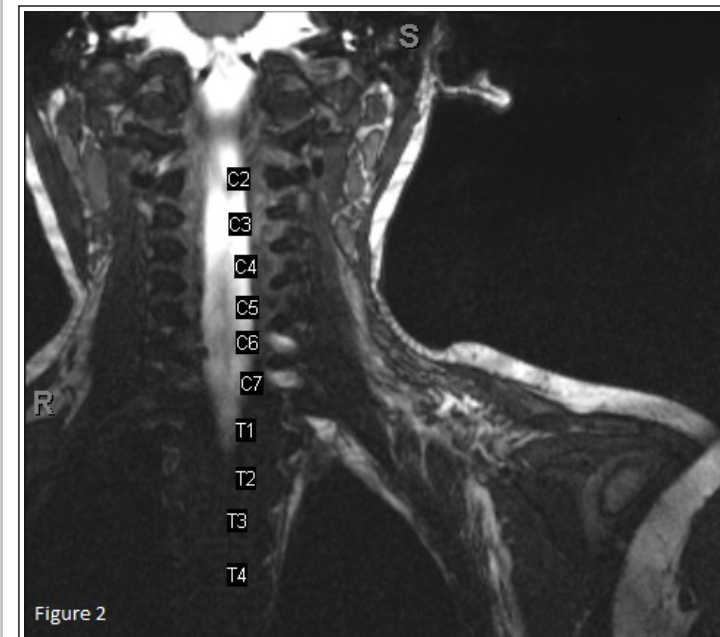


Figure 2: Left MRI Brachial Plexus Ultrafast Spin Echo Sequence demonstrates proximal nerve root