

Clinical Communications: Adults



CERVICAL SPINE FRACTURE PRESENTING AS AN ORTHOSTATIC HEADACHE SECONDARY TO CEREBRAL SPINAL FLUID LEAK

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Abstract—Background: Head injuries are a common chief complaint encountered in the emergency department (ED). A cerebrospinal fluid (CSF) leak resulting from such injuries is uncommon, but has potentially debilitating consequences if undiagnosed. **Case Report:** A 34-year-old male patient presented to the ED with complaints of an orthostatic headache after a bicycle accident that occurred 5 days prior to presentation. He presented with a nonfocal neurologic examination. Computed tomography (CT) of the head was without significant pathology. CT angiography of the neck, performed due to a concern about traumatic arterial dissection, revealed C7 spinal fractures, but no evidence of dissection or occlusion of the arteries in the neck. Lying flat, he appeared comfortable but became quite symptomatic upon sitting upright or standing. Based on this finding, a CSF leak was suspected and he was admitted for symptom control and more detailed imaging to rule out such a leak. He was found, on magnetic resonance imaging, to have epidural CSF collections consistent with the suspected leak. In addition to immobilization for the cervical spine fracture, he was treated for orthostatic headaches conservatively with good outcomes. **Why Should an Emergency Physician Be Aware of This?:** Although this syndrome is still considered rare compared to other posttraumatic injuries, there is a growing body of evidence suggesting it may be underdiagnosed. Additionally, the signs and symptoms of this syndrome are nonspecific, with the exclusion of the orthostatic headache, and may be readily attributed to other diagnoses. © 2015 Elsevier Inc.

Keywords—headache; CSF leak; trauma

INTRODUCTION

Head injuries are a common chief complaint encountered in the emergency department (ED). Much of the time, these are benign entities requiring little intervention. However, a cerebrospinal fluid (CSF) leak resulting from such trauma is an uncommon, potentially overlooked, diagnosis that may result in long-term consequences if undiagnosed. Here we present a case of traumatic CSF leak and resultant intracranial hypotension causing a characteristic orthostatic headache syndrome.

CASE REPORT

A 34-year-old man with no stated medical history presented to the ED with chief complaint of severe headaches 5 days after a bicycle accident. The patient was an avid bike rider who lost control on a patch of gravel, causing him to crash at, per his estimate, 25 miles per hour. He went head first over the handlebars, landing on his head and left shoulder, per his recollection. He was wearing a helmet that broke in half at the time of the accident, but he denied any loss of consciousness and was able to get back up and ride a nearby

train home. His only other complaint was soreness of the left shoulder, which he felt took most of the impact.

He awoke feeling sore the next morning, but notably without any significant headache. As the week progressed, however, he experienced the indolent onset of worsening headaches. For the first several days, these were most strongly associated with driving his car. His headaches began in the posterior neck and radiated frontally toward the orbits. The headaches worsened as the week progressed and began to occur with activities other than driving. He also began to experience severe nausea, vertigo, and diaphoresis. Notably, these symptoms were dramatically worsened when he sat upright or stood up, but nearly absent when laying flat.

On initial ED evaluation, the patient was comfortable when laying flat in the bed, however, any vertical change of position caused him to immediately experience significant discomfort. His examination was remarkable for the following vital signs: oral temperature 36.3°C, pulse 65 beats/min and regular, blood pressure of 131/84 mm Hg, unlabored respirations at a rate of 18 breaths/min, and 99% pulse oximetry on room air. His physical examination did not reveal any evidence of skull fracture; no bruising or deformity was seen on the face or head. His left cervical paraspinal muscles and trapezius were sore with palpation, though neither midline tenderness nor nuchal rigidity was appreciated. He was alert and oriented to person, place, time, and events, with a normal cranial nerve examination and normal peripheral sensory and motor examination, with the exception of slight decrease in sensation to light touch over the left first digit.

Upon initial evaluation, his symptoms were concerning for a potential intracranial bleed, traumatic vertebral artery dissection, or severe postconcussive syndrome. Given the vertiginous and positional nature of his symptoms and neck pain, there was also concern for a possible traumatic dissection within the posterior circulation. Intracranial hypotension was also considered in the differential diagnosis, though thought to be less likely, given the lack of evidence of a basilar skull fracture on physical examination. A CT scan of the brain and CT angiography of the neck were performed. Neither skull fractures nor intracranial bleeding were noted on brain imaging, and the angiogram of the neck revealed no flow limiting stenosis, occlusion, or dissection in any of the vasculature of the neck (on the initial radiology resident interpretation). Of note, the final attending radiologist interpretation of the scan the next day noted fractures of the left C7 superior articular process, interarticular body, and lamina (these findings were discovered only after admission to the hospital and departure from the ED) (Figures 1 and 2).

Given the severity of his symptoms and lack of clear diagnosis, Neurology was consulted and magnetic resonance imaging (MRI) of the head and cervical spine

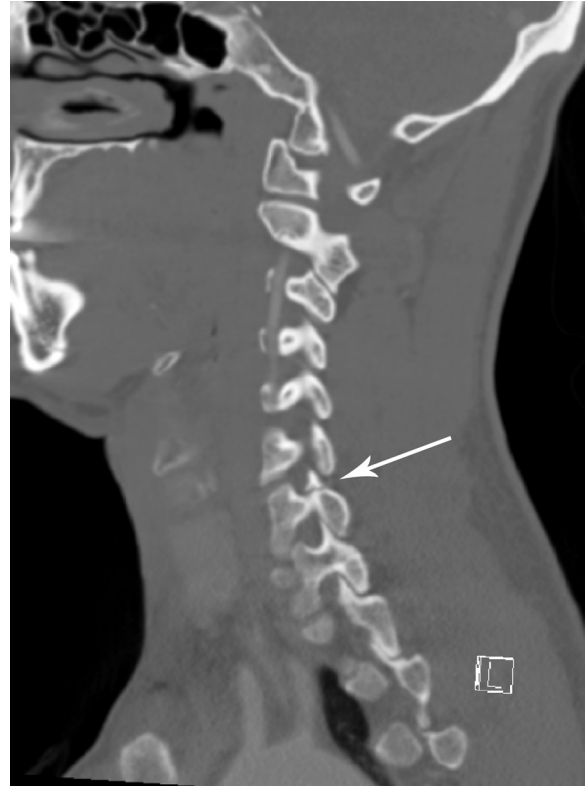


Figure 1. Computed tomography angiogram of the cervical spine. This image demonstrates a fracture of the superior articular process of C7.

were ordered to assess for signs of intracranial hypotension or other traumatic injury. The patient was admitted to the Neurology inpatient service for symptom control. The brain MRI was remarkable for diffuse parenchymal enhancement that was believed to be secondary to intracranial hypotension. There was no evidence of cerebellar tonsillar herniation. Imaging of the cervical spine

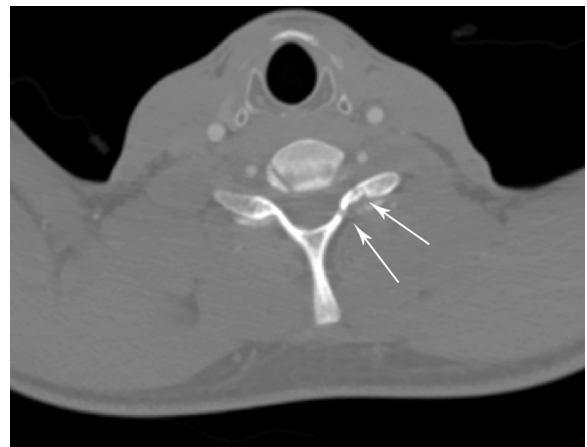


Figure 2. Computed tomography angiogram of the cervical spine. This image demonstrates a fracture of the C7 lamina.

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