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AN UNCOMMON CAUSE OF ACUTE BACK PAIN: SPINAL SUBARACHNOID HEMORRHAGE PROGRESSING TO SPINAL CORD COMPRESSION

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☐ **Abstract—Background: Spinal subarachnoid hemorrhage (SSH) is an uncommon occurrence responsible for <1% of all cases of subarachnoid hemorrhage (SAH). Case Report: We present the case of a 53-year-old man who presented to the emergency department (ED) with acute onset of "tearing" back pain that began during activity, and who was diagnosed with an SSH that ultimately progressed to spinal cord compression. Why Should an Emergency Physician Be Aware of This?: Although uncommon, the consequences of SSH are potentially devastating, yet reversible, making awareness of this condition critical. Several rare yet potentially devastating causes of acute back pain are deserving of consideration when approaching back pain in the ED setting; SSH is among them. Pain that is described as "tearing" or that is unresponsive to ordinary analgesic dosages should prompt strong consideration of vascular or other serious pathology, including arterial dissection or spinal cord compression.** © 2015 Elsevier Inc.

☐ **Keywords—back pain; subarachnoid hemorrhage; spinal cord; compression; emergency**

INTRODUCTION

Spinal subarachnoid hemorrhage (SSH) is an uncommon occurrence, responsible for <1% of all cases of subarachnoid hemorrhage (SAH) (1). Although uncommon, the consequences of SSH are potentially devastating, yet reversible, making awareness of this condition critical. We present the case of a 53-year-old man who presented to the emergency department (ED) with acute onset of "tearing" back pain that began during activity, and who was diagnosed with an SSH that ultimately progressed to spinal cord compression.

CASE REPORT

A 53-year-old male presented to the ED complaining of acute onset of tearing back pain. The symptoms began 1 h before ED arrival when he was playing musical drums. The patient described the pain as sharp, and sudden in onset, located primarily in his upper back "between the shoulder blades" and associated with nausea and diaphoresis. He also reported that the pain radiated superiorly to his neck. He denied headache. He also denied any other trauma or cardiac history. The pain was reported as "10 out of 10" in severity. His medical history was significant for asthma, diabetes, and hypothyroidism. There was no history of antithrombotic medication use.

On initial evaluation, he was alert and oriented, but appeared uncomfortable. His initial vital signs were as follows: temperature was 35.7°C, heart rate was 86 beats/min, blood pressure was 127/77 mm Hg, respiratory rate was 18 breaths/min, and room air oxygen saturation as 98%. Physical examination revealed diffuse sweating. Comprehensive physical examination, including thorough cardiac and neurologic examinations, were normal.

The patient was initially treated with multiple doses of intravenous (i.v.) narcotics and antiemetics, but his pain

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Figure 1. Axial image from neck computed tomography angiogram shows high-density subarachnoid hemorrhage (long arrow) surrounding the spinal cord (short arrow).

Figure 2. Sagittal T1-weighted image of the cervical spine shows mildly hyperintense subarachnoid hemorrhage (arrow) anterior to the brainstem and upper cervical cord.

persisted. The initial portable chest radiograph showed no evidence of a widened mediastinum or other acute cardiopulmonary pathology. Initial complete blood count, coagulation profile, electrolytes, and cardiac markers were all normal except for an elevated blood glucose of 173 mg/dL. Initial electrocardiogram revealed sinus rhythm, but was otherwise nondiagnostic.

A computed tomography (CT) of the chest and abdomen with i.v. contrast (aortic dissection protocol) was obtained. A CT angiogram of the neck was also obtained because of radiation of pain to his neck. The initial CT imaging report was normal for all studies obtained. However, a subsequent reading of the neck CT recognized a radiographic hyperdensity suspicious for subarachnoid blood in the cervical spine (Figure 1). Dedicated magnetic resonance imaging (MRI) of the brain and spine was then obtained. This revealed diffuse intracranial and SSH predominately anterior to the brainstem with heterogeneous focus at the second and third thoracic vertebral (T2 and T3) levels, which was most consistent with loculated subarachnoid blood (Figure 2).

The neurosurgical service was emergently consulted. Their initial examination matched that of the ED providers, including an entirely normal comprehensive neurologic examination. Perineal sensation and rectal tone were normal. Conservative management was elected, and the patient was admitted to the neurosurgical intensive care unit for observation. Two days after admission, the patient developed bilateral lower-extremity weakness. A repeat MRI of the brain and spine obtained showed focal compression of the spinal cord at the T2 and T3 levels. The patient was emergently taken to the operating room for a T1–T5 thoracic laminectomy and decompression. Postoperative diagnosis included SAH mass with intramedullary extension causing cord compression and neurologic dysfunction. Pathology was consistent with hematoma. He underwent subsequent spinal angiography to evaluate possible bleeding sources. Angiography demonstrated no evidence of arteriovenous malformation (AVM) or other vascular abnormality. He was ultimately discharged to a rehabilitation facility with asymmetric reduction of motor function in the lower extremities: 4+ out of 5 (5-point scale) in the left lower extremity, and 1 out of 5 in the right lower extremity.

DISCUSSION

Acute onset of severe back pain is a common presentation to the ED, and the differential diagnosis is extensive. Although 90%–95% of patients presenting with acute