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Unique Case of “Post-Lumbar Puncture Headache”

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Abstract

Lumbar puncture (LP) is associated with complications that include post-LP orthostatic headache, local bleeding, and subdural hematoma. We report a unique case of a spontaneous frontal epidural hematoma following a therapeutic lumbar puncture in a patient with a history of idiopathic intracranial hypertension. This case highlights the importance of symptomatology in patients following LPs by revealing a rare intracranial presentation that would be devastating if not discovered promptly and appropriately managed.

Keywords

lumbar puncture; headache; epidural hematoma

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INTRODUCTION

Lumbar puncture (LP) complications include post-LP headache, intraspinal bleeding, and intracranial subdural hematoma (SDH). We present a patient who developed a severe headache from a spontaneous intracranial epidural hematoma (EDH) formation following a therapeutic LP for idiopathic intracranial hypertension (IIH). This is a rare and potentially devastating complication associated with a widely practiced procedure.

CASE PRESENTATION

A 24-year-old Caucasian female nurse with a history of IIH presented with nausea and worsening headache. There was no history of preceding trauma. Two days earlier, she underwent an LP (opening pressure of 30 cm H₂O with removal of 15 mL of cerebrospinal fluid [CSF]) to relieve an acute exacerbation of a headache typical in nature to her chronic IIH. However, within 24 hours after this LP, she developed a different type of headache that she described as localized to the right retro-orbital region, constant, and “the worst headache of my life.” Review of systems and the physical exam were otherwise unremarkable.

Past medical history was significant for previous obesity and a formerly positive IgM antiphospholipid antibody, although she has no history of thromboembolism. She smokes regularly, drinks alcohol socially, and denies illicit drug use. Her family history was noncontributory. Laboratory work, including coagulopathy panel, was normal except for a heterozygous prothrombin gene mutation (DNA antibody was 1.4× normal).

Vascular and structural head imaging, beginning the night of admission, revealed a right 4.5 × 2.2 cm subfrontal EDH not present on a comparison computed tomography (CT) head scan performed 5 days prior to LP. There was no evidence of skull fracture or vascular abnormalities. Because the hematoma was stable on serial scans (Figs. 1 and 2), neither neurosurgery nor anesthesiology consultations advised intervention. The patient’s retro-orbital headache was symptomatically treated until a follow-up brain CT done 24 days after LP demonstrated radiographic resolution of her frontal EDH.

DISCUSSION

In this case, we report a unique spontaneous intracranial EDH development in the context of rapid shifts in CSF pressure following LP. CSF hypotension is the culprit for the common orthostatic post-LP headache and has even, when especially severe, led to several documented cases of intracranial SDHs. Decreased buoyancy of the brain causes traction on supporting structures that tear bridging veins, leading to the SDHs. There have been no prior reports, however, of nontraumatic intracranial EDH following a traditional LP.

One report describes a patient who developed a spontaneous EDH from constant intraoperative lumbar CSF leakage during a thoracoabdominal aortic repair.¹ Jeong et al propose that excess CSF drainage may have triggered intracranial EDH in light of their patient’s superimposed risk factors (ie, anticoagulation during surgery and connective tissue abnormalities in Marfan syndrome). It is unclear if an analogous mechanism occurred in our patient, who has a prothrombin gene mutation and had undergone repeated therapeutic LPs

for chronic headaches secondary to IIH. Weakening of meningeal vessels may have played a role in our patient to produce an EDH, which is usually of arterial origin related to trauma.

REFERENCE

1. Jeong YB, Choi WJ, Han SH, Choi IC. Cerebral epidural hematoma following cerebrospinal fluid drainage during thoracoabdominal aortic repair. *Acta Anaesthesiol Scand.* 2009; 53:1221–1222. [PubMed: 19397497]

Fig 1.
Computed tomography-head (coronal) 3 days following lumbar puncture revealing right subfrontal epidural hematoma.

Fig 2.
Brain magnetic resonance imaging (sagittal) 7 days following lumbar puncture demonstrating stable hematoma.