

Postural Headache in the Presence of Cerebral Venous Sinus Thrombosis

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Cerebral venous sinus thrombosis (CVST) can present with a headache similar to that after a dural puncture. We report on a patient who developed postural headache after epidural anesthesia for delivery. The headache became more intense during the following 6 days, and the patient had a tonic clonic seizure. A magnetic resonance angiogram demonstrated CSVT, and anticoagulation

therapy was started, with resolution of the symptoms over 2 wk. Any postdural-puncture headache that loses its positional character, becomes persistent, or does not improve with a properly performed blood patch should raise the suspicion of CVST.

(Anesth Analg 2005;101:1499–500)

Cerebral venous sinus thrombosis (CVST) can present with a headache similar to that following a dural puncture. There have only been few reports of CVST occurring concomitantly with postdural puncture headache (PDPH). We present such a case.

Case Report

A previously healthy 23-yr-old woman presented to the emergency room with postdural headache. A week before her admission, she had had an uneventful vaginal delivery under epidural anesthesia. A few hours postpartum, the patient developed an occipital headache, which was provoked by sitting or standing and was relieved by lying down. The patient also had occasional blurry vision and flashes of light. The pain was partially relieved with nonsteroidal antiinflammatory drugs and Tylenol No. 3 (acetaminophen 300 mg and codeine 30 mg), and the patient was sent home 48 h after delivery.

Over the next 4 days, the pain became more intense and less responsive to oral analgesics. When she presented to the emergency room, she was afebrile, normotensive, and without neurologic deficits. The anesthesiologist on call was contacted, and the decision was made to perform an epidural blood patch. However, just before the procedure, the patient had a tonic clonic seizure. Lorazepam and phenytoin were administered. The patient was drowsy after the seizure but had no neurologic deficits. A cranial, noncontrast computed tomography scan revealed no acute bleeding. A lumbar puncture was performed using a 20-gauge

needle. The cerebrospinal fluid (CSF) showed no infective agents. Her arterial blood pressure was increased to 150/100 mm Hg, and magnesium and antihypertensives were started for possible postpartum eclampsia. The patient was admitted to the intensive care unit. On the next day, the patient's headache had worsened and was not completely relieved by lying down. Because of concern for CVST, magnetic resonance imaging (MRI) was performed, which revealed areas of hypointensity in the superior sagittal sinus and edema in the surrounding parenchyma compatible with venous thrombosis. The patient was anticoagulated with heparin and transferred to our institution for neurosurgical observation. A hypercoagulation workup revealed protein S deficiency.

Over the next 2 days, the patient continued to have postural headaches with dizziness, with no relief from IV caffeine or oral analgesics. The pain service was consulted at this point and asked to perform an epidural blood patch. However, as the patient was already anticoagulated and had no neurologic deficits, the decision was made not to perform the procedure at that time.

Over the next 2 days, the severity of the headache decreased, and it became nonpostural. Its distribution was mostly frontal and less occipital. Coumadin therapy was initiated, and the heparin infusion was tapered once the goal International Normalized Ratio (INR) of 2-3 was reached. The patient was discharged from the hospital 10 days after her readmission. A week later, her headache completely disappeared. She has now been headache-free and asymptomatic for more than 5 months.

Discussion

CVST is an uncommon complication of pregnancy with an incidence of between 1:3000 (1) and 1:10,000 (2). Factors that predispose to this condition include the hypercoagulable state of pregnancy and hereditary conditions, including factor V Leiden mutation,

Accepted for publication May 19, 2005.

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DOI: 10.1213/01.ANE.0000181003.37968.CB

deficiencies of protein C, protein S, and antithrombin III (3). Sinus thromboses related to pregnancy usually occur from the third trimester to four weeks postpartum (1). The main symptoms include headache, seizures, impaired consciousness, nausea, and vomiting (3). The diagnosis can be made by MRI. Prompt systemic anticoagulation is the mainstay of medical management and leads to good outcomes in most patients who present with intact sensorium. Patients with persistent CVST and neurologic deterioration despite optimal medical management are considered candidates for endovascular therapy (infusion of thrombolytics, mechanical thrombectomy, and angioplasty with stenting) (3).

There have been very few reports of CVST occurring concomitantly with PDPH (4–9). Because CVST can present with postural headache, the symptoms can often be confused with those of PDPH (10). In most cases, the patients received epidural blood patches and only after the failure to treat the headache were further diagnostic steps taken, which revealed the presence of CVST. Our case is unique in that we were faced with three possible causes for the patient's headache. The initial headache was probably caused by an unrecognized dural puncture; however, the worsening headache and change in pain character at the time of readmission were likely produced by the venous thrombosis. This is made more plausible by the fact that these changes occurred around the time when the patient had a seizure. It is also important to consider the diagnostic lumbar puncture as a contributing factor to the patient's headache at the time of evaluation by the pain service, because a 20-gauge needle can cause a significant CSF leak. Some authors have suggested that the intracranial hypotension resulting from a dural leak might predispose to CVST, especially in patients with hereditary prothrombotic conditions, because the hypotension leads to venous dilation and blood stasis (4,6). Whether a blood patch can prevent this complication is unknown.

We were faced with the dilemma of whether to continue the anticoagulation or stop it to perform an epidural blood patch. A prolonged CSF leak might be associated with persistent intracranial hypotension that can lead to intracranial hemorrhage (10). There have been few reports of subdural hematoma after neuraxial blocks (11,12). However, our patient did not

have any focal neurologic deficits at the time of consultation. An epidural blood patch would have required reversing the anticoagulation in the face of CVST, a condition associated with a 6%–18% mortality (13). These factors resulted in the decision to continue conservative management.

In conclusion, we present the case of a patient with postural headache after epidural anesthesia who developed CVST. CVST can mimic PDPH and should always be considered in the differential diagnosis, especially if the pain changes from positional to non-positional, indicating increased intracranial pressure. The timely institution of anticoagulant therapy might prevent neurological deterioration. Any PDPH that loses its positional character, becomes persistent, or does not improve with a properly performed blood patch should raise the suspicion of CVST.

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