Transient bladder and fecal incontinence following epidural blood patch

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ABSTRACT

Epidural blood patch (EBP) is the currently accepted treatment of choice for postdural puncture headache because of its high initial success rates and infrequent complications. Many authors recommended a small volume (10-20 mL) of blood to be delivered for an effective EBP. Here, we report an obstetric patient who developed a transient bladder and fecal incontinence after 19 mL of blood EBP at L₁-L₂ level. Since the magnetic resonance image did not demonstrate any definitive spinal cord lesion, the exact mechanism remains unclear. We suggest that accumulation of blood performed at L₁ to L₂ level in a closed relationship with the sacral cord, may have trigger a significant pressure elevation of the epidural space at this level, resulting in a temporal spinal cord-related injury in the sacral cord.

Key words: Complications, epidural anesthesia, epidural blood patch, magnetic resonance imaging, obstetric anesthesia, postdural puncture headache

INTRODUCTION

The incidence of headache after accidental puncture is as high or higher than 70% when large (17 gauge) epidural needles are used. Epidural blood patch (EBP) is the most effective treatment of postdural puncture headache (PDPH), with a reported cure rate of 33-66% after one blood patch and a low complication rate. Mechanism by which EBP is effective include a physical “patch” effect, in which injected blood directly forms a seal over a dural leak, a pressure effect where epidural pressure is transmitted to the cerebrospinal fluid (CSF) space alleviating a component of intracranial hypotension and the attenuation of initial cerebral vasodilatation. Here, we report an obstetric patient who developed a transient bladder and fecal incontinence after a lumbar EBP due to a PDPH.

CASE REPORT

A 33-year-old, 60 kg, 155 cm, G₁P₀A₀C₀ presented at 37 weeks of gestation in early active labor, requesting an epidural for analgesia. She had no significant medical history. With the patient in the sitting position and sterile conditions, a 18 G Tuohy needle was inserted at the L₁-L₂ interspace at the first attempt with loss of resistance. The needle was removed and immediately a epidural catheter was successfully inserted at the L₁-L₂ interspace at the first attempt, without problems. 10 mL of 0.25% bupivacaine plus 50 μg of fentanyl and 1% bupivacaine in continuous perfusion was given during labor. The patient delivered two healthy infants without incident and pain.

On postpartum day 1, the patient commenced with a positional headache, with neck pain and nausea. 3 days later, the headache was not relieved by intravenous analgesics and conservative therapies, and after the patient had consented, we decided to perform an EBP. With the patient in sitting position and under sterile conditions, a 18 G Tuohy needle was inserted at the L₁-L₂ interspace at the first attempt with loss of resistance.
technique without difficulty. 19 mL of autologous blood was injected until the patient complained lumbar pressure without incidences. 2 h later after supine bed rest and under a closed observation, the patient reported an improvement of the headache, and she was discharged to the ward.

A few hours later, the patient noted difficulty in micturating together with occasional fecal incontinence. Neurological examination did not show either back pain or diminished sensation to pinprick and light touch in the perineum and perineal area. Strength was normal in both legs. Commented with the neurologist and neurosurgeon, we decided to do a lumbosacral magnetic resonance imaging (MRI) that showed an accumulation of blood in the posterior epidural space extending from L2 to T12 without mass effect, in a closed relationship with the sacral cord and including the cauda equina nervous roots at L1 and L2 level (sagittal T2-weighted lumbar MRI, [Figure 1] and axial T2-weighted lumbar MRI, [Figure 2]).

After analyzing the MRI images with the neurosurgeon and because the images ruled out any compression or signal abnormality that could be expected with such symptoms, we decided medical treatment with prednisone 600 mg/day and dexketoprofen 100 mg/day together with close neurological examination. 12 h later, the patients started to feel a sense of fullness in her bladder, with a completed resolution of her symptoms 2 days later.

**DISCUSSION**

Epidural blood patch is the currently accepted treatment of choice for PDPH because of its high initial success rates, low failure rates, and infrequent complications. In our institution, we are used to inject between 15 and 20 mL.\(^3\)\(^4\) Size and compliance of the epidural space vary between patients, and smaller blood volumes may be required to produce a similar “pressure” effect between individuals. Larger blood volume has been associated with a higher rate of complications since a nonlinear relationship between blood volume and success rate has also been documented.\(^3\)\(^4\) Many authors recommended a small volume (10-20 mL) of blood to be delivered for an effective EBP\(^6\).

Our patient noted difficulty in micturating together with occasional fecal incontinence a few hours later after the EBP. Based on the neurological examination and in her MRI images, we could deduce that an associated, radiographically silent, transient sacral lesion may have contributed to her clinical signs. About 84% of suprasacral cord lesions with unexpected detrusor areflexia had sacral cord signs, such as saddle paresthesia and reduced rectal tone indicating combined sacral cord injury.\(^9\)\(^10\) We wonder if the accumulation of blood in the posterior epidural space in a closed relationship with the sacral cord and with the cauda equina nervous roots would have been trigger a significant pressure elevation of the epidural space, resulting in a temporal spinal cord related injury in the sacral cord. According Han et al.,\(^7\) even a small volume of injected blood could trigger a significant pressure elevation in the low compliance of the epidural space resulting in the spinal cord related injury. These authors described a 33-year-old female patient in whom long-term bladder and bowel dysfunction developed following 10 mL of EBP, suggesting that a show wave effect secondary to the displaced CSF at the injection site may have resulted in a sacral cord lesion. To this way, we have to realize that we performed the EBP at L\(_1\) to L\(_2\) level, and the clinical signs of our patient suggested that the most caudal part of the spinal
had been affected, supporting this hypothesis. However and according to this, we cannot rule out a mechanism of meningeal irritation due to the blood accumulated in the epidural space at this level.\(^{[8]}\)

Serious neurological compromise such as unexpected bladder and fecal incontinence may occur after EBP. Since the MRI image did not demonstrate any definitive spinal cord lesion, the exact mechanism remains unclear. We suggest that the accumulation of blood in the posterior epidural space, secondary to the EBP performed at L\(_1\) to L\(_2\) level in a closed relationship with the sacral cord, may have triggered a significant pressure elevation of the epidural space at this level resulting in a temporal spinal cord-related injury in the sacral cord.

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