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Case report

Fluoroscopy-guided caudal epidural blood patch for relieving post-dural puncture headache after lumbar spine surgery

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KEYWORDS

Caudal;
Epidural blood patch;
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Fluoroscopy

Abstract *Objective:* Epidural blood patch is indicated to treat post-dural puncture headache (PDPH). When it was difficult to approach from lumbar area due to surgical wound or scar, we attempted to perform epidural blood patch from caudal hiatus.
Case report: A 41-year-old woman had undergone spinal surgery because of L5-S1 spondylolisthesis. After surgery, she complained of posture-related headache and dizziness. Conservative management (fluid-supply, bed rest, and pain control) was attempted, but no improvement. Initially we did lumbar epidural autologous blood patch from the level of L3-4, but in vain. Because the lesion (dural tear) might be located at the level of L5-S1 according to statement of surgeon, we performed caudal epidural autologous blood patch to manage her PDPH under guidance with fluoroscopy. After this treatment, her symptoms dramatically improved.
Conclusions: The results indicated that fluoroscopically guided caudal epidural blood patch could treat lower lumbar epidural tear after spinal surgery.

1. Introduction

Post-dural puncture headache is common complication after epidural needle puncture and incidence developed in 50% or more of patients. After spine surgery, PDPH developed if dural tear was existed. Generally, conservative treatments such as bed rest, analgesics, hydration, and caffeine could relieve headache in most of patients. In other way, cerebral vasoconstrictors, theophylline, sumatriptan and ACTH were also reported to improving symptom. In some cases, conservative medical treatments could not improve headache and epidural blood patch injection was done to obstructing dural tear. Increasing CSF pressure and blood clot inducing cerebral vasoconstriction was thought to relieve headache. In clinical situation, 15–20 ml of autologous blood was injected to lumbar epidural space. But in our intractable cases, lumbar epidural blood patch was not improving headache. The patient undergone L4–S1 spine surgery and had post dural puncture headache. She received L3–L4 blood patch but symptom had no improvement. Due to the fact that lesion site was highly suspected in L5/S1, we decided to perform caudal epidural blood patch.

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2. Case report

A 41-year-old woman had undergone spinal surgery because of L5-S1 spondylolisthesis. Three days later after operation, she complained of posture-related headache and dizziness. She felt severe headache when sitting and standing. The amount of drainage fluid increases to 400 ml per day and the color of fluid changed from bloody to clear.

Conservative management (fluid-supply, bed rest, and pain control) was attempted for 12 days with no improvement with her posture-related headache. The epidural blood patch was recommended. First time, lumbar epidural blood patch with 25 ml of autologous blood at L3-4 level was attempted but no improvement of headache.

According to surgeon's statement, the site of leakage might be at the level of L5-S1. The trial of caudal epidural autologous blood patch was done. With the patient in prone position, her sacral hiatus was identified under fluoroscopy. The 18-gauge Tuohy-Schliff needle was inserted by median approaches to the sacral hiatus under guidance with fluoroscopy (Fig. 1). The 10 ml of autologous blood with 3 ml of contrast medium (Omnipaque) was injected to confirm the distribution of contrast medium. An additional 25 ml of autologous blood was slowly injected. The autologous blood and contrast medium were limited below the level of L5-S1 (Fig. 2). The patient's postural headache improved after caudal epidural injection. The amount of drainage fluid dramatically decreased from 400 ml per day to 200 ml per day.

Three days later, we performed caudal epidural blood patch again with 30 ml of autologous blood and 3 ml of contrast medium (Omnipaque). The tube of drainage was removed at the same time. The patient's headache was totally cured and she was discharged from hospital two days later with complete resolution of symptoms.

3. Discussion

Initially, we attempted to treat this patient's PDPH via lumbar epidural approach at the level of L3-4 but in vain. Adhesion in epidural space might obstruct the flow of autologous blood from the space of L3-4 to the lesion site (L5-S1). There were surgical wounds at the level of L4-S1; therefore, it was difficult to approach at these levels.

In previous reports [1,2], they used a catheter to inject the autologous blood. We did not set an epidural catheter due to several reasons. First, according to previous reports, a catheter may cause radicular symptoms such as numbness [1]. Second, the catheter's lumen is too tinny to inject high viscosity fluid such as blood. Third, the lesion site is highly suspected at the level of L5-S1. Caudal approach was close to lesion site and the catheter replacement might not be necessary.

In Gerancher et al. study, a parturient with difficult lumbar epidural approach had PDPH and had relief after having caudal epidural blood patch successfully. The study gave us an inspiration to consider caudal epidural blood patch for difficult approach epidural access [1]. After reviewing literatures, no radiologic finding to evaluate the level of caudal epidural blood clot but fluoroscopy-guided lumbar epidural blood patch was performed in Kawaguchi et al. study [3,4]. Those studies gave up an idea to mix contrast media to autologous blood for caudal epidural blood clot. In this way, it might help us to evaluate what the level of autologous blood works. In

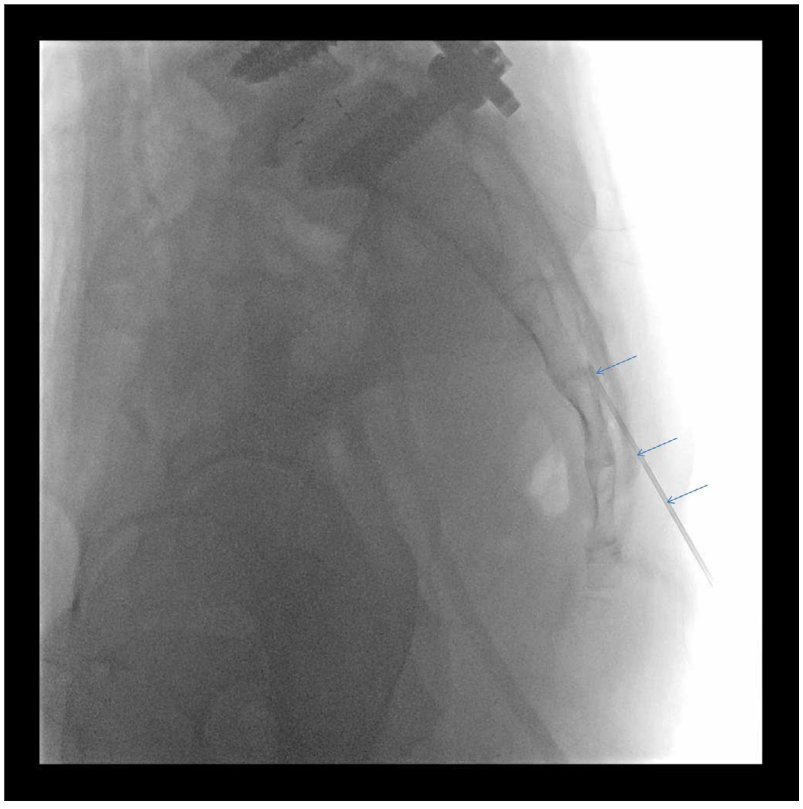

Figure 1 The 18-gauge Tuohy-Schliff needle (arrow) was inserted into the sacral hiatus.

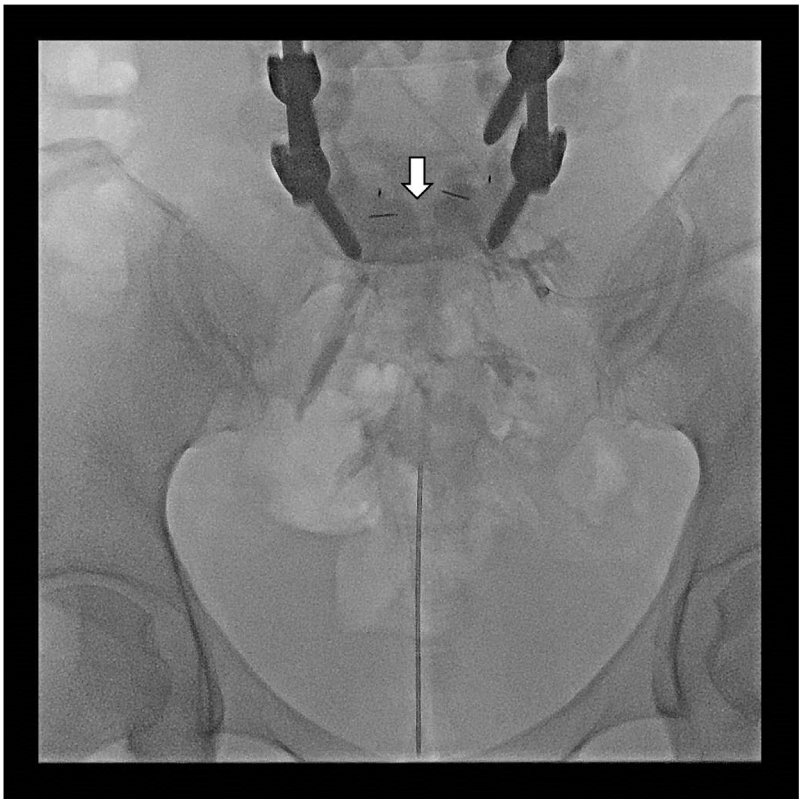

Figure 2 The blood with contrast medium (arrow) only achieved to the level of L5-S1 from caudal hiatus.

general, 15–20 c.c. epidural blood patch was performed if no fluoroscopy guide and fluoroscopy may help us to decrease the blood volume to achieve the effect. It is more confirmed to the level of epidural blood patch if fluoroscopy-guided.

When it is difficult to inject blood patch through lumbar epidural space, the caudal hiatus approach may be another choice. PDPH was originating from lower lumbar spine surgery, the leakage site below the accessible level, and caudal epidural might have a role to improve symptom.

Conflict of interest

The authors declared that there is no conflict of interest.

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