

Letters to the editor

Syncope after therapeutic caudal epidural block: report of two cases

Hiroshi Sunagawa and Takanori Murayama

Department of Anesthesiology and Critical Care Medicine, Jichi Medical School, Omiya Medical Center, 1-847 Amanuma, Omiyaku, Saitama 330-8503, Japan

To the editor: Caudal epidural injection of local anesthetics is a commonly used technique to relieve lower back pain and sciatica. In certain conditions, however, the epidural injection may increase intracranial pressure (ICP) [1–5], and reduce both cerebral blood flow (CBF) and spinal cord blood flow (SCBF) [6]. These physiologic changes are occasionally manifested as altered mental status, with transient loss of consciousness. Due to the relatively wide space of the sacral canal [7,8], the increase in ICP is less with a caudal epidural injection than with a thoracic or lumbar epidural injection [5]. In patients with severe spondylosis and spinal canal stenosis, however, a caudal epidural injection can cause an acute increase in ICP and altered mental status. Here we report two patients with severe spondylosis in whom there was an acute increase in ICP after caudal epidural block.

The first patient was a 75-year-old woman (150 cm in height, 52 kg in weight), who presented with complaints of lower back pain and sciatica secondary to spondylosis and lumbar spinal canal stenosis. The patient was otherwise healthy, and had been treated with two caudal epidural blocks by one anesthesiologist at our clinic. A third caudal epidural block was planned by the same anesthesiologist, and the patient was placed in the left lateral decubitus position. A 2.5-cm 23-gauge needle with syringe was introduced into the caudal epidural space through the sacral hiatus. After a negative aspiration test, 14 ml of 1% mepivacaine was injected over 1 min. The anesthesiologist inadvertently injected the solution somewhat faster than in the previous two blocks. Immediately after the injection, the patient suddenly became unresponsive, without convulsion. Systolic blood pressure increased to 170 mmHg and heart rate remained at 76 bpm. Respiration was unaffected. Approximately 1 min after the injection, her mental status recovered, without any neurological sequelae, except for mild transient headache. Adequate analgesia with

an L1 level sensory block was achieved 30 min after the injection.

The second patient was a 77-year-old woman (152 cm, 43 kg) who, at her initial visit to our clinic, had complaints of lumbago and melalgia. Her medical history was unremarkable except for osteoporosis and severe diffuse spondylosis. A caudal epidural block was performed, with the patient in the left lateral decubitus position. Anatomical landmarks were easily identified, and 20 ml of 0.5% mepivacaine, mixed with 125 mg methylprednisolone was injected through the sacral hiatus with a 3.2-cm 22-gauge needle. As soon as the injection was completed, the patient complained of headache and nausea. Within 2 min, the patient became unconscious, and hypertensive (systolic blood pressure was 220 mmHg), and showed bradycardia (60 bpm). A few minutes later, her mental status improved, and she was taken to have brain computed tomography (CT). No convulsion was noted throughout this syncopal episode, and an adequate sensory block was achieved. The brain CT was negative.

Both patients were discharged home without any sequelae after a 2-h stay in the recovery unit.

A few cases of syncopal episodes after caudal epidural injections have been reported in the past [7,9]. In one report [9], a huge volume (60 ml) was injected into the epidural space, while in another [10], the patients had brain tumors and increased ICP. In old patients with spondylosis, the escape routes from the epidural space are considerably narrow, and the epidural compliance is considered to be low [2,5]. Although the injection volume in our practice was modest, there is no doubt that our technique triggered the transient syncopal attacks in the present two patients with severe spondylosis. Therefore, one could assume that the injection into the low-compliant extradural space triggered an increase in ICP, a decrease in CBF, and the altered mental status. In future practice, the speed and volume of caudal epidural injections should be specifically tailored for older patients with severe spondylosis.

References

1. Hirabayashi Y, Shimizu R, Matsuda I, Inoue S (1990) Effect of extradural compliance and resistance on spread of extradural analgesia. *Br J Anaesth* 65:508–513

2. Paul DL, Wildsmith JAW (1989) Extradural pressure following the injection of two volumes of bupivacaine. *Br J Anaesth* 62:368–372
3. Asano M, Kosaka Y (1986) Changes of epidural pressure and cerebrospinal fluid pressure during abnormal surgery (in Japanese with English abstract). *Masui (Jpn J Anesthesiol)* 35:1694–1700
4. Hilt H, Gramm HJ, Link J (1986) Changes in intracranial pressure associated with extradural anaesthesia. *Br J Anaesth* 58:676–680
5. Usubiaga JE, Usubiaga LE, Brea LM, Goyena R (1967) Effect of saline injection on epidural and subarachnoid pressure. *Anesth Analg* 46:293–296
6. Grocott HP, Mutch WAC (1996) Epidural anesthesia and acutely increased intracranial pressure. Lumbar epidural space hydrodynamics in a porcine model. *Anesthesiology* 85:1086–1091
7. Woo YP, Massengale M, Macnamara TE (1979) Age, height, and speed of injection as factors determining caudal anesthetic level, and occurrence of severe hypertension. *Anesthesiology* 51:81–84
8. Burn JM, Guyer PB, Langdon L (1973) The spread of solutions injected into the epidural space. *Br J Anaesth* 45:338–345
9. Semple AJ, Bisset WIK (1985) Transient loss of consciousness after therapeutic caudal block. *Anaesthesia* 40:380
10. Abouleish E (1987) Intracranial hypertension and caudal anesthesia. *Br J Anaesth* 59:1478–1479

Address correspondence to: H. Sunagawa

Received: March 28, 2005 / Accepted: December 23, 2005