

## Letters to the Editor

Additionally to the main directions mentioned above, ICPCN plans to create the e-learning modules on the ICPCN web site in a number of languages to educate professionals in pain management linked to the WHO Guidelines; an advocacy to increase access to palliative care and analgesics for children and promotion of this as a human right; distribution of the information on developments through e-Hospice and actual face-to-face trainings; a global advocacy campaigns to raise awareness of the need for and benefit of palliative care for children.

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## Pneumorrhachis and Pneumocephalus with Severe Chest Pain Symptom: A Rare Complication of Epidural Steroid Injection

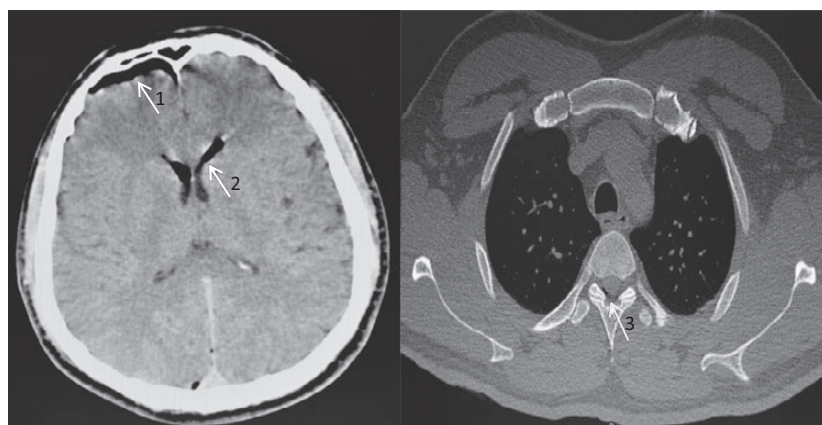
It has been presented at 47th Turkish Society of Anesthesiology and Reanimation Congress as a poster presentation.

Dear Editor,

Pneumorrhachis and pneumocephalus are unusual complications of inadvertent dural puncture. We present the case of pneumorrhachis and pneumocephalus in a patient with lumbar spinal stenosis who was performed epidural steroid injection by using loss of resistance technique to air.

A 37-year-old man with the history of spinal stenosis, low back pain, bilateral leg pain, and neurogenic claudication was performed epidural steroid (80 mg metil prednisolone) injection in another pain clinic. He complained of severe

chest pain and headache approximately 1 hour after epidural injection in the recovery room. The anesthesiologist who attempt epidural steroid injection did not mention about accidental dural puncture. The patient was admitted to our intensive care unit (ICU) with suspected pulmonary embolism based on medical history given by the anesthesiologist. His hemodynamic findings revealed blood pressure, 145/75 mm Hg; heart rate, 88 beat/minutes; and peripheral oxygen saturation, 98%. Neurological examination was normal. Cranial computer tomography (CT) images showed air densities in the left lateral ventricle frontal horn and the right frontal dural space. Thorax CT demonstrated millimetric air densities in the thoracic and lumbar segments of spinal canal and adjacent to L2 vertebral spinous process (Figure 1). Symptomatic treatment (intravenous fluid, dexamethasone, analgesics) was given at the ICU follow-up. Intracranial air resorption was



**Figure 1** Arrow 1: air in the right frontal dural space. Arrow 2: air in the left lateral ventricle frontal horn. Arrow 3: millimetric air densities in the thoracic spinal canal.

**Hur et al.**

confirmed with control CT scan. The patient was discharged fully asymptomatic on the third hospital day.

Epidural steroid injections are widely used for treatment of symptomatic lumbar spinal stenosis. Corticosteroids are expected to reduce inflammation and contribute pain relief [1]. Loss of resistance technique by using air or saline is ordinarily performed to identify epidural space. If dural puncture occurs, pneumocephalus is a potential complication of loss of resistance to air [2]. Sudden onset of headache after epidural procedures is the characteristic symptom of pneumocephalus [3]. Treatment is symptomatic and includes hydration, dexamethasone, caffeine, analgesics, and oxygen therapy [2].

Pneumorrhachis is a rare complication and defined as presence of air in the spinal canal. Traumatic, nontraumatic, or iatrogenic factors can cause pneumorrhachis. The course of pneumorrhachis is usually asymptomatic, and air reabsorbs spontaneously [4]. In the literature, neurologic deficits associated with pneumorrhachis such as acute nerve root compression or cauda equina syndrome have been reported after epidural analgesia procedure when loss of resistance technique to air technique was used. The use of normal saline in the loss of resistance technique decreases morbidity [5]. However, our patient did not have any neurologic disorder, and main symptoms were severe chest pain and headache. The symptom of severe chest pain has given rise to confusion about clinical status of the patient and was thought as pulmonary embolism. Pneumorrhachis and pneumocephalus were determined after clinical and radiologic evaluation. We consider that chest pain may occur because of the air in the thoracic segments of the spinal canal.

In conclusion, combination of pneumorrhachis and pneumocephalus is an extraordinary complication of

epidural steroid injection. If a patient complains about sudden headache and atypical symptoms such as chest pain without neurologic findings after epidural procedures, anesthesiologists should be aware of pneumorrhachis and pneumocephalus. Diagnosis should be confirmed with cranial and thoracic CT scans.

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**References**

- 1 Brown LL. A double-blind, randomized, prospective study of epidural steroid injection vs the mild® procedure in patients with symptomatic lumbar spinal stenosis. *Pain Pract* 2012;12(5):333–41.
- 2 McMurtrie R, Jan R. Subarachnoid pneumocephalus: a rare complication of epidural catheter placement. *J Clin Anesth* 2002;14(7):539–42.
- 3 Kawamata T, Omote K, Matsumoto M, et al. Pneumocephalus following an epidural blood patch. *Acta Anaesthesiol Scand* 2003;47(7):907–9.
- 4 El-Halabi D, Alkandari T, Yaktien MM. Traumatic air in spinal canal (pneumorrhachis). *Anaesthesiology Intensive Therapy* 2012;44(1):25–7.
- 5 Shenouda PE, Cunningham BJ. Assessing the superiority of saline vs air for use in the epidural loss of resistance technique: A literature review. *Reg Anesth Pain Med* 2003;28(1):48–53.

## Spontaneous Air Reduction of Vertebra Plana with Kummell's Disease During Vertebroplasty: Subsequent Experience with an Intentional Trial

Dear Editor,

Kummell's disease, known as the delayed posttraumatic osteonecrosis of the vertebral body, is characterized by a vertebral compression fracture with osteonecrosis. Necrotic changes cause air or fluid collection in the fractured vertebra, which shows a pathognomonic radiologic finding "intravertebral vacuum cleft" [1]. Vertebral augmentation procedures, such as vertebroplasty (VP) and kyphoplasty (KP), are well known to be effective in managing vertebral compression fractures [2]. However, vertebra plana, meaning severe or complete vertebral body collapse, is a relatively contraindication for these

procedures because of technical difficulty and the increased risk of bone cement leakage [3].

In this letter, we present an intentional trial of spontaneous reduction of vertebra plana with Kummell's disease. This procedure was performed after we encountered an accidental air reduction when a bone access cannula advanced into the intravertebral vacuum cleft [4].

A 73-year-old woman presented at our pain clinic complaining of aggravating low back pain for a duration of 1 week (visual analog scale [VAS] was more than 7/10) that was made worse while sitting or walking. One year ago,