
Post-operative seizures after spine surgery: A dilemma

Sir,

Seizures are a common complication in Neurosurgical Intensive Care Unit (ICU), occurring frequently after intracranial surgery but seldom reported after spine surgery. We report two patients who suffered generalised seizures following spine surgery.

Our first case was a 36-year-old male diagnosed with atlantoaxial dislocation and basilar invagination who underwent transoral odontoidectomy and posterior fixation (TOO and PF). As per our institute protocol, the patient was shifted to the neurosurgical ICU for

overnight elective mechanical ventilation and was extubated on the 1st post-operative day (POD). After an hour, he suddenly developed generalised tonic-clonic seizures. Intravenous (IV) midazolam (3 mg) was administered to abort the seizures. Arterial blood gas (ABG), blood sugar and electrolytes were normal. The patient was given loading dose of 750 mg phenytoin as a slow IV infusion. A computed tomography (CT) scan head was done which was normal. He became fully conscious after 1 h. During inspection of the surgical wound, surgeon noticed that serosanguinous fluid oozing from the suture site. On the basis of CT scan cervical spine, a small rent was suspected in dura due to the tip of fixation screw [Figure 1]. The patient had no new episode of seizures and was discharged on POD15 with Glasgow coma scale score of 15 and motor power 4/5 both upper limb and 5/5 lower limbs.

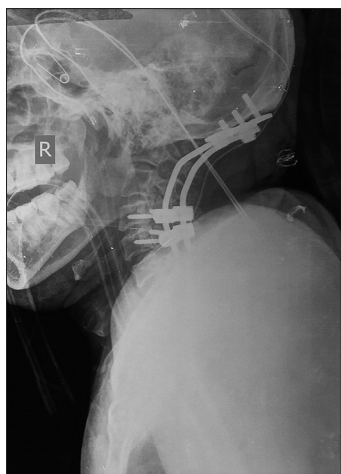


Figure 1: Computed tomography scan cervical spine showing tip of fixation screw close to dura

Our second case was a 4-year-old female who was diagnosed to have low lying tethered cord and was scheduled for detethering. During closure, surgeon washed the region with 300 ml of normal saline mixed with 40 mg gentamicin. Three hours after tracheal extubation; in the ICU, she suddenly developed generalised tonic-clonic seizures and became unresponsive. Immediately, midazolam 2 mg IV was administered for the cessation of seizures and patient's trachea was reintubated using IV propofol injection. ABG, blood sugar and electrolytes were normal. A loading dose of 300 mg phenytoin as a slow IV infusion was started. CT scan of head showed no abnormal findings. The patient regained consciousness after 1 h. After elective ventilation for a day, trachea was extubated on POD 1. Rest of the post-operative period was uneventful, and she was discharged from hospital on the 6th POD, neurologically intact and no new deficit.

The possible causes of generalised seizures may be multifactorial such as pneumocephalus, subdural haemorrhage following cerebrospinal fluid (CSF) leak, epilepsy disorder, post-meningitis, cerebrovascular disease, hyponatremia or allergy to contrast medium.^[1-3] All metabolic causes and above-mentioned factors were ruled out. Although CSF leak is usually benign, the associated intracranial hypotension can result in complications such as subdural haemorrhage and seizures. CT scan head is relatively less sensitive for diagnosis of intracranial hypotension as compared to magnetic resonance imaging (MRI). The typical finding of intracranial hypotension on MRI is pachymeningeal enhancement but is not a rule and may be absent because of some dynamic changes

depending on the time of imaging and hydrostatic pressure changes.^[4] A minor rent in dura from screw tip used for rod fixation may have led to slow leakage of CSF from wound site which resulted in seizures subsequent to intracranial hypotension even in the absence of typical radiological findings. Nursing the patients in head up position after extubation may have exaggerated the intracranial hypotension. The patient had complained of headache once he became alert, which also suggests intracranial hypotension. Direct visualisation of fluid discharging from wound also makes intracranial hypotension as the most likely cause of seizures in this patient. In our second case, there was no evidence of hypoxia, hypotension or use of any epileptogenic agent and CT head was also normal. Few antibiotics such as penicillin, rifampicin, isoniazide used for perioperative wound irrigation to counter local infection can also induce seizures. Gentamicin solution was used to irrigate the wound before closure in our patient. However, this is a routine protocol at our institute, and we have not encountered seizures in other cases where it has been used. Spinal cord neurons are known to get electrically polarised similar to those in the cerebral cortex neurons, leading to spinal cord seizures.^[5] Thus to some extent, manipulation of the spinal cord during surgery may itself act as an epileptogenic stimulus causing post-operative seizures. Intracranial hypotension and spinal stimulation are the likely events eliciting spinal seizures in our patients. The possibility of seizures both ictal and non-ictal should be kept in mind during the management of patients with intraoperative CSF leak.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Access this article online	
Quick response code	Website: www.ijaweb.org
	DOI: 10.4103/ija.IJA_786_17

How to cite this article: Kaushal A, Kumar S, Mahajan C, Kapoor I, Prabhakar H. Post-operative seizures after spine surgery: A dilemma. *Indian J Anaesth* 2018;62:315-7.

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