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Case Report

Neurological deterioration after spinal anaesthesia: a rare mode of presentation of spinal tumours

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ABSTRACT

Spinal anaesthesia is a safe and widely performed mode of anaesthesia with low complication rate. It may however be complicated infrequently with neurological deterioration as a result of injury to nerve root and spinal cord or epidural haematoma. Rarely neurological deterioration may occur following spinal anaesthesia in the presence of spinal tumours. We presented a case of neurological deterioration following spinal anaesthesia for caesarean section in a patient with previously undiagnosed thoracic spinal tumour.

Keywords: Spine, Tumour, Neurological deterioration, Anaesthesia

INTRODUCTION

Spinal/epidural anaesthesia is well tolerated with low rate of attendant complications.[1] It is the widely preferred mode of anaesthesia in performing caesarean section and a number of orthopaedic procedures in the lower extremities.[2] Neurological deterioration following spinal anaesthesia is infrequent but could be devastating to the patient.[3] It may be due to injury to the nerve root or a low-lying cord, spinal epidural hematoma, or drug- and dosage-related complications.[3,4] Less frequent is the deterioration in the presence of a previously undiagnosed spinal tumour.[1,3] Even less reported is neurological deterioration in the presence of intradural-extramedullary tumours.[5,6] We presented a patient with previously undiagnosed thoracic meningioma who developed numbness and paraplegia following spinal anaesthesia for caesarean section.

CASE REPORT

A 29 year old woman who had spinal anaesthesia for emergency caesarean section because of obstructed labor at a peripheral hospital. She developed paraparesis and numbness of the lower limbs five hours after the surgery. Thoracic spine MRI showed a contrast enhancing extramedullary tumour at the level of fourth thoracic vertebra. She was referred to one of the neurosurgical centres in the country but presented to the traditional healers instead. Her symptoms progressed and she became paraplegic after two weeks. She presented to our hospital with spastic paraplegia and bisphincteric dysfunction 2 years after onset of symptoms. The sensory level was T4. We performed T4-5 laminectomies and gross total tumour excision. The tumour histology was meningothelia meningioma. She has made some neurological improvement 3 months after surgery. The power in the lower limbs is now grade 1-3. She is currently undergoing physiotherapy.

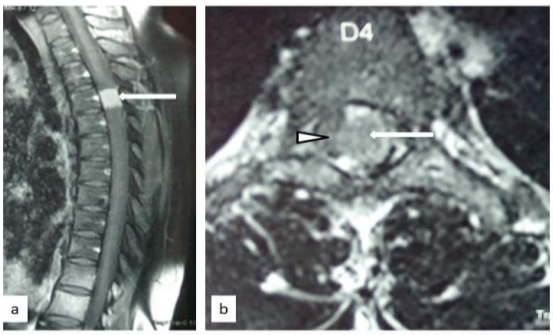

Figure 1: Thoracic MRI of the patient; sagittal T1 + contrast (a) and axial T2 (b) thoracic magnetic resonance images of the patient showing the tumour (arrows) and the displaced and compressed spinal cord (arrow head).

DISCUSSION

Spinal tumours are relatively rare, accounting for 1-3 percent of all central nervous system tumours.[7] They can be classified as extradural, intradural-extramedullary, or intradural-intramedullary. Spinal tumours may present with motor, sensory or autonomic deficits as a result of spinal cord or nerve root compression. Rarely, neurological deterioration following lumbar puncture may be the first presentation of a previously undiagnosed spinal tumour.[3,6] The earliest report of this phenomenon was by Eaton et al 1940 who reported sudden paralysis following lumbar puncture in a patient with an extramedullary spinal tumour.[8]

Several mechanisms have been proposed for this deterioration. Elsberg proposed that the removal of the CSF buffer between the tumour and the spinal cord caused one to fall on the other leading to injury to the cord.[9] Nicholson reported the obstruction of cerebrospinal fluid by space occupying lesions as the cause of neurological complications. He proposed that the injected drug cannot be diluted and stagnated with consequent accumulation of drug which can cause neurological toxicity.[10] Impaired venous drainage from the spinal cord below the level of spinal cord tumour due to engorged epidural veins exacerbated by lumbar puncture has also been suggested as the mechanism for neurological deterioration in this setting by Hollis.[11]

Jooma et al coined the term spinal coning in 1984.[12] They described spinal cord dysfunction in four patients with spinal cord tumours following insertion of shunt for hydrocephalus. Though deterioration followed ventricular shunting in their patients, they suggested that the term can be used for neurological deterioration following removal of CSF below the spinal lesion as well. Spinal coning results from the movement of spinal tumour and spinal cord relative to each other due to sudden change of pressure differences above and below the level of block, which may cause impaction of the tumour against the cord and subsequent neurological deterioration.[12]

Spinal cord tumours may present with motor, sensory or autonomic symptoms but may sometimes be asymptomatic.[3,6] Our patient had not reported any symptom before she had spinal anaesthesia. It will not be cost effective or universally possible to obtain spinal MRI for all patients undergoing spinal or epidural anaesthesia. We suggested detailed neurological evaluation before and after spinal anaesthesia with a view to identifying signs of spinal cord compression so as to prevent post procedural deterioration or enable prompt intervention.

Our case also highlighted the role being played by poor health literacy and poverty in the outcome of neurological diseases in developing countries. Our patient was promptly diagnosed and referred to a neurosurgical centre before the establishment of our unit. She however presented to traditional healers because of financial constraint. She only came to us when there was no improvement in her symptoms after 2 years despite deployment of fast financial resources for the traditional care. Although the health system in the resource challenged countries of the world is far from ideal and specialist care centres especially neurosurgical ones are not universally accessible, a functional health insurance scheme will go a long way in improving accessibility of a larger proportion of the population to better health care.

CONCLUSION

Although rare, neurological deterioration following spinal anaesthesia may be the first presenting features of a spinal cord tumour. All physicians managing patients undergoing this procedure should be aware of this fact. A detailed neurological evaluation before and after spinal anaesthesia will go a long way in pre procedural diagnosis of patients at risk and prompt intervention in patients with post spinal anaesthesia neurological deterioration.

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