

Lateral Medullary Syndrome Caused by Prone Position for Spine Surgery

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We report a rare case of Wallenberg's lateral medullary syndrome caused by prone position for spine surgery. A 48-year-old man developed Wallenberg's syndrome characterized by involuntary myoclonic movements, ataxia on his left side, hyperalgesia and cold sensation on his right side after prone position for general anesthesia for the spinal stenosis L3-L4, L4-L5. Brain computed tomography scan was immediately performed and showed negative findings, but magnetic resonance image (MRI) demonstrated brain infarction on the left medulla. Emergent heparinization was performed and his motor power and sensation returned to normal and discharged with stable and satisfactory recovery after 16 days.

KEY WORDS : Lateral medullary syndrome · Prone position.

Introduction

Complications associated with prone positioning of patients for spine surgery are not rare. The main complications associated with prone position include ocular and auricular injury, venous air embolism, ischemia of skin at pressure points, and excessive joint flexion and extension⁴. However, complication associated with cerebral infarction, especially in the posterior circulation, has not been reported. We report a rare case of postoperative Wallenberg's lateral medullary syndrome after prone position for lumbar spine surgery. The mechanism and treatment are discussed with a review of literatures.

Case Report

A 48-year-old, 78kg man was admitted for surgical procedure of a decompressive sublamina ligamentectomy. He had a history of diabetes mellitus with medication for 3 years but routine preoperative clinical assessment and laboratory findings including serum glucose level were all normal. Tracheal intubation via fiberoptic bronchoscope was performed smoothly. General anesthesia was augmented with IV thiopental 240mg, rocuronium 50mg, and isoflurane in oxygen (FiO₂ 0.4). Then the patient was carefully turned

onto the prone position. The sublamina ligamentectomy was performed without any problem within 120 minutes. The patient was changed to the supine position at the end of the surgery. Heart rate, blood pressure, and body temperature were maintained at preoperative value during the operation. After reversing of the residual ne-

uromuscular blockade, the patient was awake and tracheally extubated in the operating room. As soon as the patient was transported to the ward, the operator first noticed involuntary myoclonic movements of the patient's left arm and leg. Meanwhile, the patient also complained ipsilateral ataxia of his left side, hyperalgesia and cold sensation of his right side. Brain computed tomography scan was performed immediately but showed negative findings. MRI and magnetic resonance angiography (MRA), performed 6 hours later, demonstrated

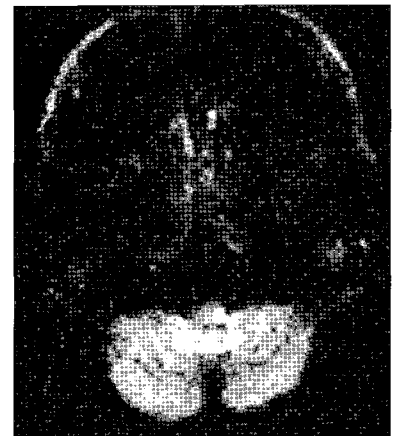


Fig. 1. Diffusion weighted magnetic resonance image shows hyperintensity at dorsolateral medulla on the left side.

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the brain infarction on the left medulla oblongata (Fig. 1). Under the impression of lateral medullary syndrome, he received 15,000 unit heparin for 5 days and regular rehabilitation therapy. In addition, further examination with electroencephalogram (EEG) and echocardiogram showed no abnormalities. There was considerable improvement in his neurologic status during the admission. The symptoms associated with lateral medullary syndrome subsided gradually. His motor power and sensation returned to normal and discharged with stable and satisfactory recovery at days after the stroke.

Discussion

Lateral medullary syndrome, also known as “posterior inferior cerebellar artery syndrome,” or “Wallenberg’s syndrome,” is one of the best recognized among several syndromes of the brainstem strokes. Although originally described as secondary to occlusion of the posterior inferior cerebellar artery, the vertebral artery is more often involved²⁾. Postoperative strokes are rare and most postoperative strokes involve the carotid artery territory, most often in the territory of a middle cerebral artery. It causes unilateral weakness, language, and behavioral changes that are easy to recognize. Vertebrobasilar strokes are more heterogeneous and often incorrectly diagnosed^{1,7)}. The age at onset is most often in the sixth or seventh decade of life, and concomitant risk factors, such as hypertension, diabetes, and vascular atherosclerosis are frequent⁵⁾. However there are increasing reports that young adults are also susceptible when there is cranio-cervical trauma or manipulation^{3,6)}. Tettenborn et al.⁸⁾ also suggested that potentially embolic material is deposited within the vertebral system as a result of extension and rotation of the neck in the anesthetized patients. Postoperatively, the material is dislodged, carried intracranially, and causes strokes. The vertebral arteries are vulnerable to mechanical injury at three sites : during ascent in the foramen of the cervical vertebrae, at the junction of the axis and the atlas, and as they pass over the atlas at the cervicocranial junction to enter the skull. Here the arteries are especially susceptible to stretching and shearing forces. Thus, sudden rotation of the head, hyperextension, and sudden acceleration-deceleration movements are likely to cause injury or obstruction. In our case, although the patient had a diabetes as a predisposing factor, MRA demonstrated normal findings except mild stenosis in left vertebral artery without evidence of cardioemboli or vertebral artery atheromas. Therefore, we presume that, during

repositioning, head rotation or hyperextension obstructed the flow of the vertebral artery at the neck and led to hypoperfusion of this areas. In addition, vasoconstriction and relative hypoperfusion related to general anesthesia might have aggravated the overall perfusion. The manifestation of lateral medullary syndrome is broad and includes numbness, dysphagia, vertigo, nausea, hoarseness, hiccups, facial pain, visual disturbance, etc. The clinical features of lateral medullary syndrome are so dramatic that the diagnosis usually is straightforward. But diagnosis can be confounded in the postoperative period. Decreased alertness, bilateral or diffuse weakness, dizziness, dysarthria, nausea, hoarseness, and ataxia are common postoperative problems and are often explained by anesthetic, metabolic, and drug-related causes. Our patient initially presented involuntary myoclonic movements, contralateral hyperalgesia, and contralateral cold sensation. Our patient initially presented with the involuntary myoclonic movements. This prompted a detailed neurologic physical examination and led to the suspicion of lateral medullary syndrome. We must keep in mind that the prone position for general anesthesia may be a risk factor of this potential complication.

Conclusion

We report a rare case of lateral medullary syndrome caused by prone position for spine surgery. Neurological recovery was achieved by the prompt diagnosis and rapid anticoagulation therapy.

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