

Transient brachial monoparesis following epidural anesthesia for cesarean section

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Abstract

Monoparesis following lumbar epidural block is a rare occurrence, with few cases reported in the literature. We report development of transient brachial monoparesis following epidural anesthesia in a parturient for cesarean section. The patient received a mixture of 15 mL of 2% lignocaine with 50 mcg fentanyl epidurally to achieve a blockade up to T6 level. She remained hemodynamically stable throughout the procedure, with no respiratory distress or desaturation. However, near the end of surgery, she developed weakness in the right upper limb. The weakness lasted for 90 min, followed by complete neurological recovery. Subsequent hospital stay was uneventful.

Key words: Brachial monoparesis, cesarean section, epidural anesthesia

Introduction

Paraparesis is a documented complication of central neuraxial blockade (CNB). The commonest reasons for high spread of regional blocks are large volumes of local anesthetics and/or high placement of epidural catheters. Monoparesis following lumbar epidural block is a rare occurrence, with few cases reported in literature.

Case Report

A healthy, 63 kg, 30-year-old primigravida requested for labor analgesia. As per the institutional protocol, a combined spinal epidural technique (CSEA) was administered. Lumbar puncture was done in L3–L4 interspace and 25 mcg of fentanyl was injected intrathecally. The epidural space was identified with loss of resistance to saline, at a depth of 5 cm to the skin, and a

catheter was fixed with the 10-cm mark at the entry point. The analgesic effect of intrathecal fentanyl lasted for 90 min. Following this, 10 mL of 0.125% bupivacaine was given. The patient had satisfactory pain relief and received two epidural top-up doses of 6 mL 0.125% bupivacaine each, at 60 min intervals. About 45 min after the administration of the last dose, it was decided that a cesarean section be performed as the labor had not progressed. In the operating room, the block was extended with a mixture of 15 mL 2% lignocaine with 50 mcg fentanyl titrated over 10 min to achieve a T6 level block. The cesarean section was uneventful and a healthy male baby was delivered. The patient was hemodynamically stable throughout the procedure.

At the end of surgery, the patient complained of weakness in the right upper limb. There was no respiratory distress or desaturation. Neurological examination showed right upper limb power of 2/5 (biceps flexion 2/5, shoulder abduction 2/5), full power of 5/5 of the left upper limb, and bilateral lower limb power of 4/5. The sensory examination revealed loss of pin prick sensation at dermatomes C6, C7, C8 and T1 of the right arm. There was no involvement of cranial nerves. A diagnosis of high unilateral block was made and the patient was reassured. The epidural catheter was removed and the patient was kept under observation in the recovery room. The patient regained complete power in the right upper limb 90 min later. Subsequent hospital stay of the patient was uneventful.

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Discussion

Epidural analgesia and anesthesia are widely used in obstetric

practice. Neurological complications after CNB are rare. The incidence of neurological complications in obstetric epidural anesthesia ranges from 0.3 to 2 in 10,000 blocks.^[1] Commonly described complications of CNB include technical failure, nausea, pruritis, urinary retention, postdural puncture headache, hypotension, bradycardia, and cardiac arrest. Jenkins, in a study comprising 145,550 epidurals, found the incidence of high or total spinal block to be 1 in 16,200 epidurals.^[2] Scott and Hibbard observed that neuropathy was the most common complication following epidural anesthesia in the obstetric population.^[3] Scott and Tunstall reported 8 reversible neuropathies in 14,856 obstetric spinal blocks and 38 reversible neuropathies in 108,133 obstetric epidural blocks. The cause of the above was postulated as either trauma due to needle/catheter or maternal obstetric palsies.^[4] The rate of permanent neurological injury after spinal and epidural anesthesia ranges from 0 to 4.2 per 10,000 and from 0 to 7.6 per 10,000, respectively.^[5]

Other reported complications of CNB are cranial nerve palsies with or without Horner's syndrome and monoparesis. The incidence of cranial nerve palsy ranges from 1 to 3.7 in 100,000 obstetric regional anesthesia.^[4] Involvement of optic nerve, trigeminal nerve, abducent nerve, facial nerve and vestibulocochlear nerve too has been reported.^[1] All these complications have been attributed to loss of cerebrospinal fluid (CSF) or high spread of block after epidural anesthetic secondary to excessive cephalad spread, with full recovery within 4–5 h.^[1] Horner's syndrome following CNB is seen in obstetric practice and is not an uncommon complication, and its occurrence may be attributed to low anatomical origin of the ocular sympathetic supply, with fibers arising from as low as T4. The block to this level is not uncommon in obstetric practice, and it can lead to cranial nerve involvement.^[6]

Our patient had weakness in the right upper limb, involving both sensory and motor components at the end of surgery. Though the volume of local anesthetic used in epidural was 15 mL, the patient complained of weakness of the right upper limb. The exact mechanism for the high spread to local anesthetic to cause monoparesis is difficult to define. A case of upper limb monoparesis following epidural anesthesia has been reported. According to the authors, the length of the epidural catheter of more than 6.5 cm in epidural space probably resulted in unilateral migration into a higher intervertebral foramen, leading to a high unilateral block.^[7] Unilateral upper limb involvement may occur due to the presence of septa in the epidural space. Epidural catheters placed 6–8 cm within

the epidural space are less likely to get dislodged and require replacement than the catheters placed 2–4 cm when prolonged labor is anticipated.^[8] The volume of local anesthetic injected into the epidural space alone is not the reason for the high spread of local anesthetic. Using epidurograms, Burn *et al.* showed that volumes greater than 40 mL injected in the lumbar or caudal region reach the thoracic and lower cervical segments.^[9] Conversely, cranial nerve block after test dose through the epidural catheter has been reported.^[10] The reasons for development of monoparesis are multifactorial and not very clear. Nevertheless, its occurrence is well documented.

The present case shows that delayed extension of epidural block, though rare, can occur and the attending anesthesiologist must be aware of such a complication so that it can be managed effectively. The management includes reassuring the patient, and taking adequate care of the airway, breathing and circulation.

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