



SUBARACHNOID BLOCK IN A PATIENT OF KYPHOSCOLIOSIS

Anesthesiology

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KEYWORDS

INTRODUCTION:

Poliomyelitis patients with kyphoscoliosis present unusual challenges for the administration of general and regional anesthesia due to deformity of spine and cardiopulmonary abnormalities.

Poliomyelitis is a neuromuscular disorder which is associated with scoliosis in 30% of patients when compared to its prevalence in general population which is 0.3-15.3%.^{[1][2-4]} This disease was eradicated from most part of the world, and India has been declared polio free in 2014 with the success of vaccination programs, but the old cases posted for surgery pose unique challenges.

Anesthetic concerns for providing general anesthesia to patients with poliomyelitis and kyphoscoliosis are increased sensitivity to sedative drugs, prolonged effect of nondepolarizing neuromuscular blocking agents, dysfunctional autonomic nervous system, and underdeveloped muscles of respiration making extubation difficult.^[5] Central neuraxial block is controversial in these patients and poses an anesthetic challenge in view of difficulties in palpating anatomical landmarks, performing dura puncture, and difficulty in predicting the extent of block.^[6-8] Several case reports published show that spinal anesthesia is safe in these sets of patients.^[9] Sensory level disparities between the two sides in these patients have been studied.

We report a case of spinal block in a patient with poliomyelitis and kyphoscoliosis presented with complaints of obstructive voiding and burning micturition posted for Optical Internal Urethrotomy.

Case Report:

A 25-year-old male patient presented with obstructive voiding since several months and burning micturition with thoracolumbar kyphoscoliosis and was posted for Optical Internal Urethrotomy. He was suffering from poliomyelitis since childhood and had a history of progressive spinal deformity leading to thoracolumbar kyphoscoliosis. There was no complaint of any shortness of breath or symptoms suggestive of respiratory or cardiovascular instability. Preanesthetic examination of airway revealed Mallampati Grade 1, adequate mouth opening and neck movements. On local examination of the lumbar spine, interspinous space was not felt. X-ray whole spine showed kyphoscoliosis of thoracolumbar spine with 45° Cobb angle, measured as the intersection between parallel lines drawn from end [Figure 1]. Vertebrae of the curve deformity. Hemogram, liver function test, renal function test were within normal limits.

After taking written and informed consent, Surgery was planned under regional anesthesia (spinal anesthesia). On the morning of surgery, intravenous line was secured with a wide bore 18-gauge cannula in dorsum of the left hand. Half an hour before shifting to the operation room, intravenous Ranitidine 50 mg and Ondansetron 8 mg were given as premedication. In the operation theatre, multipara monitor was attached and baseline parameters, heart rate, non-invasive blood pressure, electrocardiography, and pulse oximetry were recorded. Preloading with Ringer lactate (15 ml/kg) was done.

Under strict aseptic precaution, with patient in sitting position, lumbar puncture was performed at L3-L4 intervertebral disc space using 25-gauge Quincke needle via modified paramedian approach.^[10] [Figure 2]



FIGURE 1



FIGURE 2.

The needle is entered just lateral to dorsal spine perpendicular to the skin. The needle is advanced toward and onto the lamina and the needle then is "walked" cephalad over the lamina until the interlaminar space is entered. When used in patients with scoliosis, this technique may have the following advantages. First, patients with scoliosis have distortion of the spinous processes. The wider angle between the spinous and transverse processes on the convex side of the curve facilitates the needle insertion. The lamina is used as the landmark, facilitating placement of the needle. The larger interlaminar space on the convex side of scoliosis also facilitates needle entrance into the epidural space. While performing block in our patient, dura puncture was done in the second attempt.

After confirmation of free flow of cerebrospinal fluid, 10.0 mg of 0.5% hyperbaric bupivacaine (2.5 ml) was injected. During the drug delivery, patient experienced tingling sensation in the left limb. The level of sensory block was tested with pinprick method in the midaxillary line after 3 min. Level of block was T6. Surgery commenced at the surgical site with satisfactory sensory block. Intraoperative period was uneventful with duration of surgery lasting 1 h. The patient was shifted to postoperative ward, patient's hemodynamics were stable, and no spinal-related complications were observed. [Figure 3]

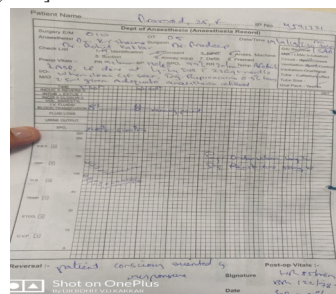


FIGURE 2.

DISCUSSION

Kyphoscoliosis is characterized by progressive deformity of spine, which involves kyphosis (anteroposterior spinal angulation) and scoliosis (lateral spinal curvature). In majority, it is usually an idiopathic disorder.^[11] Secondary kyphoscoliosis occurs as a result of various neuromuscular, vertebral, or connective tissue disorders.^[12]

The level of derangements in cardiac and pulmonary function of kyphoscoliosis patient is related to the amount of Cobb's angle in thoracolumbar X-ray. Cardiopulmonary function starts decreasing if this angle is larger than 40° and it becomes very significant with angle >100°.^[13,14]

In our patient, poliomyelitis was the cause of progressive kyphoscoliosis. Neuraxial anesthesia in this type of patient is technically challenging to the anesthesiologist. Due to angulation and rotation of vertebral body, epidural space is deviated toward the convexity of angulation. One method of administering spinal or epidural block is by directing the needle toward the needle toward the convexity of the curve with significant angulation of the needle. Huang described a modified paramedian approach of spinal anesthesia in such patients.^[15]

We used same approach in our patient as described above in the procedure. Modified paramedian approach may offer several advantages in patients with kyphoscoliosis. Because of the distortion of the spinous processes in patients with scoliosis, the interspinous space is not felt. The wider angle between the spinous and transverse processes on the convex side of the curve allows a wider field for needle insertion and advancement. Second, the needle is inserted perpendicular to the skin just lateral to the dorsal spine. This needle insertion technique is simpler than the standard paramedian approach in which the needle is angled in both sagittal and transverse planes. We found this approach as better alternative to standard paramedian approach for spinal anesthesia in patients with spinal deformity.

While administering drug after needle insertion and dura puncture through the modified right paramedian approach. The patient was made supine and sensory and motor blocks tested after 3 min, level of block achieved was T6. Surgery commenced at the surgical site once satisfactory block was achieved.

CONCLUSION:

Spinal anesthesia is an effective and safest option for patients with kyphoscoliosis. There is always a possibility of asymmetry in spread of sensory block in poliomyelitis patients with kyphoscoliosis. Based on anatomical consideration in patients with scoliosis, a modified paramedian approach with needle insertion toward convexity may offer several advantages.

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