ANAESTHESIA MANAGEMENT OF INGUINAL HERNIA IN A PATIENT WITH SEVERE KYPHOSCOLIOSIS

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ABSTRACT

BACKGROUND

Patients with kyphoscoliosis present a unique challenge during their anaesthetic management due to physiological derangements in cardiac and pulmonary function and may cause difficulties with both tracheal intubation and regional anaesthesia. We present a case report of 30 year's male patient with severe kyphoscoliosis posted for right side Lichtenstein's meshplasty successfully managed with spinal anaesthesia.

KEYWORDS

Inguinal Hernia, Kyphoscoliosis, Subarachnoid Block.

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BACKGROUND

Kyphoscoliosis describes an abnormal curvature of spine characterised by anterior flexion (kyphosis) and lateral bending (scoliosis) of spines. It occurs during the growth period without any obvious cause in 80% of cases. It may be associated with neuromuscular disorders such as poliomyelitis, cerebral palsy, muscular dystrophy, neurofibromatosis and Marfan's syndrome. The deformity in the spine and the resultant thoracic deformity lead to pulmonary abnormalities. These pulmonary changes cause the restrictive pattern on pulmonary function tests and leads to progressive hypoventilations, hypercapnia and cor pulmonale.[1] Cardiopulmonary changes and difficult airway cause difficulty in general anaesthesia whereas abnormal curvature of spine and unpredictability of level of anaesthesia make regional anaesthesia difficult.[2]

CASE REPORT

A 30 year's old male patient with kyphoscoliosis and right-sided recurrent inguinal hernia was posted for right side Lichtenstein's meshplasty. Patient came with complaint of swelling in right inguinal region since two years. Patient had history of kyphoscoliosis since birth and right side hernioplasty was done under general anaesthesia three years back. Patient was able to lie down on his back and was able to move unaided. There was no history of motor or sensory symptoms or any bowel disturbances. On examination, general condition was good with moderate built and well nourishment. Patient was alert and cooperative. His airway was assessed as Mallampati class I. Investigations revealed haemoglobin, platelet count, blood urea, serum creatinine, serum electrolytes, liver function test, blood sugar level and ECG were normal. X-ray chest showed severe kyphoscoliotic deformity with convexity towards right in upper dorsum and towards left in lower dorsal region, crowding of ribs on left side, Cobb's angle >60°. PFT showed restrictive stage of COPD. Bedside PFTs were done, cough test and wheeze test were negative, forced expiratory time was 3 seconds, breath holding time was 32 seconds. 2D echo was normal (EF 55%).

The risk of anaesthetic technique, difficult spinal anaesthesia and complications like partial block, failed spinal, high spinal, general anaesthesia and postoperative intensive care were explained to patient and his caretakers and the patient was accepted for anaesthesia under ASA grade IV with venti physical status with written informed consent.[3]

Patient was shifted to operation theatre and intravenous access was secured with 18G IV cannula. 500 mL of ringer lactate was given as preload. Pulse oximeter, NIBP and ECG monitors were connected. Emergency airway cart including LMA, Bougie, Trupti blade, Airtraq were kept ready. Patient was prepared for subarachnoid block. Under all aseptic and antiseptic precautions, local part was infiltrated with 2% lignocaine. Spinal anaesthesia was given with 23 G Quincke spinal needle in L3-L4 intervertebral subarachnoid space in sitting position through right paramedian approach. The site was entered just lateral to the dorsal spine perpendicular to the skin and advanced towards and onto lamina. Needle was introduced further until clear flow of CSF was obtained. Spinal anaesthesia was administered by injecting 2.2 mL of 0.5% hyperbaric bupivacaine. Then, patient was given supine position. The sensory block was achieved up to T10 level after 5 minutes. A pillow was kept under shoulders to prevent the ascent of the drug to higher level.

Patient remained haemodynamically stable throughout 120 minutes of surgery. Postoperative patient's general

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condition was good. Sensory and motor functions were successfully restored after 3 hours of subarachnoid block. Patient was shifted to ward and discharged after two days with no complaints.

Figure 1. Inspection of Back

Figure 2. X-Ray Chest (PA View)

DISCUSSION

Kyphosis refers to an excessive convex curvature of spines occurring in thoracic region. It can result in a lump or hump on a person's back.[4] Kyphosis is usually associated with scoliosis. Severity of scoliosis and spinal deformity can be judged by Cobb's angle, which is defined as the angle between the line drawn parallel to lower surface of the lowest affected vertebral body and line drawn parallel to upper surface of the highest affected vertebral body. It correlates with the cardiopulmonary function. In the case of thoracic involvement, the lung alveoli are compromised, which leads to the development of restrictive lung disease and pulmonary artery hypertension. Total lung capacity, vital capacity, functional residual capacity and tidal volume are decreased.

Due to curvature of spine, regional anaesthesia is difficult in this type of patients. Huang[5] have described a modified paramedian approach of spinal anaesthesia. In this approach, the skin is entered just lateral to the dorsal spine perpendicular to the skin and it is advanced toward and onto the lamina and goes cephalad over the lamina until the interlaminar space is entered. There may be possibility of partial or incomplete block as subarachnoid space can be reached, which itself is difficult. In our patient, subarachnoid space was reached through right paramedian towards convexity side. Due to anatomical defects in spine, the CSF volume is decreased, thus lower doses of local anaesthetics may get higher level of block. Epidural anaesthesia is also difficult due to improper patient's position, difficulty in guiding catheter and altered epidural space volume. The causes of failed or incomplete neuraxial block could be the anatomical defect itself or improper placement of the local anaesthetics.

Intubation and positive pressure ventilation become difficult in kyphoscoliotic spine. There may be decreased functional residual capacity resulting in further ventilation perfusion mismatch and hypoxaemia. It may lead to difficult extubation and prolonged ventilation due to difficult airway. Postoperatively, after general anaesthesia, poor cough reflex and laryngeal incompetence cause pulmonary infection. All these factors together can lead to delay in extubation and need for postoperative ventilation.[6] So, general anaesthesia is not a choice of anaesthesia due to difficulty in intubation, extubation, postoperative ventilation.

CONCLUSION

In kyphoscoliotic patients, general anaesthesia can be associated with difficult intubation and prolonged postoperative ventilation. Epidural anaesthesia may not always give adequate level of block. So, subarachnoid block with a proper planning with meticulous approach can be a useful technique in patients with severe kyphoscoliosis for infraumbilical surgeries.[3]

REFERENCES

[1] Schwartz JJ. Skin and musculoskeletal diseases. In: Hines RL, Marschall KE, eds. Stoelting's anesthesia and co-existing disease. 5th edn. Philadelphia: Saunders Elsevier 2008:p. 505.

[2] Salem RM, Klowden AJ. General anaesthesia. In: Salem RM, Klowden AJ, eds. Anaesthesia for orthopaedic surgery. 3rd edn. New York: Churchill-Livingstone 1994.

[3] Kokane DM, Hingole P. Spinal anaesthesia in a case of kyphoscoliosis. Int J Adv Med 2015;2(1):67-70.

[4] Urban MK, Lohlou S. Muscle diseases. In: Fleisher LA, ed. Anaesthesia and uncommon diseases. 5th edn. Philadelphia, USA: Saunders Elsevier 2009:144-145.

[5] Huang J. Paramedian approach for neuroaxial anesthesia in parturients with scoliosis. Anesth Analg 2010;111(3):821-822.

[6] Baydur A, Milic-Emili J. Respiratory mechanics in kyphoscoliosis. Monaldi Arc Chest Dis 1993;48(1):69-79.