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Case Report

Severe thoraco lumbar Kyphoscoliosis-A challenge to anaesthesiologists

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ABSTRACT

Severe spinal deformities present with functional and physical problems for the patient and doctors in terms of planning of a procedure or for anaesthesia. Due to problems associated with respiratory system, spinal anaesthesia is used widely though technically difficult. We present a case of severe thoracolumbar Kyphoscoliosis successfully managed with spinal anaesthesia.

Key words: Kyphoscoliosis, Subarachnoid block, Restrictive pulmonary disease.

1. INTRODUCTION

Patients with Thoraco Lumbar Kyphoscoliosis present unique challenges to both Anaesthesia and surgical teams. Airway management and Cardio respiratory embarrassment make General Anaesthesia hazardous where as Regional Anaesthesia is fraught with technical problems due to abnormal curvature of spine and unpredictability of the level of Anaesthesia.

2. CASE STUDY

A 45 year old male patient presented with closed patellar fracture of left side with a deformity of Severe Thoraco Lumbar Kyphoscoliosis. The patient had an alleged history of fall while carrying weight over his head. He slipped and fell on a rock. He complained of the pain and difficulty in extending his left knee. No history of loss of consciousness, ENT bleed vomiting or seizures. He was referred to us from a regional hospital after failed spinal anesthesia and differing of surgery.

Diagnosed as closed transverse displaced fracture of left patella and posted for surgery for open reduction internal fixation with tension band wiring.



Fig.1 Photograph showing lateral view of Kyphoscoliosis

On examination patient was conscious, co-operative, moderately built and nourished. He had left knee swelling and deformity, tenderness, depression over the left mid patellar region with abnormal mobility. No distal neurovascular deficit was present. Airway was Mallampatti grade 3. He had severe thoracolumbar Kyphoscoliosis (Fig.1).

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Investigations revealed Haemoglobin, Bleeding & Clotting time, platelet count, Blood urea, serum creatinine, sodium, potassium were normal. ECG showed tall T waves, X-ray chest showed tubular heart, PFT altered (moderate to severe restrictive pulmonary disease), pulse 84/min, BP 110/70 mmHg, X-ray spine showed Cobb's angle obliterated (Fig.2).



Fig.2. X-ray showing PA and lateral view

The risk of Anaesthetic technique (difficult spinal anaesthesia and complications like partial block, failed spinal, high spinal; general anaesthesia and post operative intensive care); was explained to patient and his care takers and the patient was accepted for Anaesthesia under ASA grade 3 physical status with written informed consent.

Patient was shifted to the operation theatre and intravenous access was obtained with 18G IV cannula, patient was preloaded with 500 mL Normal saline while pulse oximeter, NIBP and ECG monitors were connected. Difficult intubation cart including LMA, Bougie, Fibre optic Bronchoscopy were kept ready. Patient was prepared for regional block (sub arachnoid block). As there was Severe Thoraco Lumbar Kyphoscoliosis, to palpate the spine itself was found very difficult. Space was identified by tracing the spine from upwards and the patient was administered spinal Anaesthesia (after 3 attempts in left lateral position) by paramedian approach with injection bupivacaine heavy 0.5 % 2.5 ml. The onset of action with sensory block up to T12 achieved in 3 min. Oxygen was administered through the Hudson mask throughout the surgery. Hemodynamic parameters & saturation were monitored and maintained within normal limits, duration of sensory block lasted for 124 min. Post-operative pain relief was given by injection Diclofenac 75mg im, patient was monitored and shifted to ward later.

Our patient had Severe Thoraco Lumbar Kyphoscoliosis with fracture left patella and as the patient had normal coagulation status spinal anaesthesia was contemplated

technique [1]. Midline placement of spinal needle is difficult in patient's with Severe Thoraco Lumbar Kyphoscoliosis due to ossification of interspinous ligaments and bony bridges, this case was referred from other institution due to failure to Anaesthetise after several attempts to give spinal Anaesthesia. Hence the meticulous approach was required to identify the space and to achieve the block. Spinal Anaesthesia related hypotension was also kept in mind, so the limit on the total dose of the drug and correct positioning was done to achieve adequate level of blockade.

3. DISCUSSION

The main handicap of Regional Anaesthesia is decreased success rate due to unsuccessful insertions, multiple attempts, false loss of resistance, failed or inadequate block [2].

Spinal Anaesthesia is the option in selected cases of kyphoscoliosis and there are case reports of successful subarachnoid block in patients with severe Kyphoscoliosis [3].

Isobaric bupivacaine has been tried in severe kyphoscoliosis with good results [2]. Severe kyphoscoliosis can be associated with a decrease in volume of CSF fluid with hypobaric technique or with rapid injection a higher than expected level can occur. We need hyper baric Bupivacaine which provides safe and consistent block. In our case Neuraxial block was uniform and symmetrical as we tilted the OT table to keep both the hips in horizontal plane.

Kyphoscoliosis results in functional changes with decrease in total lung capacity, vital capacity and a functional residual capacity. The severity of compression is directly related to the degree of Kyphoscoliosis angulations and is determined by measuring Cobb's angle which is defined as the angle between the perpendicular of the lines drawn parallel to the upper border of the highest and lower border of the vertebrae. If this angle is 40° the Cardio Pulmonary function frequently decreases and if 100° it significantly decreases [1].

4. CONCLUSION

Subarachnoid block with a proper planning with meticulous approach can be a useful technique in patients with severe thoracolumbar Kyphoscoliosis with normal coagulation status with efforts towards maintaining airway and equipment will result in successful outcome.

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