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A case report of Caesarean section in parturient with kyphoscoliosis under spinal and epidural anaesthesia

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Abstract
Kyphoscoliosis is a abnormal curvature of the spine and it gets aggravated during pregnancy. Approach to this patients with kyphoscoliosis and the choice of anaesthesia is described in this case report. The choice of anaesthesia must be individualised for each patients by keeping risk benefit ratio in mind.
Keywords: *kyphoscoliosis, caesarean section, spinal anaesthesia, cobb's angle.*

Introduction

Kyphoscoliosis is a abnormal forward curvature and curvature of the spine in the coronal plane. It may be congenital or acquired. Acquired occurs due to degenerative neuromuscular diseases. Idiopathic is the most common and has female preponderance[1]. Irrespective of etiology kyphoscoliosis causes various physiological changes that are concerning for anaesthesiologists.

Case Report

A 24 year old primigravida @ 34 weeks and 2 days with short stature and kyphoscoliosis was admitted for safe confinement. She was able to perceive the fetal movements and there were no further complaints. She was a booked and immunized, her height and weight was 122cms and 42kgs respectively and was a case of cephalopelvic disproportion so elective caesarean section was planned .

A complete preoperative evaluation was done .Her Hb was 10.7, other blood investigations were normal, Airway assessment revealed mallampatti class 1 with adequate mouth opening, temporomandibular joint was normal, examination of the spine revealed kyphoscoliosis. Chest xray was not taken. Vitals were recorded spo2 – 93% in room air, HR -118/min, BP -110/80mmHg, RR-36/min. Bilateral air entry was present and patient had B/L basal crepts and heart sounds were normal .ECG was normal, ECHO showed normal chambers and no regional wall motion abnormalities, normal systolic function with EF-60%. patient was started on bronchodilators and I.V antibiotics. She remained conscious and oriented and fetal well being was monitered continuously, ABG was within normal limits.

Pt was planned for elective caesarean section under epidural and spinal anaesthesia. After getting consent, premedications were given, patient was shifted to operation theatre, baseline parameters were recorded and ECG was continuously monitored, 23g iv canula was secured and patient was coloaded with 200ml of RL. In sitting position 18G touhy epidural needle was inserted in space L2-L3, epidural space was identified using loss of

resistance technique and 18G catheter was threaded into the needle and fixed at 6 cms. Test dose with inj. lignocaine with adrenaline 2% 2 cc was given and the position of the epidural catheter was confirmed. For spinal 23G quinkes needle was used in space L3-L4, placement of the was confirmed after free flow of CSF and Inj. Bupivacaine 0.5% (H) 1cc was given. adequate levels were achieved at T6.

Female baby weighing 2.8kgs was delivered uneventfully with apgar of 8/10 at 1st min and 9/10 at 5th minute. inj. lignocaine with adrenaline 2% 6ml was given epidurally in titrated doses. Patient was comfortable throughout surgery. There was no significant hypotension and bradycardia, SpO2 was maintained with 92% - 94% with 40% of O2 with venturi mask throughout surgery, surgery was uneventful and baby was transferred to neonatal ICU.

Patient was conscious and oriented throughout surgery, patient transferred to postoperative ICU, repeat ABG was within normal limits. patient was kept in head up position, postoperative pain relief was done with continuous epidural analgesia of 0.125% Bupivacaine. Respiratory status gradually improved with I.V antibiotics and bronchodilators and she was transferred to postoperative ward after 3 days and to PNC ward after 1 day and discharged with baby on POD 10. Chest x-ray was taken postoperatively which showed a cobbs angle of 73 degrees. [figure 1]

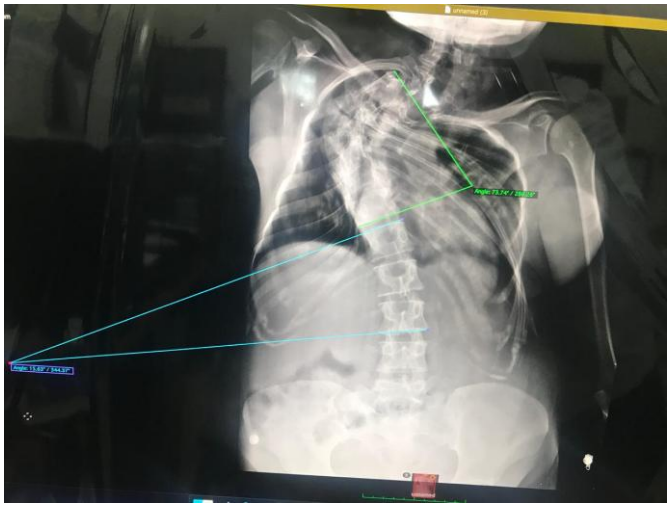

Figure 1 – postoperative x ray showing cobbs angle of 73^0

Discussion

Achondroplasia (abnormal endochondral bone formation) is the most common type of disproportionate short stature. It is an autosomal dominant genetic condition but 80% of cases result from a spontaneous mutation.[2]

Females are affected more frequently than males. Anaesthesia, whether general or regional poses many potential problems in these patients specially during the later stages of pregnancy. Achondroplastic dwarfs characteristically have low fertility rate and those who do conceive, often require caesarean section because the normal sized fetal head and smaller than the normal maternal pelvic diameter results in cephalopelvic disproportion during the later stages of pregnancy.[3] Additionally the fetus may have a narrow foramen magnum and upper cervical spine, creating the potential for spinal cord compression during neck manipulation.

Patients with kyphoscoliosis have restrictive pattern of lung disease and the severity of pulmonary impairment depends on the degree of the Cobb's angle[4], the number of vertebrae involved, and the cephalic location of the curvature. Deformation of the vertebral bodies results in shorter, thinner pedicles and laminae and a more narrow vertebral canal on the concave side. Vertebral deformation is unusual in patients with a Cobb angle less than 40 degrees. cobbs angle of more than 60 results in pulmonary and cardiac manifestations.[5]

In pregnancy severity of the kyphoscloiosis is increased. In pregnancy there is a 45% increase in the tidal volume , minute ventilation[6], but the deformity results in restricted expansion of the lungs and there is a decrease in the tidal volume, minute ventilation , total lung volume capactity and further decrease in FRC to the extent that it falls below the closing capacity, atelectasis may occur in basal alveoli. Early-onset scoliosis and severe scoliosis may result in greater pulmonary vascular resistance and eventually lead to pulmonary hypertension.

For cobbs angle more than 60, a pulmonologist opinion is got for PFTs and arterial blood gas

measurements are obtained, echocardiography can be useful in accessing the right heart functioning.

Both general and neuraxial anaesthesia has its own advantages and disadvantages. General anaesthesia with controlled ventilation though seems to be ideal but is associated with many problems. There might be an abrupt increase in pulmonary artery pressure with nitrous oxide leading to right heart failure. Neuromuscular agents should be used with caution due to associated myopathies and dystrophy. Malignant hyperthermia is common on these patients.

These patients will have tracheal deviation and may pose difficultly during intubation. Respiratory infections are common and may need postoperative ventilation

In neuraxial anaesthesia, Identification of epidural and the sub arachnoid space is difficult in these patients, the presence of the vertebral rotation results in the spinous processes rotating into the concavity of the curve. Epidural or Spinal needle should be directed from a palpated spinous process toward the convexity of the curve at a significant angle to reach the respective space. Based on previously done studies which suggested 1.3 ml of hyperbaric bupivacaine to achieve adequate level of anaesthesia in caesarean section. We gave 1 ml of 5% hyperbaric bupivacaine for spinal anaesthesia, As epidural catheter was also in situ and further surgical anaesthesia can be achieved with epidural topup.[8]

Epidural anaesthesia has been given for caesarean section in several parturients with achondroplasia by several authors, all of whom used an epidural catheter to give graded doses of local anaesthetic. A large variation in the heights of the patients and individual variations would have an effect on the levels achieved. Different volumes of test doses have also been used keeping in mind the short stature of these patients as accidental subarachnoid injection could have led to a high level of blockade as happened in one of these patients.

Local anaesthetic requirements in kyphoscoliosis vary with patients. The main disadvantage associated with spinal anaesthesia is technical difficulty and its unpredictable effect.

The selection of type of anaesthesia must be decided with several patient factors such as difficulty in intubation, risk of developing pulmonary hypertension, risk of requirement of postoperative ventilation. As the patient had a cobbs angle of 73 degree and the risk of pulmonary hypertension was high[7], epidural and spinal anaesthesia was preferred .

Conclusion

Thus the patient with kyphoscoliosis posted for caserean section was successfully managed under spinal and epidural anaesthesia without any complications

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