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Case Report on Management of Kyphoscoliotic Parturient with Twin Pregnancy Posted for Emergency LSCS in a Secondary Health Care Institute

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Abstract: ***Anesthetic care for cesarean section is itself challenging, which may further increase due to any disease or deformity associated with spine namely kyphoscoliosis. This also increases the potential risks both for mother and fetus due to complicated maternal pulmonary physiology and associated pathological changes seen with kyphoscoliosis. The anesthetic management plan chosen should have a favorable outcome both for mother and fetus specially when complicated by twin pregnancy. We report a case of a 26 year old female, full-term primigravida with kyphoscoliosis and twin pregnancy who was posted for emergency cesarean section in a secondary level healthcare institute. The anesthetic management of this unusual patient is presented here.***

Keywords: Anesthesia, emergency cesarean section, twin pregnancy, spine disorders, kyphoscoliosis, spinal anesthesia, general anesthesia

1. Introduction

Kyphoscoliosis is a forward and lateral bending of the spine affecting thoracolumbar spine. [1] It involves deformity of spine including kyphosis that means anteroposterior spinal angulation and scoliosis, which is lateral spinal curvature [dy}. Scoliosis is associated with restrictive lung disease and low blood oxygen levels, which can lead to cardiovascular compromise. If left untreated, severe idiopathic scoliosis is fatal by the fifth decade as a result of pulmonary hypertension and respiratory failure. [1] Increased weight gain pregnancy may exacerbate the severity of spinal curvature in women with uncorrected scoliosis. Severe scoliosis is rare in parturients, which varies from 1 in 1500 to 1 in 12, 000 pregnancies. [2]

2. Case Report

A 26 year old female, with POG 39 wks+2 D, 152 cm in height and weighing 65 kgs, twin pregnancy with fetal distress was posted for emergency cesarean section. Airway assessment revealed a Mallampatti Grade I, no loose or artificial teeth, mouth opening>3 fingers, adequate temporomandibular joint movement, and a full range of neck movements. Examination of the spine revealed a lateral curvature along with thoracic kyphosis. Her blood investigations were normal. She had a history of recurrent respiratory tract infection. Previous records were unavailable. Chest X-ray revealed a left sided deformity of dorsolumbar spine with convexity towards left. The thorax was asymmetric with dorsolumbar kyphoscoliosis. Fasting 4 hrs.

Her baseline vitals show pulse rate of 97 beats/min, regular, blood pressure (BP) 118/70 mmHg, and SpO2 98% on room air. Bilateral normal vesicular breath sounds were heard on auscaltation and other systems were normal. Continuous electrocardiogram, noninvasive BP, and pulse oximetry monitoring were established. We planned to proceed with general anesthesia after administering anti aspiration prophylaxis as her last meal was <8 hrs. Difficult airway cart was kept ready. Cricoid pressure was given by assistant and patient was preoxygenated with 100% O2 for 8 vital capacity breaths, induction was done with intravenous (IV) injection of propofol 2.5 mg/kg until loss of response to verbal command. Succinylcholine 2 mg/kg IV was given to facilitate the endotracheal intubation. Under direct laryngoscopy trachea was secured with cuffed ETT no 7mm ID using Mac Blade No. 3. CLG 2 noted. CETT was fixed after checking bilateral equal air entry tube and confirmed by ETco2. Anesthesia was maintained with 60: 40 (N2O: O2) and isoflurane 1%. Muscle relaxation was maintained with atracurium 0.4 mg/kg initially followed by supplementary doses 0.1 mg/kg as and when required. Horizontal skin incision was given for caesarean section. Two live male infants of 1460 gmsand 1420 gms with an APGAR of 8/9 each was delivered. After completion of surgery, residual paralysis was reversed with neostigmine (0.05 mg/kg) and glycopyrrolate (0.01 mg/kg). Surgery lasted for 1.5 h. After surgery, she was monitored closely for 12 h in the postoperative ward. Postoperative period was uneventful.

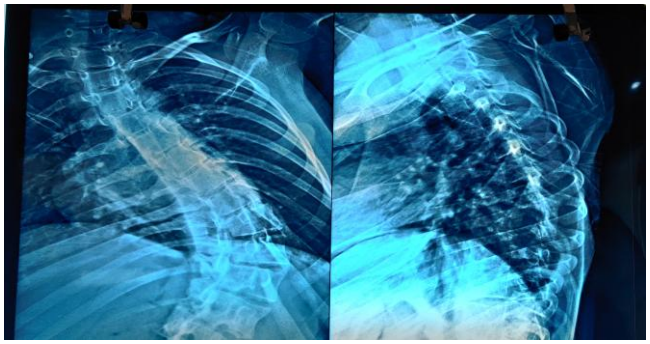

Figure 1: Chest X ray showing thoracolumbar kyphoscoliosis

3. Discussion

Most important aspect of obstetric anesthesia is the safe management to minimize the risk to mother and fetus. The physiological changes occurring in pregnancy can further worsen the respiratory system compromise already associated with a scoliotic patient with restrictive lung disorder. The maternal mortality and morbidity correlates well with the degree of functional impairment before pregnancy. [3], [4] Increased mucosal vascularity leading to edema of the respiratory tract during pregnancy may lead to difficulty in endotracheal intubation along with increased weight gain due to fat and water retention increases the size of breasts leading to higher chances of difficult / failed intubation. Edema of the airway results in increased potential for bleeding and smaller sized endotracheal tubes should be used for general anesthesia. [5] Patients with scoliosis suffer from restrictive lung disease which involves decreased vital capacity, functional residual capacity, tidal volume, and increased respiratory rate. [1], [6] The severity of scoliosis depends primarily on the type, duration of scoliosis as well as on the Cobb's angle of curvature. [1], [6], [7] The severity of pulmonary impairment is primarily dependent on the degree of the Cobb's angle and the number of vertebrae involved. In severe cases, displacement with rotation of the trachea and main stem bronchi may also be noted, which could cause problems during intubation for general anesthesia. [1] Thoracic scoliosis causes a significant reduction in the number of alveoli predisposing these patients to impairment in gas exchange and pulmonary hypertension. [1] The Cobb's angle is a radiological measurement which is made on an AP view of X-ray spine. The Cobb's angle can be correlated with the impairment of pulmonary function tests. An angle more than 60° results in a restrictive type of pulmonary impairment with a decrease in forced expiratory volume in 1 s, forced vital capacity, and chest wall compliance. [1], [6] General anesthesia is indicated in scoliosis due to maternal preference or when there is maternal cardiopulmonary disease and when there is difficulty in performing regional block. Regional anesthesia is met with technical problems due to an abnormal curvature of the spine. [2, 3] Severe scoliosis is also associated with altered anatomy of the airway causing difficulty in intubation. It is also associated with pulmonary hypertension and increased pulmonary vascular resistance which can further increase during laryngoscopy and intubation. Therefore on should avoid hypoxia, hypercapnia, acidosis, and anesthetic gases such as nitrous oxide, as they further increase the pulmonary vascular resistance. [5] Neuraxial blockade in patient with scoliosis have complications such as unpredictable/ failed block, risk of high spinal anesthesia. The increased intraabdominal pressure in pregnancy leads to engorgement of epidural veins, reduction of subarachnoid space, reduced CSF volume, all of which may lead to increased chances of high spinal anesthesia, inducing hypotension. This is more so in cases of severe scoliosis, which can be associated with decreased volumes of cerebrospinal fluid. [8] There are reports of anesthetic management of the kyphoscoliotic parturient using a combined spinal epidural, [3] continuous spinal anesthesia, [9] and local infiltration anesthesia when there is a failure in spinal or epidural anesthesia. [7]

4. Conclusion

Parturient females with less severe scoliosis are diagnosed very late in pregnancy, especially during second to third trimester when worsening of respiratory function takes place. Therefore early assessment and pulmonary function testing should be done to identify them. Based on risk of failed/high spinal anesthesia and failed regional blocks general anesthesia is the best option for these patients.

Declaration of consent

Author certifies that all appropriate consents were taken. The patients understand that the name and identity will not be published and all efforts to conceal the identity will be taken but anonymity cannot be guaranteed.

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Conflict of interest

There are no conflicts of interest.

Conflict of interest

None

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