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Anaesthetic management of a patient with severe kyphoscoliosis with left psoas abscess

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Abstract

Patients with Severe Kyphoscoliosis present with unusual challenges for the Anaesthetist. Achieving an adequate subarachnoid block (SAB) can be a daunting process let alone maintaining the airway due to their restrictive lung disease. We present a case of anaesthetic management and difficult intubation in a patient with severe kyphoscoliosis with left sided Psoas Abscess with failed SAB, restrictive lung disease having restricted neck movements using awake fibre optic intubation.

Keywords: severe kyphoscoliosis, fibre optic intubation, difficult airway/intubation

Introduction

Kyphoscoliosis is a musculoskeletal disorder in which there is an abnormal curvature of spine in both a coronal and sagittal planes. It's a combined spinal abnormality of two other conditions kyphosis and scoliosis.

Kyphosis is excessive convex curvature of spine occurring in the thoracic and sacral regions and scoliosis is excessive lateral curvature of spine.

Kyphoscoliosis leads to under ventilation of lungs and pulmonary hypertension.

Patients with spinal abnormalities present unusual challenges for administration of sedation and anaesthesia during surgical and technical procedures.

Airway management and ventilation are the commonest challenges.

Case scenario

A 48-year-old man known case of kyphoscoliosis with restrictive lung disease presented with complains of left sided psoas abscess since 2 months, 8.1 x 10.3 x 9.5 cm volume 415cc, patient had history of kyphoscoliosis since 40 years gradually progressing in nature associated with gradual increase in shortness of breath, easy fatigability unusual gait and short stature.



Fig 1: Pre-operative examination of spine and chest with severe kyphoscoliosis

General examination

BP 120/70 mmHg Rt arm supine position

Pulse 88 b/min, regular rhythm

O/E: Vitally stable

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Airway examination

Mallampatti scoring of 3.

Restricted neck mobility

Mouth opening - 2 fingers, inter incisor gap was less than 1cm. No loose teeth

Systemic examination

RESP: Air entry decreased on right side, No added sounds.

CVS: S1 S2 normally heard, no murmur heard.

CNS: Conscious, oriented

P/A: soft, non-tender.

Pre-anaesthetic check-up done after all routine investigations

- Complete blood count,
- LFT,
- RFT,
- Serum electrolytes,
- Random blood sugar,
- ECG and 2D echo were within normal range

X-RAY- crowding of ribs seen, cobb's angle 55 degree

MRI: Severe kypho-scoliotic deformity of spine noted.

Gibbus deformity noted at level of L1 vertebral body.

A 8.1x 10.3x 9.5cm approx. volume 415cc sized STIR/T2 hyper intense and T1 hypo intense collection noted in Left psoas muscle mostly suggestive of Psoas abscess straightening of spine noted. Multilevel disc desiccation changes noted. At C4-C5 level there is diffuse disc bulge causing anterior thecal sac indentation.

Pulmonary function test- severe restrictive lung disease



Fig 2: Cxr with severe kyphoscoliosis.

Preoperative advice

Patients was kept nil by mouth for 6 hours.

Informed consent taken, nebulisation with Duolin and Budecort 6 hourly, Injection hydrocortisone 100 mg preoperatively.

In pre operation room patient's airway was prepared to be ready for the challenging situation with nebulization with lox 4% 2ml followed by Inj glycopyrolate 0.2mg IV, gargle with viscous gargle lox 2%.

Patient was wheeled in the operation room standard monitors were attached and baseline vitals were recorded.

Intraoperative care

Patient was taken in sitting position and subarachnoid block was attempted even after change of hands subarachnoid block failed, knowing the challenging situation general anaesthesia was considered with difficult intubation cart including supra glottic devise, bougie, fiberoptic bronchoscope, video laryngoscope were kept ready.

Patient was preoxygenated with 100% oxygen for 3min,

administered Inj. Midazolam 1mg and 50mcg tetrad fentanyl given IV.

Patient was intubated using awake fibre optic intubation with cuffed ET tube no 7.5 and fixed at 21cm. B/L air entry was present.

Induced with Inj propofol 100mg Anaesthesia was maintained with nitrous oxide in oxygen and titrated doses of isoflurane, titrated doses of inj vecuronium and analgesia maintained with inj fentanyl 2 mic/kg/hr.

The surgery was performed in right lateral position and lasted for 4 hours. Adequate fluid requirement was maintained intraoperative Crystalloids were used for maintenance and third space losses. Intra operatively and postoperatively urine output of 0.5-1.0 ml/kg/hr was maintained.



Fig 3: patient positioning for psoas abscess drainage.

Discussion

Kyphosis is an exaggerated anterior flexion of spine resulting in round or hunch back appearance ^[1].

Kyphosis is usually associated with scoliosis ^[2]. Scoliosis is derived from the Greek word meaning 'crooked'. Patients with scoliosis suffer from restrictive lung disease which decreases their vital capacity, functional residual capacity, tidal volume, and increases respiratory rate ^[3].

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 anaesthesia.

The main handicap of regional anaesthesia is decreased success rate due to unsuccessful needle insertions, multiple attempts, false loss of resistance and failed or inadequate block. The CSF volume is decreased in kyphotic spine, thus even lower doses of local anaesthetics may achieve higher than expected level of block resulting in higher incidence of hypotension ^[4].

The abnormal spine makes intubation and ventilation difficult. Co-existing hypoxemia and pulmonary infection may lead to difficult extubation and prolonged ventilation due to difficulty in aligning the airway. Postoperatively after general anaesthesia, elements of laryngeal incompetence and impaired swallowing further decrease the airway defense mechanisms. All these factors together can lead to delay in extubation and need for postoperative ventilation ^[5].

Hence forth proper pre-anaesthetic evaluation, prior preparation for any untoward complications and intraoperative monitoring will give the proper outcome with less complications.

Conclusion

Severe kyphoscoliosis could be associated with difficulty in regional anaesthesia and airway management due to distorted airway anatomy familiarly with special technique which may be used for tracheal intubation of patient with the difficult airway is must.

Successful difficult airway management needs early recognition adequate preparation, planned and vigilant approach.

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