

Ankylosing spondylitis: Difficult airway, difficult positioning - a case report.

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Abstract: *Ankylosing spondylitis (AS) poses a great challenge to the anesthetist where airway is difficult. Various positioning during surgery can also be very demanding where even slight manipulation of rigid yet brittle spine can lead to drastic consequences of iatrogenic fractures and spinal cord trauma. I present a case of AS for corrective osteotomy in prone position performed under general anaesthesia successfully. Although airway is always anticipated to be difficult, difficulty in positioning of the patient was faced.*

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I. Introduction

Ankylosing spondylitis is a painful chronic autoimmune spondyloarthropathy. It is also known as Marie Strumpell disease where it primarily targets the spine and sacroiliac joints and ultimately resulting in characteristic bamboo spine (fused and rigid spine). Such patients pose a significant challenge to the anesthetist as a consequence of difficult airway, impaired cardio-pulmonary status, positioning for procedures and the pharmacotherapy. I report a case of a young adult posted for corrective osteotomy of lumbar 2 vertebra. It was an anticipated difficult airway alongwith anticipated difficult positioning.

II. Case Report

A 32 year old male (157 cm, 55 kg) a known case of AS, symptomatic for the last 5 years, was posted for corrective osteotomy of lumbar 2 vertebra. He had a classical bamboo spine with no mobility of cervical or thoraco-lumbar spine [Figure 1, 2]. The cardiac and respiratory systems were normal on examination and his haematological and biochemical parameters were also within normal limits. Airway examination showed mouth opening of 4 cm with Mallampati grade 3. Airway was anticipated to be difficult because of the lack of any extension of cervical spine. A difficult airway cart was kept ready along with a flexible fiberoptic bronchoscope. Awake fiberoptic intubation (FOI) was planned in view of no extension at cervical vertebra. A check laryngoscopy under local anesthesia was done one day prior to surgery which showed Cormack Lehane grade 2. Patient was explained about the procedure of awake FOI. In the operation room, all standard monitors were attached. Patient was asked to position himself in a comfortable posture. Three pillows were kept under his head to compensate for the curvilinear posture of the spine. One 18 g cannula was secured. Patient was nebulized with 2% xylocaine for 10 min followed by gargles with 10% xylocaine viscous. Injection midazolam 1 mg, glycopyrolate 0.2 mg and fentanyl 50 µg were given intravenously. Supplemental oxygen was administered through nasal cannula. Transtracheal injection with 4 ml of 4% xylocaine was given. Bite block was placed, and oral fiberoptic bronchoscopy was attempted in the supine position and was successful. In the first attempt. Trachea was intubated with endotracheal tube 8.0 mm. Thereafter intravenous induction was done with intravenous propofol 100mg and muscle relaxation achieved with vecuronium 6 mg.

Afterwards the patient was attempted to be placed in the prone position but due to the curvature of the rigid spine the hips were not in contact with the bolsters beneath. Although extra padding was already done to increase the height of the bolsters but still the body was not contact. Such positioning can put undue pressure on the spine, so the patient was carefully turned supine again and extra layer of padding was done, a pillow kept under the chest and the detachable head end of the table was extended down to 15 degree so as to compensate for the foam head rest and avoid the stress on the cervical vertebrae. Another careful attempt was taken, and all the points were in contact with the bolsters and no strain was observed in such position. All the pressure points were carefully padded to avoid any peripheral neuropathy. Anesthesia was maintained with O₂:N₂O (40:60) in sevoflurane. Boluses of fentanyl and vecuronium were given intermittently. Subsequently surgery went uneventfully in the prone position. Trachea was extubated at the end of the surgery after reversal of neuromuscular blockade and patient was then shifted to post anesthesia care unit with stable hemodynamics.



Figure 1. MRI scan showing rigid curved thoracolumbar spine.



Figure 2 : X ray lateral view neck showing fused anterior longitudinal ligament (bamboo spine)

III. Discussion

AS is a chronic inflammatory disease of the axial skeleton in which the inflammatory process starts from the sacro-iliac joints and spreads cephalad to affect the spine up to the cervical level along with costo-vertebral joints. (1) It is more common in males with an incidence of 1% and a peak onset at the age of 20 -30 years. (2). With a strong association with HLA B 27, syndesmophyte formation leads to ossification of

ligaments resulting in a rigid skeleton. Along the progression of the disease, osteoporosis accentuates the compression fractures ending in a rigid hyper-kyphotic hump which greatly increases the positional injuries. Cervico thoracic areas are more prone to such development and even a slight manipulation can end in nerve compression or compression fractures.(3) Vertebrobasilar insufficiency is a common finding in rigid cervical spine as a result of bony encroachment on vertebral artery. A thorough pre operative neurological examination should be conducted and range of motion of all joints be assessed for optimal positioning. Rigid, brittle spine manipulation can easily end up in vertebral fractures, epidural haematoma, spinal cord compression especially under general anaesthesia.

Cardiopulmonary involvement also pose a threat in advanced cases where aortic valve and mitral valve are commonly involved. Restrictive lung disease pattern is documented in most cases although the severity may vary. A battery of test are indicated pre operatively which include echocardiography, lung function tests, imaging of the cervical spine. Surgical osteotomy of severe deformity can significantly improve a patient's functionality. Correction of kyphotic deformity can prevent further lung impairment and drastically enhance the psycho- social status of the patient. General anaesthesia with controlled ventilation via tracheal intubation affords a secure airway. Pre-operative indirect laryngoscopy can be invaluable in assessing a patient to predict difficult intubation which was instrumental in this case.

Prone positioning itself aggravates the physiological derangement and it is enhanced manifolds in the presence of AS. A rigid and brittle spine is easily manipulated after the neuromuscular blockade. If necessary thought is not given, the results can be drastic. Starting from the eye care and tube malpositioning during prone positioning, all demand special care. Ventilator mechanics along with restrictive lung disease is exacerbated during positive pressure ventilation. The bamboo spine doesn't give any margin for laxity when the patient is placed prone, the spine appears as an arrow which necessitates the use of extra padding on the bolsters for support. Cervical spine has to be especially protected as it is most prone for compression and the head can hang and compress the vital structures without any proper support. A 15 degree head down tilt only of the head end of the table can help immensely in placement of head over foam head support and positioning of arms. Peripheral neuropathy is exacerbated in such patient as these are usually malnourished due to difficulty in swallowing especially in cases with chin to chest deformity. Extra precaution is due at every step.

The anesthetist is always more concerned with the airway and one should be too but the positioning is also of equal importance as it may have dire consequences and one should be prepared before hand for a difficult positioning too.

IV. Conclusion

AS always is a disease which puts all minds to work. Airway is also anticipated to be difficult but we faced difficulty in placing the patient prone. Improper positioning have drastic consequences which can lead to spinal cord compression, vertebrobasilar insufficiency or quadriparesis. Such patients should be treated with utmost care at every step not just the airway.

References

- [1]. Goyal R, Singh S, Shukla RN, Singhal A. Management of a case of ankylosing spondylitis for total hip replacement surgery with the use of ultrasound-assisted central neuraxial blockade. *Indian J Anaesth* 2013;57:69-71
- [2]. Woodward, L.J. and Kam, P.C.A. (2009), Ankylosing spondylitis: recent developments and anaesthetic implications. *Anaesthesia*, 64: 540-548
- [3]. Rustagi P, Patkar GA, Tendolkar BA. Management of a case of ankylosing spondylitis for percutaneous nephrolithotomy in prone position under combined spinal epidural anesthesia. *Med J DY Patil Univ* 2016;9:765-7.
- [4]. Heyde CE, Fakler JK, Hasenboehler E, Stahel PF, John T, Robinson Y, et al. Pitfalls and complications in the treatment of cervical spine fractures in patients with ankylosing spondylitis. *Patient Saf Surg* 2008;2:15.

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