



Anaesthetic Management Of A Case Of Severe Ankylosing Spondylitis Having Temporomandibular Joint Ankylosis And Fixed Flexion Deformity Of Neck Posted For Elective Cholecystectomy

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Abstract

Ankylosing spondylitis (AS) is a chronic inflammatory rheumatic disease causing inflammation and bony ankylosis of joints lined by fibrocartilage. It affects the axial skeleton more commonly than the peripheral joints. Several problems are encountered perioperatively in such patients including difficult airway for endotracheal intubation, patient positioning and restrictive lung disease. Here, we report the anaesthetic challenges faced in a case of AS with bilateral Temporomandibular joint (TMJ) ankylosis, fixed flexion deformity of neck and severe kyphoscoliosis posted for elective cholecystectomy.

Keywords: Ankylosing spondylitis, TMJ ankylosis, kyphoscoliosis, fixed flexion deformity, awake fiberoptic intubation

Introduction

The incidence of involvement of Temporomandibular joint (TMJ) is 10–35% in Ankylosing Spondylitis (AS) patients.¹ The granulation tissue infiltration into bony insertions of ligaments and joint capsules in AS gradually leads to fibrosis, ossification and bony Ankylosis. Involvement of TMJ presents as a progressive limitation in mouth opening and painful jaw movements.²

Airway management for general anaesthesia in patients with rheumatic diseases can be quite challenging because of the changes related to the disease, especially in TMJ and the cervical spine. In such a scenario, airway and neck assessment is crucial. Atlanto-axial subluxation can be found in such patients. Also, there is a potential risk of spinal cord damage when performing airway management. Cricoid dysfunction is another factor

influencing complexities related to airway management.^{3,4}

Spine deformity, neck rigidity and fixed flexion deformity pose a challenge to the anaesthesiologist as well as, the surgeon. A skilled team of anesthesiologists is required for awake fiberoptic intubation without undue neck movement since manipulation of the patient's neck and repeated changes in surgical position can untowardly lead to spine injury.⁵ Neck extension can also cause vertebral insufficiency as result of bony encroachment onto the vertebral artery.⁶

The purpose of the report is to describe the anaesthetic challenges faced in a case of AS with bilateral TMJ ankylosis, fixed flexion deformity of neck and severe kyphoscoliosis.

Case Report

A 32-year old female reported with the complaints of pain abdomen, vomiting & nausea intermittently for the last four months. The patient was a recently diagnosed case of AS (not on disease modifying anti-rheumatic drugs (DMARDs)) involving the cervical, thoracic and lumbar spine with no other medical or family history. She had severe kypho-scoliotic deformity & rigidity of the spine and neck with no flexion, extension or lateral movements possible due to forwardly positioned neck. Normal lumbar lordosis was absent. Examination of all systems revealed no abnormalities. No clinical cardiopulmonary insufficiency as a contraindication to general anaesthesia was evident.

All laboratory investigations including complete haemogram, C-reactive protein, erythrocyte sedimentation rate and immunoglobulin levels were within normal limits. Patient was positive for HLA-B27 antigen, classical of AS. Chest expansion was restricted to 2 cm and pulmonary function tests (PFT) showed a mild restrictive lung disease.

On examination, the patient had mild retrusion of the chin and a mouth opening of 1 cm. Protrusive and laterotrusive movements of the mandible were non-existent. The reduction in mouth opening occurred gradually over a period of about 15 years noticed significantly in the last 10 years, not associated with any pain/joint sound/tenderness. No corrective surgery was done/planned for the TMJ ankylosis.

Surgical positioning is also a challenge in AS patients with neck and spine rigidity. So, the position of the patient was planned before anaesthesia with appropriate padding of the elbow, pelvis, heel and supporting pillows between legs to avoid pressure injury.

Pre-anaesthetic psychological preparation of the patient to awake fiberoptic intubation was done after explaining the entire procedure and the need for awake intubation despite conventional techniques being available. Patient was accepted for surgery under ASA physical status class III. Difficult airway cart with emergency tracheostomy set was kept standby in our case.

Before the intubation, the patient was nebulised with 2 ml 4% lignocaine and made to lie in the supine position with 2-3 pillows under the head, neck and shoulders to stabilise and support the deformity. Inj. Glycopyrrolate 0.005 mg/kg was given i.m. 30 min. before the intubation. The nasal mucosa was anaesthetized using cotton pledgets soaked in 4% lignocaine to block the sphenopalatine ganglion and anterior ethmoid nerve. Inj. Dexmedetomidine 1µg/kg i.v. over 30 minutes followed by 0.5µg/kg/hour i.v. infusion was initiated. The superior laryngeal nerve was blocked at the level inferior to greater cornua of hyoid bone. Recurrent laryngeal nerve was blocked using translaryngeal injection of 2% lignocaine injected at the end of deep inspiration via an intravenous cannula introduced in a caudal direction through the cricothyroid membrane. This induced a cough reflex facilitating the spraying of vocal cords with the anaesthetic solution. Nasal decongestant drops were instilled to minimize nasal airway mucosal bleed. Just before the fiberoptic bronchoscope (FOB) was inserted, two puffs of 10% lignocaine spray were sprayed onto the posterior pharyngeal wall and posterior faucial pillar. Awake fiberoptic naso-endotracheal intubation was done using the 'spray as you go' technique. Anaesthesia was induced with 90mg i.v. inj. Propofol given in titrated doses, inj. Fentanyl 2µg/kg i.v. and inj. Vecuronium bromide 0.08mg/kg i.v. Subcostal transversus abdominis plane block was given for peri-operative pain management and to facilitate smooth extubation. Anaesthesia was maintained with Air:O₂=1:1, 50-100µg/kg/min. inj. Propofol i.v. and 1-1.5µg/kg/hr i.v. inj. Fentanyl. Open cholecystectomy was uneventful but challenging because of the severe kyphoscoliotic deformity and took 50 minutes. Tracheal extubation was done once patient was fully awake after reversal of muscle relaxant and over a ventilating gum-elastic bougie since no corrective surgery for TMJ ankylosis was done. The bougie was removed once the post-extubation phase remained uneventful. The patient was then shifted to post-anaesthesia care unit. The patient was finally discharged for OPD follow-up after uneventful stay in the surgical ward for 2 days.

1 cm mouth opening of the patient



Awake Fiberoptic visualisation of the glottis in this patient



Fixed flexion deformity of the neck with mild retrusive mandible



Discussion

Ankylosing Spondylitis is a chronic progressive inflammatory disease with axial and paraxial spondyloarthropathy. It has a predilection to bone

formation in the affected joints. In 90–95 % cases, its considered to be an autoimmune disease with positive HLA-B27 antigen. A routine airway examination is always advisable in AS patients to rule out any involvement.^{7,8,9}

Anaesthesia in AS patients is a challenge as the two most pressing concerns in such patients are neck rigidity and TMJ ankylosis. Even a mild neurological injury due to cervical manipulation can lead to serious sequelae. Conventional anaesthesia is out of the question in such patients as anaesthesiologists can never totally secure the airway due to limited mouth opening. Awake fiberoptic nasal intubation, hence, is the safest choice. Neck support is mandatory during anaesthesia with limited movement to avoid neurological injury.

Awake fiberoptic nasal intubation requires considerable patient cooperation. A preanesthetic psychological preparation by giving a realistic explanation of the difficulty which the patient may experience goes a long way in alleviating the anxiety and getting the patient's cooperation. Planning the positioning of the patient prior to anaesthesia can minimize the risk of injury to pressure points and cervical spine.¹⁰

An intubating LMA (ILMA) may be used to achieve blind endotracheal intubation with restricted cervical spine movement. But ILMA is not recommended as the method of choice for intubation because of its poor success rate without the use of fiberoptic and the great amount of force that may be exerted on the posterior wall of the pharynx at C2–C3.¹¹

A surgical tracheostomy performed under local anaesthesia is an alternative method of securing the airway of patients with cricoarytenoid joint involvement. However, major difficulties with this method include the presence of an extreme fixed flexion deformity of the cervical spine with little or no access to the trachea, tracheal deviation and patient distress.¹²

Rigid optic intubation stylets can also be used similarly to standard intubation stylets, to secure the airway. The learning curve is shallower for most anaesthesiologists as compared to fibreoptic. They are especially useful in patients with restricted mouth opening.¹³

Blind nasal intubation and Retrograde wire intubation are other invasive options to secure the airway, not preferred as the first choice.

In the present patient, fixed flexion deformity (FFD) was mild-moderate; the chin was not in contact with the chest. When extensive FFD of the neck is present,

initial cervical surgery may be advised to permit neck extension. This will make tracheostomy or awake fiberoptic intubation possible if the airway is compromised in the immediate postoperative period.¹⁰

Conclusion

Management of Ankylosing spondylitis patients posted for any procedure, becomes challenging especially in moderate-severe disease. Multidisciplinary skilful team approach with proper planning in managing such high risk cases leads to best outcome. A combination of thorough pre-operative assessment with preparation, intraoperative management and post-operative care resulted in a safe anaesthesia and a successful surgical outcome in our patient.

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