Anaesthetic management in case of Ankylosing Spondylitis – A case report

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Summary :

We are presenting the case report of a 45 year old male with ankylosing spondylitis posted for emergency closure of gastric perforation. This report highlights the problems and challenges faced by the anaesthesiologist in the anaesthetic management especially airway and intubation difficulties.

Keywords:Ankylosing spondylitis,cervical spine,difficult intubation.

Ankylosing spondylitis is a chronic inflammatory disease included in the group of sero negative spondyloarthropathies affects mainly the axial skeleton with progressive rigidity and functional limitation. It affects young adults between 2nd and 4th decades of life mainly males (5:1) and HLA-B27 positive individuals.

Initially the patient with Ankylosing Spondylitis complains of low lumbar pain, which improves with movement and worsens with rest and prolonged rigidity in the morning. It evolves upwardly, affecting, progressively the dorsal and cervical spine, contributing to the development of "Skier posture" characterized by straightening of the lumbar lordosis, accenutuation of the dorsal kyphosis, and straightening of the cervical lordosis with projection of the head forward.The inflammatory process may begin in the sacroiliac joints and evolve upwardly in the spine and costovertebral articulations. The interspinal ligaments calcify, forming bony bridges between the lumbar vertebrae, creating the characteristic radiological aspect of "bamboo spine".

The involvement of the cervical spine varies from a limitation of neck movements to complete ankylosis. A cervical spine immobile and in flexion, along with its predisposition for fractures secondary to traumas caused by mild extension, frequently associated with limitation of mouth opening due to changes in the temporomandibular joint, are responsible for a difficult tracheal intubation.

Case report:

We report a case of a 45yrs old male who was posted for emergency closure of gastric perforation. Patient was a known case of ankylosing spondylitis since 12yrs. Patient gave history of chronic backache since 12 years and stiffness of joints which initially began in the hip joint progressed to the spine since 8 yrs. He had been taking analgesics since past 8 yrs. There was no history of steroid intake. Patient's father had also suffered from similar complaints. There was no history and complaints related to eye, gastrointestinal cardiovascular or respiratory or central

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nervous system. On airway assessment mouth opening was two finger width,TMJ admitted one finger in front of tragus. Mallampati score was Grade III. mandibular space (thyromental distance was 6cms). Atlanto occipital joint extention was severely limited. Dentition was normal.

Patient was a middle aged, adult male, poorly built and nourished, conscious oriented with time, place and person, his pulse rate was 122/ min, blood pressure was 116/70mmHg, febrile, with a respiratory rate of 28 per min. On systemic examination of respiratory system patient was tachypnoeic with accessory muscles of respiration in action. Chest movements were bilaterally reduced with air entry reduced on left basal region. There were no adventitious sounds. On perabdomen examination, there was generalised abdominal distention with tenderness all over the abdomen. Bowel sounds were absent. Cardiovascular system and central nervous system were normal.

His pre operative investigations were Hb of 9.6 gm%,ESR of 44mm with other parameters within normal limits. Rheumatoid factor was negative. Neck X-ray lateral view showed straightening of the cervical spine,ossification of anterior, posterior and interspinous ligament, normal vertebral height, normal disc spaces. and normal prevertebral space.

Anaesthetic management:

After obtaining a valid informed consent, case was taken up for surgery. Keeping in view the anticipated difficult airway, tracheostomy and transtracheal jet ventilation were kept ready as standby. Nasogastric tube suctioning was done. Pt was premedicated with inj.Glycopyrrolate-0.2mg i.v, inj.Rantac-50mg i.v, inj.ondansetron-4mg i.v, inj.sufentanil-50 μg i.v. Preoxygenation was done with 100% oxygen for 5 mins. Patient was anesthetized with Inj.Propofol-1%, 2 mg/kg.iv. Mask ventilation was confirmed with cricoid pressure as it was anticipated difficult airway. Inj. succinyl choline 75mg was given iv. On laryngoscopy it was Cormack-Lehane – Class III. But intubation was difficult and failed with 2 attempts and patient was brought back to spontaneous ventilation and awakened. The next trial of intubation was done by senior anesthesiologist with repositioning of the patient (See photo); Large shoulder support in line with the neck which was in a fixed hyperextended position. Then, smaller size ETT (number 7.5 cuffed) with stylet was used along with BURP manoeuvre. Patient could be intubated

successfully and the placement of the endotracheal tube was confirmed by five point auscultation and capnography.

Anaesthesia was maintained with N_2O : O_2 (50% : 50%). Inj.sufentanil – 25μg hourly, inj. Vecuronium 4mg i.v and repeated at 1mg doses. Intraoperative monitoring included pulse oximetry, continuous ECG, non invasive blood pressure measurement and capnometry. At the end of surgery residual neuromuscular block was reversed with inj.neostigmine -2.5mg and inj.glycopyrrolate-0.4mg i.v. Patient was shifted to ICU with endotracheal tube in situ for observation and maintained on Inj.sufentanil and 100% oxygen through T piece. After confirming that patient was maintaining normal oxygen saturation values and $ETCO_2$, he was extubated after 12hrs. Post op course was uneventful and was haemodynamically stable.

Discussion:

The anaesthesiologist should base the anesthetic conduct on the severity of ankylosing spondylitis, centered on four main aspects: degree of upper airways involvement, presence of pulmonary restriction, degree of cardiac involvement and access to the neuraxis. Chest X-ray can show restrictive changes and in the majority of the cases, pulmonary function tests should be requested. Respiratory insufficiency and the limitation of chest expansion increase the incidence of pulmonary complications and the need for postoperative mechanical ventilation in the ICU, especially in major surgeries. Cardiologic evaluation (ECG and ECHO) is essential to determine the cardiovascular risk. Involvement of the heart valves, especially the aortic valve, may be present with associated conduction defects. These changes in cardiovascular system did not exist in our patient.

Emergency surgeries provide less time for evaluation of the patient as in our present study.

Once the difficulties for tracheal intubation are determined, the anesthesiologist should choose a method of intubation. Fibrescope guided intubation with mild sedation of the patient and anesthesia of the mucous membranes is the method of choice in patients with advanced deformity of the cervical spine. Other safe options include awake intubation, intubation with moderate sedation of the patient, with instillation of local anaesthetic in the oropharyngeal mucous membrane, infiltration of the superior laryngeal nerves and transcricothyroid instillation using direct laryngoscopy, if possible. One can also choose blind nasal or oral intubation with the aid of a light probe and retrograde intubation. In our case ,we decided to approach the patient with conventional laryngoscopy under GA as the mouth opening was adequate and mask ventilation was also possible. A standby arrangement for surgical tracheostomy and transtracheal jet ventilation was also kept ready. The involvement of the temporomandibular joint limits mouth opening in up to 40% of the patients, which can evolve to complete ankylosis. Although rare, cricoarytenoid arthritis with dyspnea, stridor and fixation of the vocal cords may be present. Cervical support should be used during the procedure, especially if symptoms of vertebrobasilar insufficiency are present. The sudden and intense variation in systemic vascular resistance caused by the spinal anaesthesia is not tolerated by patients with defects in the aortic valve sometimes seen in patients with Ankylosing spondylitis.

Neuroaxial blocks are technically difficult and usually impossible, due to the limited articular mobility and obliteration of the interspinal spaces. X-ray of the lumbar spine may be useful to evaluate the possibility of spinal anesthesia. External cardiac massage in the presence of a rigid thoracic wall may be ineffective.

Conclusion:

Patients with ankylosing spondylitis disease present specific challenges to the anesthesiologist. Handling of the airways and access to the neuroaxis can be very difficult. The degree of cervical spine involvement will determine how difficult the tracheal intubation might be. One should avoid excessive handling of the neck, which could cause trauma to the spinal cord.

Thus, individualized preanesthetic evaluation is fundamental, as well as the indication of the right technique to minimize morbidity when these patients undergo surgical or diagnostic procedures.

References :

1. Van der Linden S, Van der Heijde D. Ankylosing spondylitis. Clinical features. Rheum Dis Clin North Am, 1998;24:663-676.
2. Podolsky SM, Hoffman Jr, Pietrafesa CA. Neurological complications following immobilization of cervical spine fracture in a patient with ankylosing spondylitis. Ann Emerg Med, 1983;12:578-580.
3. Dave N, Sharma RK. Temporomandibular joint ankylosis in a case of ankylosing spondylitis anaesthetic management. Indian J Anaesth, 2004;48:54-56.
4. Schelew BL, Vaghadia H. Ankylosing spondylitis and neuraxial anaesthesia a 10 year review. Can J Anaesth, 1996;43:65-68.
5. Kamarkar US,Chaudhari LS Hosalkar H et al- Difficult intubation in a case of ankylosing spondylitis a case report.J Postgrad Med,1998;44:43-46.
6. Popitz MD-Anaesthetic implications of chronic disease of the cervical spine.Anaesth Analg,1997;84:672-683.