Airway in Acromegaly – A Difficult Affair

INTRODUCTION:
Majority of the studies regarding the complications in acromegaly are from Anaesthetists side rather than from Otolaryngology side. How-ever when both specialties are taken together the term difficult air-way means either difficulty in tracheal intubation or difficulty in introdu-cing laryngoscope. In our case it was difficulty in both intubation as well as laryngoscope introduction. It is important to identify the difficult airway before surgery to prepare for safe ventilation and intu-bation to avoid morbidity and mortality. Awake fiberoptic intubation, laryngeal mask airway and surgical airway are the options in difficult airway. And if it is going to be can’t intubate can’t ventilate situation the next resort is emergency tracheostomy.

Acromegaly is a rare disorder where both surgeon and anesthetist find it difficult to handle the airway due to the hypertrophy of soft tissue in the oralcavity, oropharynx & laryngopharynx due to excessive production of Growth hormone

GH hypersecretion is caused by adenoma and rarely by extrapitui-nary lesions. Patients present with classic features such as elevated GH level, pituitary enlargement on MRI and pathologic features of pituitary hyperplasia. Acral bony growth manifested as frontal bossing, increased hand and foot size, mandibular enlargement with prognathism,(Fig:3) and widened space between the incisor teeth. Other clinical features include hyperhidrosis, muffled voice, oily skin, arthropathy, kyphosis, carpal tunnel syndrome, proximal muscle weakness & fatigue, acanthosisnigricans and skin tags. Generalised visceromegaly like cardiomegaly, and macroglodia and thyroid gland enlargement occurs. According to the reports about 30% of patients have cardiovascular complications, 60% have upper airway obstruction with sleep apnea. There are both central sleep dysfunction as well as soft tissue laryngeal airway obstruction.(2 )

Lab investigations include serum IGF – I levels, GH suppression, PRL, thyroid function, gonadotropins, sexsteroids. Treatment is surgical resection of GH secreting adenomas by transsphenoidal approach, somatostatin analogues are used as adjuvants.(2)

First case of acromegaly with laryngeal symptoms was reported by Chapell in 1896. Physical examination of these patients reveals prognathism, large thickened lips, large tongue, large nose(Fig:3)

enlarged larynx, coarse voice, thickening of epiglottis, thickening of aryepiglottic folds,ventricular folds,vocal cords,arytenoid cartilag-es, fixation of vocal cords, palsy of recurrent laryngeal nerve. Studies shows that abnormal flow volume curves suggesting upper airway obstruction was found in more than 25 % of patients with acromegaly whose cardiorespiratory system was normal.(3)

A possible cause of fixation of vocal cords is paralysis of recurrent laryngeal nerve. There is overgrowth of the cartilaginous structures which stretches the nerves to result in immobility of the cords.(3) Another possi-bility is interference with movement of cricoarytenoid joints or thickening of laryngeal structures.(4) It has been found in certain cases that stridor is precipitated by an upper respiratory infection. (4)

CASE : Our case was a 47 year old male who was diagnosed as a known case of acromegaly of 15 years duration. He was on treatment since then with somatostatin analogues which he took once in 3 months and underwent trans sphenoidal decompression for pituitary adenoma one week post surgery at a local hospital. In the immediate postoperative period he developed stridor for which tracheostomy was done. Howev-er he was decannulated one week back and thereafter developed noisy breathing which worsened since 1 week and was presented to our emergency department with breathing difficulty. On examination he had inspiratory stridor with saturation fall at room air. His flexible endo-scopy revealed bilateral immobile vocal folds, paradoxical movements, Sucking in of ventricular mucosa and bilateral edematous arytenoids. calcium were normal. Total count was elevated with pre-dominant polymorphs, normal electrolyte and blood sugar levels.

After admission and stabilization the need for an emergency surgical airway was explained to the patient and relatives. Since there was a chance to offer better airway with a temporary lateralization we de-cided to do a suture cordexpy as an immediate relief. Consent for tracheostomy which could be decannulated later was also taken.

Since it was difficult airway the chief anaesthetist decided to do an awake intubation. The patient was prepared for awake intu-bation. Patient was prepared for fiberoptic intubation with ade-quate nasal decongestion and local anaesthesia, tracheal mucosa was anaesthetized using 4 % xylocaine which was injected through cricothyroid membrane.
Fibreoptic endoscope railroaded with endotracheal tube and introduced through the nasal cavity. (Fig:1) Epiglottis found falling and obscuring the view of glottis. With great difficulty glottis reached. However, awake intubation failed in this case since the patient became uncooperative just before the introduction of scope tip to the glottis. Fibreoptic scope couldn't be passed beyond the glottis into the subglottis and trachea. Multiple attempts done and it was found that since the airway was critical patient couldn't tolerate even the tip of the fibreoptic scope which was obstructing the only available breathing space of the patient. So the fibreoptic intubation trial abandoned and intubation tried with bougie which was successful.

**DISCUSSION:**

Few Case reports of airway difficulties associated with anaesthesia in acromegaly have been published earlier. It is a real challenge for both anaesthesitist and surgeon. Among many criterias tested as potential predictors for difficult intubation three simple and easy to perform examinations are modified mallampati, measurement of thyromental distance and head and neck movements. Among these in this case thyromental distance was actually more than normal requirement and head and neck movements were normal, but because of macroglossia modified mallampatti was unfavourable.

There were studies regarding the applicability of fibreoptic intubation in acromegaly cases, the most commonly used tests for prediction of intubation difficulties do not apply to fibreoptic intubation. Eventhough Fibreoptic intubation has been recognized as one of the best methods to manage a difficult airway,(5) the predictive parameters of difficult fibreoptic intubation have not been studied.

Though the need for surgical airway was well explained to the patient and bystanders, they were reluctant at first because to them he was suffering from the same symptoms for many years and were not convinced about the critical airway. On detailed interrogation he always had snoring and sleep apnoea which was part of acromegaly and recent surgery which ended up in tracheostomy and subsequent decannulation was not well discussed in detail.

Fibreoptic intubation failed since the tip of endoscope was obstructing the only glottic space available for the patient to breathe. The edema of supraglottis due to the previous intubation added up to the misery. Cases were reported with the same history that repeat attempts at endotracheal intubation precipitate the need for emergency tracheostomy. (6) In many reported cases it has been found that fibreoptic intubation failed.

Repeated intubation causes further trauma and edema which makes exposure of larynx more and more difficult on repeated attempts, that may be the reason for inability to expose the larynx for laser cordotomy.

**CONCLUSION:**

Difficult airway is a concern for both the anesthetist as well as the surgeon. A difficult airway is considered when one of following is involved: difficult laryngoscopy and difficult mask ventilation and / or difficult tracheal intubation.(7) The important aspect such as identifying the difficult airway before manipulation was clearly carried out here. When a patient with acromegaly is taken for a surgery it should be well explained to the patient regarding the potential airway problem. When a patient with acromegaly is taken for a surgery it should be well explained to the patient regarding the potential airway problem. On next visit we found that there was a cut through in his sutures of cordopexy so we planned for an Endoscopic Laser cordotomy so that decannulation would be possible. But to our surprise we couldn't even expose the larynx due to persisting edema of the oropharynx as well as the supraglottis. So the procedure was abandoned. His initial follow up visits showed edematous supraglottic and glottic area which took quite a long time to subside.

He was send home with shileys tracheostomy tube. He was advised to come for follow up at regular intervals. On next visit we found that there was a cut through in his sutures of cordopexy so we planned for an Endoscopic Laser cordotomy so that decannulation would be possible. But to our surprise we couldn't even expose the larynx due to persisting edema of the oropharynx as well as the supraglottis. So the procedure was abandoned. His initial follow up visits showed edematous supraglottic and glottic area which took quite a long time to subside.

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