



Retrosternal Goiter with Acromegaly – An Airway Challenge

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ABSTRACT

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Background: Patients with acromegaly may present with a goiter. Moreover, patients with acromegaly are more prone to develop severe airway obstruction and breathing difficulties during induction therapy because of enlargement of the tongue, hypertrophy of soft tissue and mandibular prognathism as a sequela of the underlying acromegaly. Here we have described successful airway management in patient with difficult airway with retrosternal goiter and acromegaly.

Case Presentation: A 29-year-old female presented to our tertiary care hospital with the complaints of swelling in the anterior aspect of the neck, headache, amenorrhea and a change in voice which she noticed progressively increasing in the last 10 years. Examination revealed thyroid enlargement of about 8 cm with regular margins and smooth surface. In order to ensure airway safety, an airway management was prepared preoperatively that included high flow nasal oxygen on standby and ear-nose and throat surgeons on standby with small and long ventilating bronchoscope for tracheostomy if required. A pre-extubation check scopy was done which showed mobile bilateral vocal cords. A cuff leak test was performed which was negative. The patient was successfully extubated and kept in the recovery room for 7 days.

Conclusion: A careful preoperative assessment and appropriate planning is necessary during intubation as well as extubation in such patients to avoid life threatening complications because of the difficult airway.

KEYWORDS:

Case Report;
Acromegaly;
Retrosternal Goiter;
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INTRODUCTION

Patients with acromegaly may present with a goiter. Moreover, patients with acromegaly are more prone to develop severe airway obstruction and breathing difficulties during induction therapy because of enlargement of the tongue, hypertrophy of soft tissue and mandibular

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prognathism as a sequela of the underlying acromegaly. Even a retrosternal goiter in such patients can cause compression of the surrounding major blood vessels or obstruction of the airways.

This increases the case difficulty from an anesthesiology point of view. Comprehensive preoperative assessments, including medical history, physical examination and imaging for the airway are considered very important for identifying patients at risk of respiratory and cardiovascular complications. In our case report we describe successful anesthetic management of patients with retrosternal goiter

who have underlying acromegaly, who underwent total thyroidectomy.

CASE PRESENTATION

A 29-year-old female, weighing 80 kilograms, height of 165cm and a BMI of 29.4 kg/m² was known case of previously diagnosed hypertension, diabetes mellitus, hyperthyroidism. She presented to our tertiary care hospital with the complaints of swelling in the anterior aspect of the neck, headache, amenorrhea and a change in voice which she noticed progressively increasing in the last 10 years.

Examination revealed thyroid enlargement of about 8 cm with regular margins and smooth surface. Patient demonstrated features of acromegaly such as: coarse facial features, broad nose, prominent cheekbones, prominent supraorbital ridges, a long protruding mandible, broadened hands and feet, and an enlarged tongue.

Airway examination revealed- Mallampati grade IV, adequate neck movement, and a thyromental distance of greater than 6.5cm (Figure 1). An x-ray of the chest in an anteroposterior view demonstrated lateral deviation of the trachea (Figure 2). Computed tomography of the chest demonstrated a well-defined hypodense lesion in the right lobe of thyroid, measuring 3.9 cm x4.3 cm x7.8 cm with a 1.6-inch extension into the mediastinum in the prevascular space (Figure 3) Multiple hypodense lesions were seen in the left lobe of the thyroid gland with the largest one measuring 2.3cm x 2cm (Figure 4). An enlarged thyroid gland was seen causing compression of the trachea with the lumen maximally narrow at the C7 level, measuring 1.7 cm anteroposteriorly and 9mm transversely. It displaced the right subclavian artery and the right common carotid artery posterolaterally

A magnetic resonance imaging study of the brain demonstrated a pituitary macroadenoma on the left side that was mildly compressing the left midbrain and pons. 2D transthoracic echocardiogram demonstrated an ejection fraction of 60% with no evidence of mitral stenosis, mitral regurgitation, tricuspid regurgitation and pulmonary hypertension. ENT examination revealed an adequate moving chink of the bilateral vocal cords. Complete blood counts, liver and renal function tests were within normal limits, and the adrenocorticotropin hormones were 48.4 IU/ml, which were raised.

In order to ensure airway safety, an airway management was prepared preoperatively that included high flow nasal oxygen on standby and ear-nose and throat surgeons on standby with small and long ventilating bronchoscope for tracheostomy if required. After taking a written informed consent, the patient was taken inside the operating room. Standard American Society of Anesthesiologists monitors were attached and two wide bore intravenous lines were secured. Preoxygenation with 100% oxygen was started. Injection fentanyl at 2 mg/kg, injection Loxicard at 1 mg/kg and injection propofol at 2 mg/kg and after confirmation of ventilation, injection succinylcholine at 2 mg/kg were given.

Apnoeic oxygenation was started and laryngoscopy was attempted with the bougie guided CMAC blade 3, which failed. Preoxygenation was done for 3 minutes and apnoeic oxygenation was started. A second attempt with the CMAC D blade was successful and the airway was secured with a 6.5 mm cuffed flexometallic tube after confirming bilateral air entry. Anesthesia was maintained with oxygen, nitrous oxide and sevoflurane. A total thyroidectomy was successfully performed with a blood loss of 150 ml.

A pre-extubation check scopy was done which showed mobile bilateral vocal cords. A cuff leak test was performed which was negative. The patient was successfully extubated and kept in the recovery room for 7 days after which they were shifted to the ward and discharged on the 7th post operative day.

DISCUSSION

Retrosternal goiter causes tracheal compression and deviation which not only causes difficult airway but also puts stress on the cardiovascular system, which can lead to circulatory failure or postoperative tracheomalacia. The incidence of difficult intubation with any thyroid swellings is 2-12.7% and that of failed intubation is 0.3-0.5%, so the first aim was to find out whether there exists a difficult airway and then select an anesthesia induction protocol and tracheal intubation method.

Chest X-ray shows whether tracheal and bronchial deviation or compression is present and Chest CT facilitates accurate measurement of the airway diameter which helps in selection of appropriate endotracheal tube size, it is also useful to find out the level of maximum compression. Apnoeic oxygenation was used to increase safe apnoea time. Prior to extubation check scopy was done to look for bilateral vocal cord movement to rule out an injury to the recurrent laryngeal nerve which is easily ignored as an important cause of postoperative asphyxia.

Tracheomalacia is a major concern after massive retrosternal goiter resection (incidence according to Huins et al showed as <1%, Chauhan et al and Sudan et al reported was about 0.05%). Therefore cuff leak test was done and extubation was performed when the patient was fully awake.

CONCLUSION

Here we have described successful airway management in patient with difficult airway with retrosternal goiter and acromegaly. A careful preoperative assessment and appropriate planning is necessary during intubation as well as extubation in such patients to avoid life threatening complications because of the difficult airway.

INFORMED CONSENT

The study was done after taking written informed consent from the patient.

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Figure 1- Airway examination revealed- Mallampati grade IV, adequate neck movement, and a thyromental distance of greater than 6.5cm



Figure 2: An x-ray of the chest in an anteroposterior view demonstrated lateral deviation of the trachea



Figure 3: Computed tomography of the chest demonstrated a well-defined hypodense lesion in the right lobe of thyroid, measuring 3.9 cm x4.3 cm x7.8 cm with a 1.6-inch extension into the mediastinum in the prevascular space

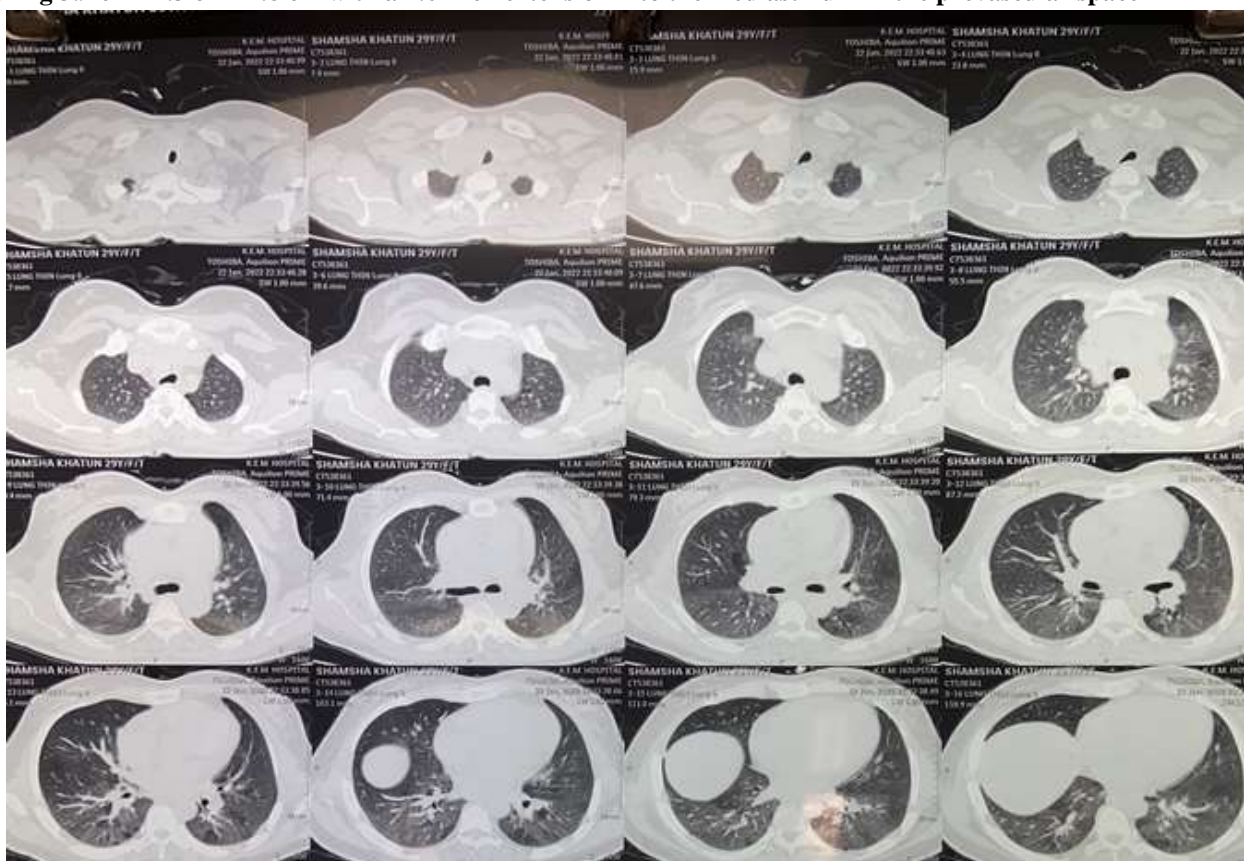


Figure 4: (Figure 3) Multiple hypodense lesions were seen in the left lobe of the thyroid gland with the largest one measuring 2.3cm x 2cm (Figure 4).

