CASE REPORT

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A Rare Cause of Tracheal Stenosis: Intratracheal Thyroid Tissue

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Abstract

Ectopic thyroid tissue (ETT) is a rare and usually asymptomatic congenital anomaly. The most common presentation is midline ectopic thyroid. In this case, a 55-year-old female treated for asthma due to dyspnea was diagnosed with stridor on physical examination. Mass that nearly obliterated the lumen of the trachea was observed on thoracic computed tomography. Diagnostic and therapeutic rigid bronchoscopy were performed. The pathological result of the biopsy was ETT. Ectopic intratracheal thyroid tissue is a rare cause of upper respiratory tract obstruction.

Keywords: Airway obstruction, ectopic thyroid, rigid bronchoscopy

INTRODUCTION

Ectopic thyroid tissue (ETT) is a rare and usually asymptomatic congenital anomaly. The embryological development of the thyroid gland begins on day 24 of fetal life as an epithelial proliferation in the foramen cecum (1). The thyroid tissue reaches its final position, i.e., in front of the trachea, during week 7 of fetal life. ETT occurs because of incomplete migration of the thyroid gland, which usually has a cervical or midline location. ETT usually causes hypothyroidism; dysphagia, dyspnea, and dysphonia is also frequently observed depending on the size of the mass (2).

In this article, we present a patient with intratracheal ETT who had previously undergone a thyroid operation and been treated for hypothyroidism. Radiological and endobronchial images were also acquired.

CASE PRESENTATION

A 55-year-old female non-smoker was admitted to our hospital in 2019 with progressively worsening dyspnea despite receiving treatment for her asthma in the previous year. The patient was a homemaker with no history of allergy. She had undergone total thyroidectomy in 2015 followed by synthetic thyroxine replacement therapy. No obvious pathology was found on routine laboratory tests, including thyroid function tests and chest radiography. In the pulmonary function test, the forced expiratory volume in 1 second (FEV1) was 2.51 (117%), the forced vital capacity (FVC) was 3.01 (118%), and the FEV1/FVC ratio was 83%. An extra-thoracic airway obstruction was detected (Figure 1). A mass originating from the thyroid gland almost completely obliterating the tracheal lumen was also observed on thoracic computed tomography (CT), which was performed after stridor was detected during the physical examination (Figures 2, 3). Rigid bronchoscopy was performed for diagnostic and therapeutic purposes. Vegetative mass was observed, beginning 1 cm beyond the vocal cords and originating from the posterior wall; it had a broad base and narrowed the lumen by 90% (Figure 4). The mass was removed with a rigid bronchoscope after argon plasma coagulation. About 70% airway patency was achieved after cleaning the bronchial tree and there were no complications (Figure 5).

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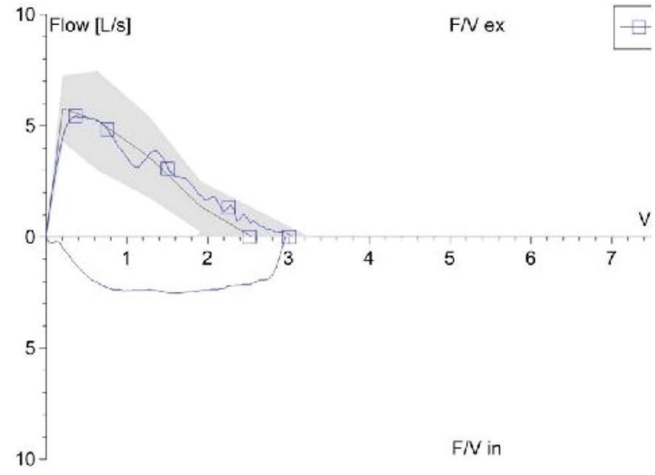

Figure 1. Extrathoracic airway obstruction on pulmonary function test

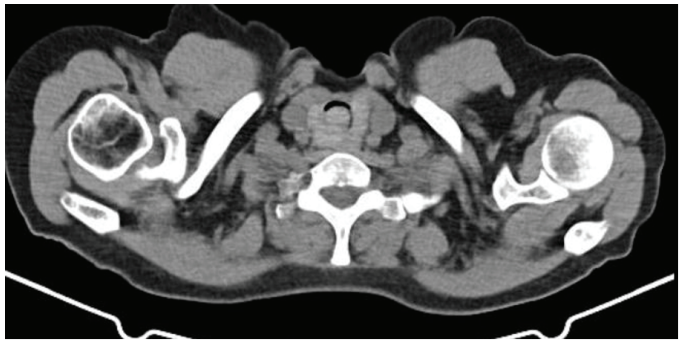

Figure 2. A mass obstructing the lumen of the trachea on thoracic CT
CT: Computed tomography

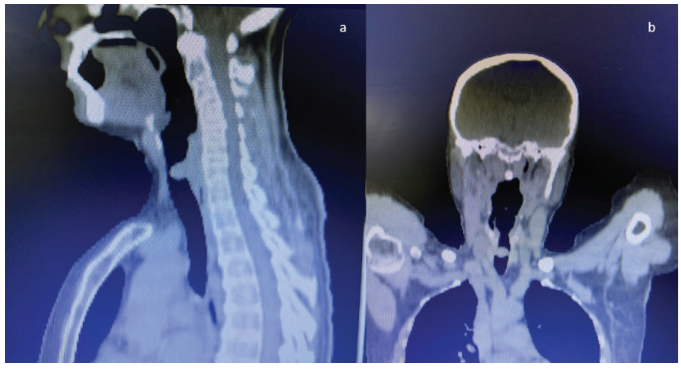

Figure 3. In sagittal and coronal multiplanar reconstruction images, a lesion, which is protruding posteriorly into the lumen, is observed in the cervical part of the trachea. (a: Sagittal, b: Coronal)

Biopsy revealed thyroid tissue containing benign follicular structures (Figure 6). The patient had undergone transplantation due to previous thyroid surgery. An endobronchial stent was unsuitable because the endobronchial lesion was very close to the vocal cords. Control fiberoptic bronchoscopy showed that the lesion had not progressed after 3 months and the tracheal opening was sufficient.

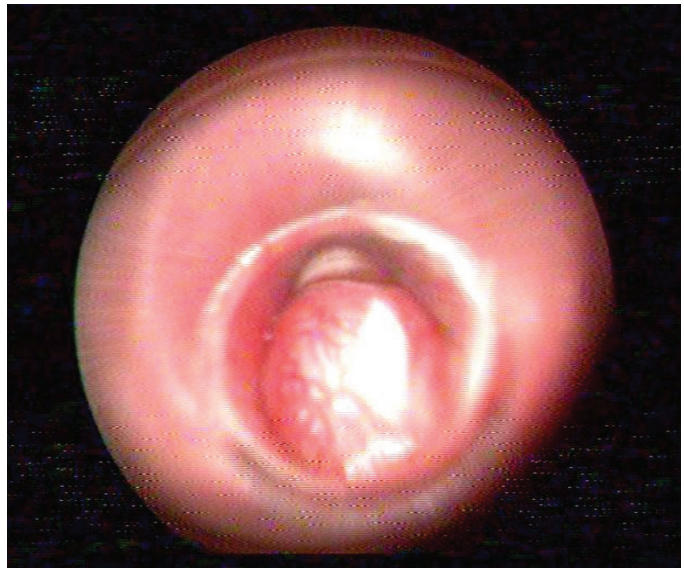

Figure 4. Endotracheal vegetative mass
APC: Argon plasma coagulation

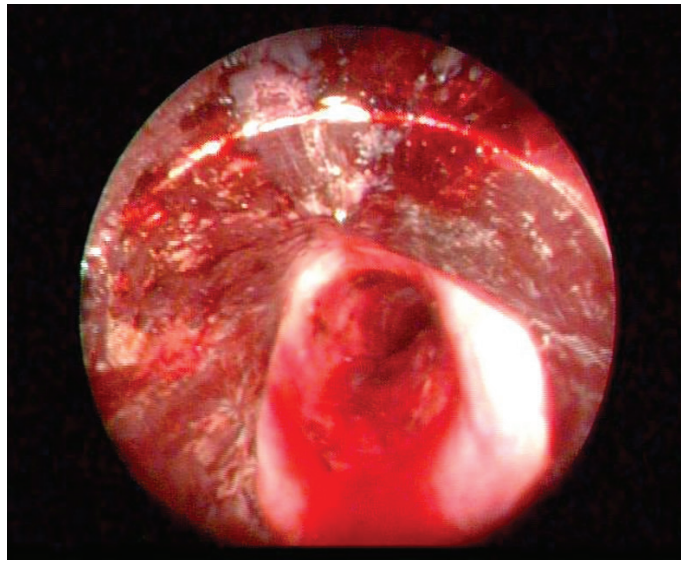

Figure 5. Endotracheal appearance after APC
APC: Argon plasma coagulation

DISCUSSION

Ectopic intratracheal thyroid tissue is an extremely rare condition that usually presents as a broad-based submucosal mass in the lateral subglottic or upper tracheal wall (3-5). This type of mass is asymptomatic until it causes airway damage. Dyspnea is the most common symptom. A history of total thyroidectomy, as in this case, or goiter should be considered to indicate the possibility of intratracheal mass. As in our patient, signs of airway obstruction may be confused with asthma and delay the diagnosis (6).

Ultrasonography is the first-choice examination and diagnosis can be confirmed by thyroid scintigraphy. CT and magnetic

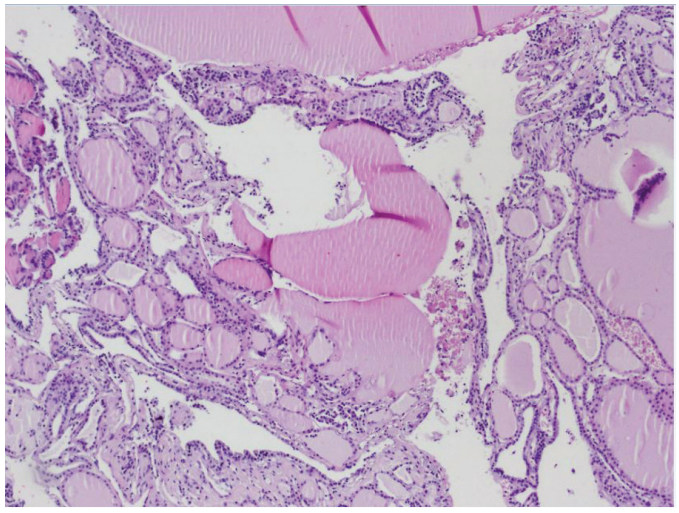

Figure 6. Thyroid tissue containing benign follicle structures, hematoxylin and eosin stain, x10

resonance imaging can also be performed depending on the situation. Masses situated high in the trachea can often be seen with an indirect laryngoscope. Direct laryngoscopy and bronchoscopy allowed for accurate identification of the mass in this case, and the diagnosis was confirmed by biopsy.

Treatment depends on the extent of the ectopic tissue, symptoms, patient characteristics, location, and laboratory values; treatment varies but includes suppression, surgical excision, and radioactive iodine therapy (2). In this study, as respiratory failure developed due to airway obstruction, the lesion was completely excised with a rigid bronchoscope for diagnosis and treatment. The symptoms completely regressed and total excision could be performed. No pathology was observed on CT scans at the 1-year follow-up, although thyroid scintigraphy is a more sensitive modality.

CONCLUSION

Intratracheal ETT is an extremely rare condition and the symptoms can be confused with asthma. The diagnosis should be made on the basis of symptoms; interventional pulmonology has utility for both diagnosis and treatment of symptomatic patients.

Ethics

Informed Consent: Informed consent form was obtained from the patient.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: S.N.S., H.N.Ü., Concept: N.Ş.V., G.G., P.P., Design: N.Ş.V., G.G., P.P., M.D.G., S.N.S., H.N.Ü., Data Collection or Processing: N.Ş.V., P.P., M.D.G., H.N.Ü., Analysis or Interpretation: N.Ş.V., G.G., P.P., M.D.G., S.N.S., H.N.Ü., Literature Search: N.Ş.V., P.P., M.D.G., Writing: N.Ş.V., P.P.

Conflict of Interest: No conflict of interest was declared by the authors.

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