A Case of Ectopic Thyroid Presenting as a Superior Mediastinal Mass

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Abstract

We report a very rare case of an ectopic thyroid in the superior mediastinum, which was detected incidentally using imaging. The case was a 50-year-old woman patient. She had an orthotopic thyroid and normal thyroid function. This superior mediastinum mass obviously lacked continuity with the orthotopic thyroid. Its computed tomography density was lower than that of the orthotopic thyroid, and an enhancement was heterogeneously observed. In the cytodiagnosis, only large and small lymphocytes were observed, and malignant diseases such as malignant lymphoma could not be ruled out, so surgical resection was performed through a cervical incision. Combined resection of the thyroid was unnecessary, and ligation of the feeding vessels from the thoracic side was able to be carried out without incident.

Keywords: thyroid dysgenesis, mediastinum, surgical procedures, diagnostic imaging

Introduction

The most common mediastinal tumors are thymomas, neurogenic tumors, and benign cysts, which account for 60% of all mediastinal tumors [1]. Differential diagnosis is different in children and adults, where neurogenic tumors are more common in children and lymphomas are most common in adults [2]. Although goiters often extend to the substernal mediastinum, primary ectopic thyroid tissues in the mediastinum are very rare entities [3-5]. We experienced a case in which thyroma, malignant lymphoma, and Castleman’s disease could not be ruled out in the differential diagnosis of the superior mediastinal mass, and the diagnosis of ectopic goiter could be confirmed using surgical resection. Because ectopic mediastinal thyroid tissue receives blood flow from the thorax, it has been reported that sternotomy and thoracotomy approaches are essential [6]. However, there have been several reports of mediastinal ectopic thyroids surgically resected via only a cervical approach, all of which involved concomitant resection of the orthotopic thyroid [7-9]. The superior mediastinal mass in this case was clearly separated from the orthotopic thyroid. Here, we present a case of ectopic mediastinal thyroid tissue resected through a cervical incision approach without concomitant resection of the orthotopic thyroid gland.

Case Presentation

A 50-year-old woman was referred to our department with a superior mediastinal mass detected using imaging. She had been receiving outpatient treatment at a local medical clinic for chronic cough for four months. Plain computed tomography (CT) of the lung was carried out because of the poor improvement of her symptoms, but a superior mediastinal mass was incidentally pointed out. Her medical history included cervical carcinoma in situ, but there were no other notable findings. She had no history of allergies or smoking, and alcohol consumption was intermittent.

Contrast-enhanced CT revealed a well-demarcated mass measuring 40 mm in diameter, extending from the thoracic inlet to the superior mediastinum (Figure 1a, 1b). Orthotopic thyroid tissue was observed, and the mass lesion was not continuous with the thyroid gland. The lesion was slightly less well absorbed than the thyroid tissue (Figure 1c, 1d) and was enhanced somewhat heterogeneously. The vasculature entering the mass from the thoracic sides could be observed (Figure 1a, 1b). Laboratory tests showed normal white blood cell counts and a negative C-reactive protein level. Her serum interleukin-2 receptor level was within the normal range (271.0 U/mL), and serum toxoplasma IgM and IgG antibodies were both negative. Thyroid functions were also within normal limits, and serum-free T4 was 0.99 ng/dL, serum-free T3 was 2.61 pg/mL, and thyroid-stimulating hormone was 1.25 μIU/mL; thereafter, both antithyroid peroxidase antibody and antithyroglobulin antibody levels were normal. Only an elevated serum thyroglobulin level of 87.7 ng/mL could be measured. Ultrasoundography also showed clear separation of the mass from the orthotopic normal thyroid, and echo-guided fine needle aspiration cytology specimens showed only large and small lymphocytes.

How to cite this article
FIGURE 1: CT findings of the present case.

(a, b) Contrast-enhanced CT coronal image. The arrowheads indicate the vasculatures entering the mass from the thoracic sides. (c) Plain CT findings of the mass located in the mediastinum. (d) Plain CT findings of the orthotopic thyroid gland.

Based on these results, thymoma, malignant lymphoma, and Castleman’s disease could not be ruled out, and it was decided to perform surgical resection. We consulted with a respiratory surgeon before the operation, and prepared for sternotomy, although unlikely, when the surgical approach was difficult. Transcervical resection of the superior mediastinal mass was performed (Figure 2a). Because the thyroid gland was clearly separated from the mass, it was preserved, and no combined resection was performed. Multiple inflow vessels from the thorax into the mass were confirmed during surgery. All were carefully ligated, and the mass could be resected through the neck without any issues. The mass seemed to have independent blood supply from those vessels. The recurrent laryngeal nerve could be preserved without needing to be identified. The resected specimen was a mass macroscopically suggestive of thyroid tissue itself (Figure 2b). Operation time was 70 minutes, and blood count was 10 mL. The postoperative course was uneventful and without any complications.
Histopathological examination revealed ectopic thyroid tissue and a nodular goiter consisting of large and small colloid follicles (Figure 3). Postoperative laboratory testing also demonstrated that it was euthyroid.

**FIGURE 3: Pathologic finding.**
Scale bar: 500 μm.

**Discussion**
Ectopic thyroids occur in one in 100,000-300,000 people [5]. However, the existence of ectopic thyroids was reported to be 10% in an autopsy study, suggesting that there is a discrepancy between the frequency of clinical evidence and actual anatomical presence or remains of ectopic thyroid tissues [10]. It has been reported that 90% of ectopic thyroid glands are lingual thyroids, and ectopic thyroid tissue present in the mediastinum, as in this case, accounts for less than 1% of all ectopic thyroid tissues [4,11]. The incidence of substernal goiters has been reported to range from 0.02% to 0.5%, of which 98% are secondary from the neck and only 1.7% are primary goiters from ectopic thyroids [3]. Mediastinal ectopic thyroid accounts for less than 1% of all mediastinal tumors, and ectopic thyroid tissue in the mediastinum is a very rare occurrence [5].

Ectopic thyroid tissues result from abnormal embryonic development of the thyroid gland [5,6]. In early embryonic life, the thyroid gland, derived from anlage of pharyngeal epithelium, descends from the foramen cecum at the base of the tongue into the neck anterior to the pretracheal region around the second and third
Ectopic thyroid in the mediastinum is a very rare occurrence. When encountered as a solid tissular mass at the mediastinum, differential diagnosis is very important. Head and neck surgeons should be aware of this rare condition.

Conclusions

Ectopic thyroid in the mediastinum is a very rare occurrence. When encountered as a solid tissular mass at the mediastinum, differential diagnosis is very important. Head and neck surgeons should be aware of this rare condition.

Additional Information

Disclosures

Human subjects: Consent was obtained by all participants in this study. Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following: Payment/services info: All authors have declared that no financial support was received from any organization for the submitted work. Financial relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. Other relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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