Case Report

Ectopic Thyroid Cancer

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Ectopic thyroid tissue may be encountered anywhere from the foramen caecum to the lower neck. It is rarely seen in the mediastinum. True malignant transformation in ectopic thyroid tissue is extremely rare. Such a malignancy is virtually always diagnosed after surgical excision of the lesion at pathological examination. We report on an extremely rare case of true mediastinal thyroid cancer in a 45-year-old woman. The clinicopathologic features and diagnosis of the lesion, with regard to its mediastinal location are discussed. (Ann Thorac Cardiovasc Surg 2007; 13: 122–4)

Key words: ectopic thyroid cancer, intrathoracic goiter, mediastinal mass

Case Report

A 45-year-old woman presented with a two month history of cough and dyspnea. Physical examination showed a moderately enlarged right lobe of the thyroid. She was clinically euthyroid. A chest X ray revealed a large well defined opacity in the right paracardiac region (Fig. 1).

Computed tomography (CT) scan revealed a mass lesion, anterolateral to the superior vena cava and lateral to the right atrium in the mediastinum (Fig. 2). Fine needle aspiration cytology (FNAC) of the thyroid gland in the neck showed follicular cells and a single group of atypical cells. A CT guided core biopsy of mediastinal mass showed scanty follicles containing colloid material. Technetium (Tc)-99m thyroid scan revealed non homogeneous tracer uptake by both the lobes of thyroid with significant mediastinal uptake, which was discontinuous from the thyroid uptake. Laboratory tests showed normal thyroid function (T4=10.5 μgm/dL, TSH=0.57 μIU/mL) with elevated thyroglobulin levels (508 ng/mL). Both vocal cords were mobile on indirect laryngoscopy. Pulmonary function tests revealed combined moderate obstructive and restrictive pathology (FEV1=1.02 L (predicted: 2.11L), FEV1/FVC=70% (predicted: 86%), FVC=1.46 (predicted: 2.43 L)).

A total thyroidectomy was planned with excision of the mediastinal mass as the patient had enlargement of the right lobe of the thyroid with a mediastinal mass and the FNAC from the thyroid had shown atypical cells. Both the thyroid and the mediastinal mass showed uptake on Tc-99m thyroid scan. The only method of diagnosing an occult primary tumor in the thyroid causing mediastinal metastases is to undertake a total thyroidectomy. We decided on a total thyroidectomy to facilitate subsequent surveillance by radio-iodine scanning and radio-iodine ablation of the residual thyroid gland to prevent recurrence. We performed a total thyroidectomy via standard neck approach and excision of the mediastinal mass through a right lateral thoracotomy (Fig. 3). Intraoperative findings revealed that there was no glandular continuity between the thyroid gland and the mass and it derived its blood supply entirely from the vascular branches of thoracic vessels. The patient had an uneventful post operative recovery. Histopathologic examination revealed nodular goiter of the thyroid gland with no malignancy (Fig. 4). The mediastinal mass showed colloid goiter with foci of follicular variant of papillary carcinoma of the thyroid (Figs. 5 and 6). A radioiodine scan performed six weeks after surgery, revealed no uptake in the neck or mediastinum. She was put on daily thyroid supplements.

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Received April 4, 2006; accepted for publication August 10, 2006.
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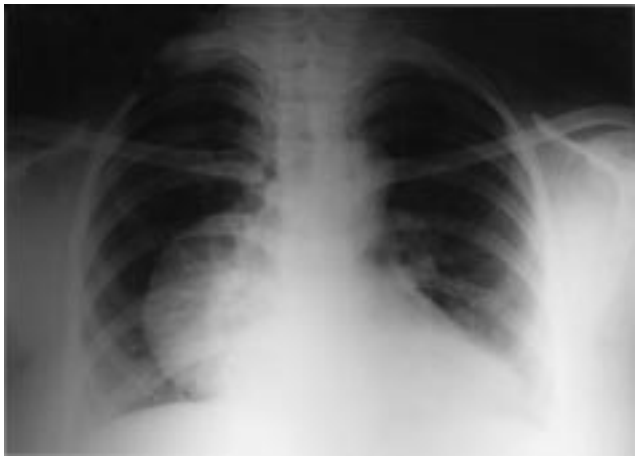

Fig. 1. Chest X-ray: a large well-defined opacity in the right paracardiac region.

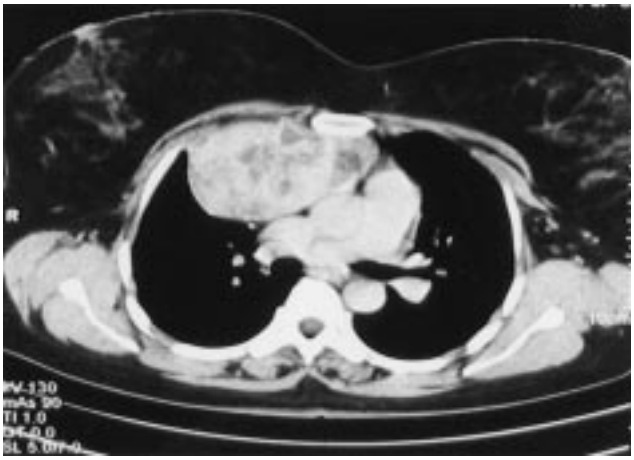

Fig. 2. Computed tomography (CT) scan reveals a mass lesion, antero-lateral to the superior vena cava and lateral to the right atrium in the mediastinum.

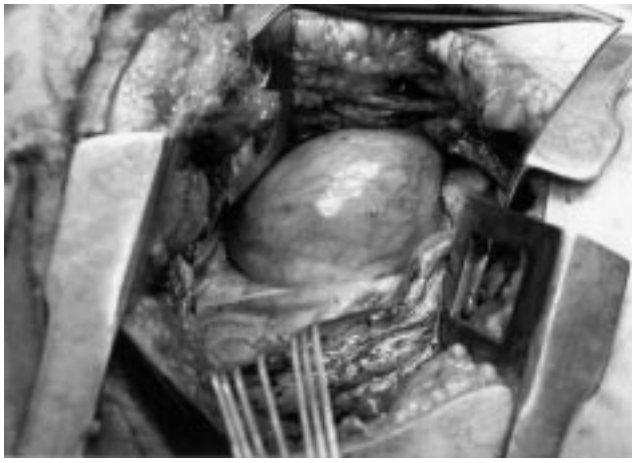

Fig. 3. Intra-operative photograph shows the ectopic thyroid mass.

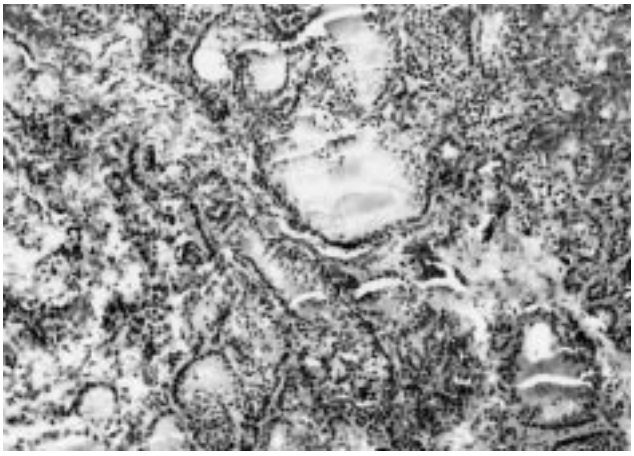

Fig. 4. Normal thyroid tissue from the neck thyroid. (H&E ×10)

The patient is asymptomatic and disease free 14 months after surgery.

Discussion

Ectopic thyroid tissue has been found from the tongue to the diaphragm. Ninety percent of the reported cases of ectopic thyroid are found in the base of the tongue, while only 10% lie in the anterior aspect of the neck superficial to the hyoid bone. The ectopic thyroid may lie in the mediastinum, larynx, trachea and oesophagus.[1] The development and descent of the thyroid gland is in anatomical juxtaposition with the heart. The effect of the descending heart on the thyroid gland contributes to the development of the various anomalies of the thyroid position. The most common ectopic thyroid tissue has been found in the tongue, then in the submandibular region, the cervical lymph nodes, larynx, trachea, oesophagus, mediastinum, diaphragm and the heart.[2]

Primary thyroid carcinomas arising from ectopic thyroid tissue are uncommon and have been reported to arise from thyroid tissue in the thyroglossal cysts, lateral aberrant thyroid tissue, lingual thyroid, mediastinal and struma ovarii. Most tumors in the ectopic locations have been papillary carcinomas, mixed follicular and papillary carcinomas or Hurthle cell tumors.[3]

Mediastinal ectopic thyroid carcinoma is extremely rare as most cases do not meet the criteria of ectopic thyroid tissue. Our case is a true ectopic mediastinal thyroid as it met the criteria of ectopic thyroids i.e. the ectopic tumor

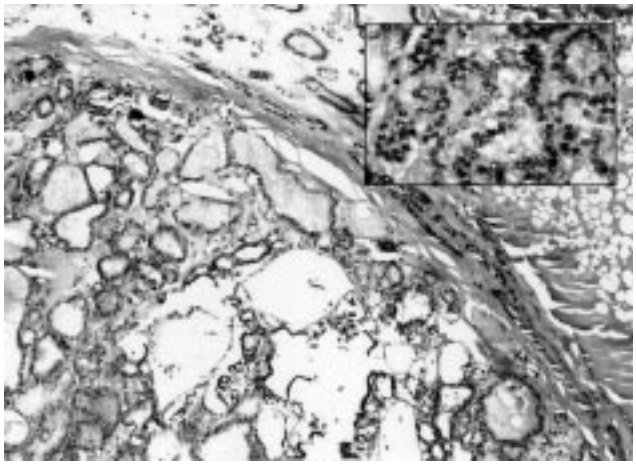

Fig. 5. Shows mediastinal thyroid tissue with capsule containing follicular variant of papillary carcinoma.
Inset: shows nuclear features of papillary carcinoma. (H&E 10×)

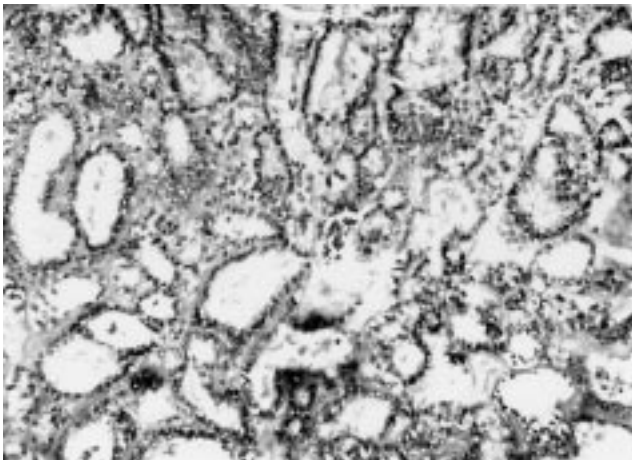

Fig. 6. High-power magnification showing follicular variant of papillary carcinoma.

derives its blood supply from intrathoracic vessels rather than cervical arteries, the cervical thyroid gland is normal or absent with no history of surgery, the cervical thyroid gland does not have a similar pathologic process as the ectopic tumor, and no history or evidence of malignancy is documented.[4] On careful review, the vast majority of mediastinal goiters will not fulfill these criteria and are found to be secondary goiters, or merely retrosternal extension of a cervical goiter.

Patients with intrathoracic goiter are usually asymptomatic with the tumor reported as an incidental finding on chest roentgenogram.[5] Sometimes they may present with respiratory symptoms similar to our patient, like cough, dyspnea, and hemoptysis. Less commonly, patients may present with dysphagia or the superior vena cava syndrome. For preoperative evaluation, plain chest X-ray, CT scan or MRI are useful. In 70% of the cases, plain chest X-rays demonstrate the goiter. Findings on chest X-ray include tracheal displacement, tracheal compression, calcifications and soft tissue mass. Our case demonstrated a soft tissue mass shadow on chest X-ray. Scintigraphy is effective for differential diagnosis of other mediastinal tumors such as thymoma, teratoma. In our case, Tc-99m thyroid scan revealed a non homogeneous tracer uptake by both the lobes with significant mediastinal uptake corresponding with the mass.

Surgical excision is the mainstay of the treatment as these tumors usually give rise to compressive symptoms. Thoracotomy or sternotomy is usually required for mediastinal thyroid tumors. Thoracoscopic excision has also been reported.[5]

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