Mediastinal Thyroid Tissue Within a Lung Tumor: Case Report

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The authors present an interesting case of a patient with a lung mass who underwent a mediastinoscopy. Biopsy revealed thyroid tissue in a section of mediastinal lymph nodes, with chronic lymphadenitis. The patient was subsequently found to have squamous carcinoma of the lung. A thyroid scan demonstrated the patient's aberrant thyroid tissue in the mediastinum. This is particularly interesting since the patient had prior administration of iodine contrast and that iodine-123 (^{123}I) was utilized for thyroid imaging. The use of thyroid imaging for the detection of ectopic thyroid tissue has been well documented.

CASE REPORT

This 71-yr-old white male presented initially for evaluation of a nodule seen in the right lung on chest x-ray. The patient underwent two bronchoscopies and a needle biopsy under computed tomography (CT) scan guidance. No diagnosis was obtained. The patient was admitted for a mediastinoscopy, which demonstrated mediastinal lymph nodes with chronic lymphadenitis. In addition to lymph nodal fragments, there were fragments of thyroid tissue demonstrating follicles of varying sizes containing colloid. A decision was made to take the patient to surgery and to do an open procedure for diagnosis. The patient underwent a bilobectomy of the right middle and lower lobe. The final pathology demonstrated squamous carcinoma of the lung.

An interesting thyroid scan was obtained following the administration of 200 μCi of ^{123}I. Anterior, right anterior oblique (RAO), and left anterior oblique (LAO) images of the thyroid gland demonstrate an asymmetric enlarged gland with substernal extension (Fig. 1 A–C). No intrathyroid hot or cold nodules were identified. Markers were placed on the sternal notch and xyphoid process to verify. Examination of the mediastinum demonstrates a small focus of increased isotope concentration (Fig. 2). This uptake is just to the left of mid-line below the sternal notch, in keeping with substernal thyroid tissue. Performance of thyroid uptakes was precluded by the prior administration of iodine contrast for a CT scan of the chest.

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DISCUSSION

Histologically normal ectopic thyroid tissue may occur in the neck (linguinal thyroid), retrosternally in the region of the mediastinum (substernal goiter) along any tract in the anterior mediastinum, pelvis (struma ovarii), or abnormally as functioning metastases.

The ideal isotope for imaging the chest to investigate an anterior mediastinal mass is iodine-131 (^{131}I). Because of the higher energy of the ^{131}I, gamma rays are absorbed less by the sternum and soft tissues of the mediastinum. This situation is also true for examination of the pelvis (struma ovarii). The most frequent presentation of intrathoracic thyroid tissue is that of a substernal extension of a cervical thyroid goiter. Less commonly, it presents as a mediastinal mass anatomically unrelated to the thyroid gland. Thoracic tissue is most frequently found in middle aged females but may occur in either sex at any age. Ectopic thyroid tissue in the mediastinum or substernal region may not be functioning, therefore, lack of concentration of ^{131}I does not necessarily exclude that diagnosis (*1,2*).

It is interesting that this patient's aberrant thyroid tissue was discovered utilizing ^{123}I (*2*). Because of the lower energy, gamma ray absorption by the sternum or soft tissues of the mediastinum, this isotope is less desirable than ^{131}I. Examination of the images demonstrate an asymmetric enlarged gland with substernal extension. No intrathyroidal hot or cold nodules were identified. Examination of the mediastinal images demonstrate a small focus of increased isotope concentration. This is just to the left of the mid-line below the sternal notch in keeping with the mediastinal thyroid tissue. It is interesting that in spite of the previous nonradioactive iodine administration, aberrant thyroid tissue was demonstrated.

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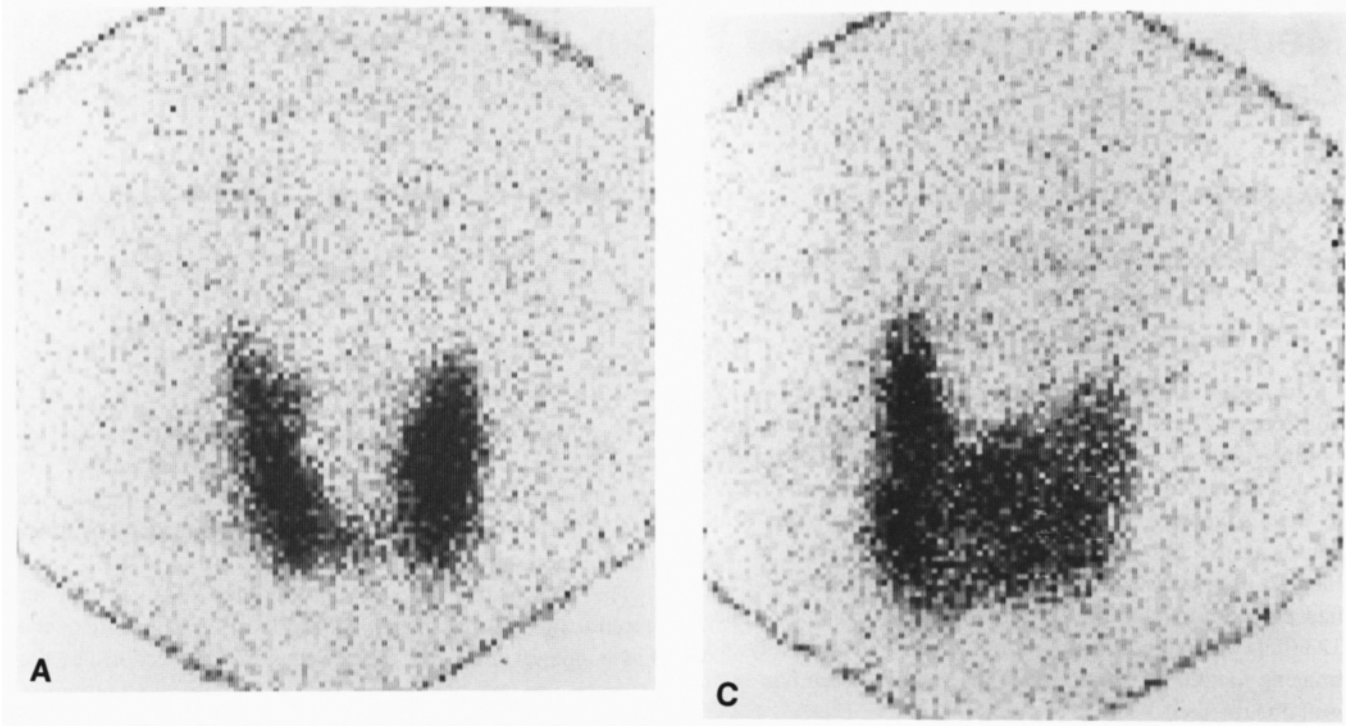

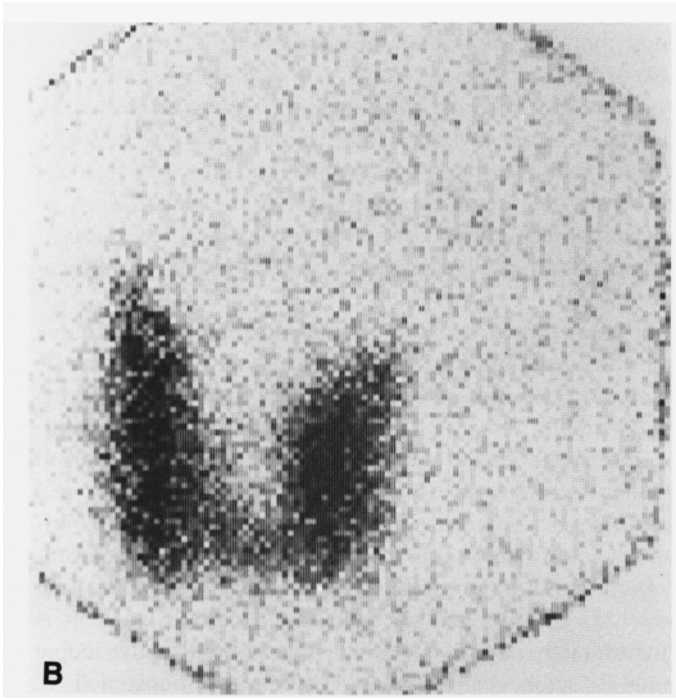

FIG. 1. Anterior (A), RAO (B), and LAO (C) images of the thyroid gland were obtained following the oral administration of 200 μCi of ^{123}I. Examination of the study demonstrates an asymmetric enlarged gland with substernal extension. No intrathyroidal hot or cold nodules were identified.

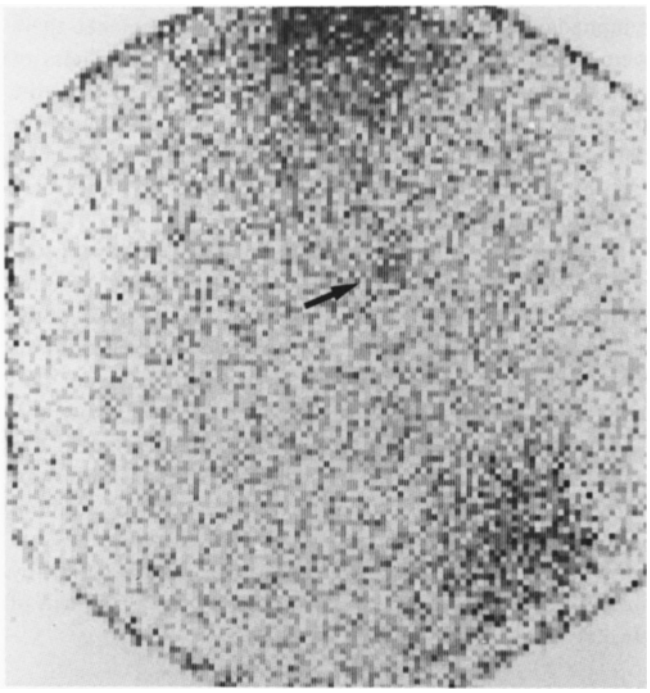

FIG. 2. Examination of the mediastinum demonstrates a small focus of increased isotope concentration just to the left of mid-line below the sternal notch (arrow).