

# A Large Superior Mediastinal Mass: “Terrible Thyroid Cancer”

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## Abstract

Anterior mediastinal masses arise from a diverse group of conditions including thymoma, teratoma, retrosternal goiter, thoracic aortic lesions and lymphoma. We report a case of a 70-year-old male with anterior mediastinal mass who on further evaluation was found to have a large mediastinal lymph node secondary to a papillary thyroid cancer. Metastatic lymph node mass from thyroid malignancy should also be considered as one of the differential diagnosis in the evaluation of anterior mediastinal mass.

**Keywords:** Thyroid cancer; Mediastinal lymph node; Anterior mediastinal mass

## Introduction

Evaluation of mediastinal mass is a clinical challenge. Most commonly encountered pathologies include thymoma, thyroid neoplasm, teratoma, thoracic aortic aneurysms and “terrible” aggressive lymphoma [1]. Incidence of ectopic mediastinal goiter accounts for about 1% of all goiters [2]. Retrosternal extension of large goiter into mediastinum is seen in about 7% of all goiters [3], where the extended lobe/nodule is in continuity with the thyroid gland. In rare situation, superior mediastinal lymph nodes could be the result of metastatic

lymph nodal deposit from differentiated thyroid malignancy which accounts for about 5% [4]. Here we report a case of an anterior mediastinal mass, which on evaluation turned out to be metastatic lymph node deposit from papillary carcinoma thyroid.

## Case Report

A 70-year-old man presented to the cardiologist with chest pain and breathlessness on exertion. ECG showed ST-T changes and the chest X-ray surprisingly showed a large antero-superior mediastinal mass (Fig. 1). He was further evaluated with a PET-CT which showed a large cystic mass in the anterior mediastinum measuring 8.4 × 17.4 × 10.9 cm with FDG-avidity in the peripheral wall of the cyst (Fig. 2). FDG uptake was also seen in left lobe of the thyroid (measuring 3 × 3 cm) and in left level IV node (1 × 1 cm) (Fig. 2). Diagnostic coronary angiogram revealed triple vessel disease needing coronary artery bypass grafting. Fine-needle aspiration cytology from the thyroid gland and cervical lymph node was consistent with papillary thyroid carcinoma (PTC).

Total thyroidectomy was initially done along with central and left lateral compartment neck dissection. Sternotomy was then performed to remove the mediastinal mass *en bloc* without rupturing the cystic wall followed by coronary bypass surgery. The final histopathology of the thyroid confirmed the diagnosis of PTC (tall cell variant) with metastatic deposits to the cervical nodes. The large mass in the mediastinum was a metastatic lymph node with cystic transformation (Fig. 3). Patient recuperated well and subsequently underwent radioiodine ablation and is currently on follow-up.

## Discussion

The differentials of an antero-superior mediastinal mass typically include the five “Ts”, thymoma, thyroid neoplasm, teratoma, thoracic aortic aneurysms and “terrible” lymphoma [1]. Majority of anterior mediastinal masses originating from thyroid are mediastinal goiter representing direct contiguous growth of goiter into the superior mediastinum. However, a large cystic mediastinal mass as a result of lymph node metastasis from a PTC is rather unusual and hence our sixth “T” in

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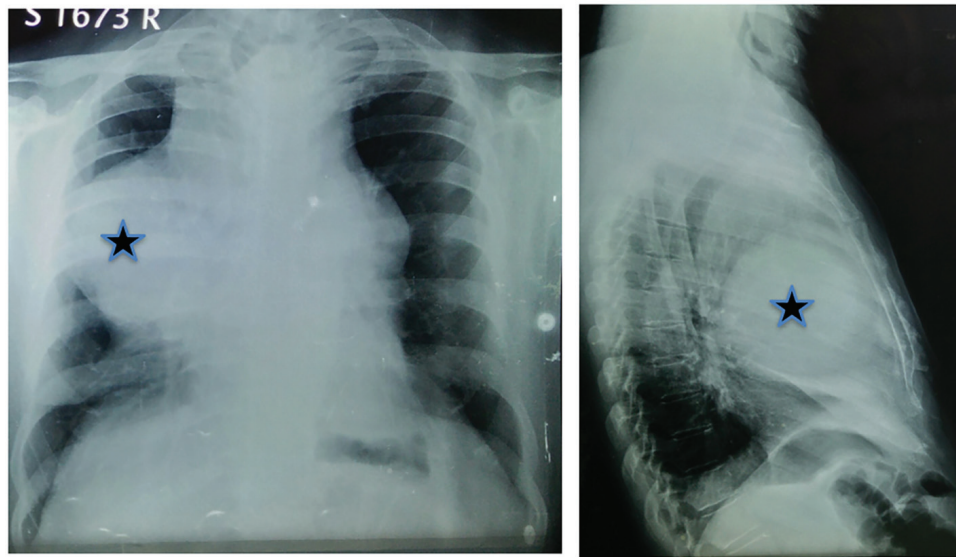
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**Figure 1.** Chest X-ray showing large antero-superior mediastinal mass (star).

the differential of superior mediastinal mass is “terrible thyroid cancer”. Less than 5% of PTCs present with level VII mediastinal lymph nodes [4]. Possible mechanisms of developing mediastinal nodes are two ways either through communication from the under surface of the gland and the other being lymphatics along recurrent laryngeal nerve [5]. Presence of lateral cervical lymph node metastasis and aggressive histological variants is more likely to have mediastinal lymph node involvement [4]. Patients with poor differentiation and suspected distant metastasis should undergo mediastinal imaging [4]. A meta-analysis of nine studies showed no relation between lymph node status at presentation and survival [5]. Surgery remains the mainstay of treatment followed by iodine therapy if curative intent is planned [6]. Addressing anterior

mediastinal nodes could be through the same thyroidectomy incision or separately through sternotomy [6]. In our case, we addressed level VII node through sternotomy due to large size of the mass, also needed for the cardiac bypass surgery which was done at the same time. Untreated metastatic mediastinal node from PTC could lead to life-threatening situations by invasion of the disease into surrounding trachea, manubrium and great vessels and pave way for hematogenous spread of tumor [6]. Reports suggest increased risk of damaging recurrent laryngeal nerve, hypoparathyroidism, chyle leak, and injury to mediastinal vessels while addressing level VII group of nodes [7]. Careful maneuvering would cause least amount of morbidity. In the present day with increased use of ultrasonography and FNAC, ability to diagnose thyroid malignancies at early stages and appropriate management is possible, hence decreasing the incidence of mediastinal lymphadenopathy [6].

### Conclusion

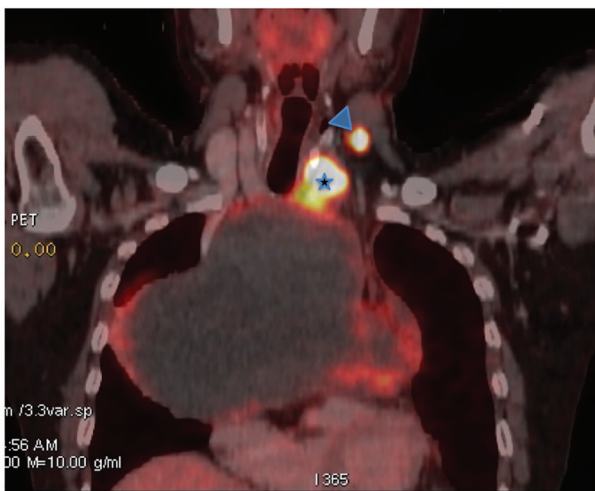
Nodal metastasis from thyroid malignancies should be considered as the sixth “T” during the evaluation of an anterior mediastinal mass.

### Author Contributions

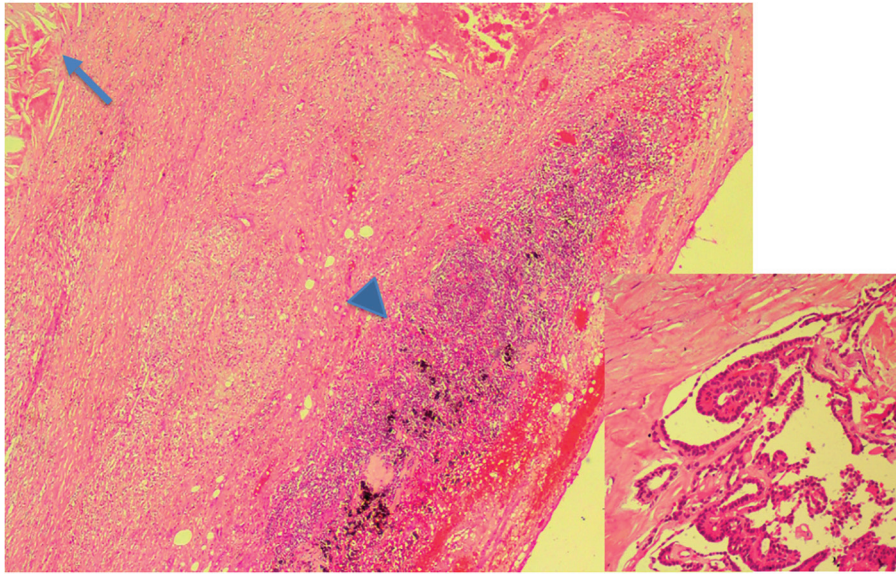
All authors were involved in the clinical care of the patient. Authors SK, NBS, and NR were involved in the preparation of the manuscript.

### Conflicts of Interest

None.



**Figure 2.** Coronal view FDG-PET-CT: large mediastinal cystic mass with FDG uptake is seen in the periphery of the mass. Also seen is intense FDG uptake on the left lobe thyroid nodule (star) and left level IV cervical lymph node (arrow head).



**Figure 3.** Histopathology (HPE) of mediastinal mass showing cyst wall containing hemorrhage and cholesterol clefts (arrow) with periphery showing the lymphoid follicles with black anthracotic pigment (arrow head). The inset ( $\times 20$ ) shows a focus of long papillae lined by single layer of tall columnar cells with sharply delineated cell borders, intensely eosinophilic, finely granular cytoplasm consistent with tall cell variant of PTC.

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