

# Isolated single lobe hyperplasia of the thyroid gland, presenting as anterior mediastinal mass, detected on positron emission tomography-computed tomography scan

### ABSTRACT

We report a case who presented with facial swelling and breathlessness. Recent chest X-ray was suggestive of soft-tissue in the mediastinum. In view of the suspicion of mass being neoplastic, the patient was referred for positron emission tomography-computed tomography (PET-CT) scan. Whole-body fluorodeoxyglucose (FDG) PET-CT scan revealed a mildly FDG-avid large lobulated soft-tissue mass in the anterior mediastinum, seen to arising from right lobe of the thyroid gland, extending into the right hemithorax. Histopathological examination of the mass was compatible with adenomatous hyperplasia of the thyroid. Here, we report an unusual case of isolated single lobe hyperplasia of the thyroid gland, masquerading as an anterior mediastinal mass.

**Keywords:** Anterior mediastinal mass, fluorodeoxyglucose positron emission tomography-computed tomography, isolated single lobe hyperplasia of the thyroid, unilateral goiter

### INTRODUCTION

Goiter usually presents with asymmetrical enlargement of both lobes of the thyroid gland. Isolated monolobar hyperplasia of the thyroid gland has been rarely described in literature. Here, we report a rare case of a 55-year-old woman, presenting with a soft-tissue mass arising from the right lobe of the thyroid gland and extending into the right hemithorax, where positron emission tomography-computed tomography (PET-CT) helped in localizing the extent of the mass and biopsy confirmed its benign etiology.

### CASE REPORT

A 55-year-old female presented with symptoms of facial swelling and breathlessness. Chest X-ray was suggestive of soft tissue mass in the mediastinum. Whole-body PET/CT scan was done, in view of suspicion of neoplastic lesion. Maximum intensity projection [Figure 1a] showed mild tracer uptake in the right hemithorax. The hybrid

PET/CT and transaxial CT images [Figure 1b and c] revealed a large lobulated mildly fluorodeoxyglucose (FDG) avid heterogeneously enhancing soft-tissue mass lesion in the anterior mediastinum, extending into the right hemithorax. On corresponding coronal and sagittal hybrid PET/CT and CT images [Figure 1d-g], the mass was seen to arising from the right lobe of thyroid gland causing mass effect with compression and displacement of the right brachiocephalic artery and superior vena cava. The mass was also

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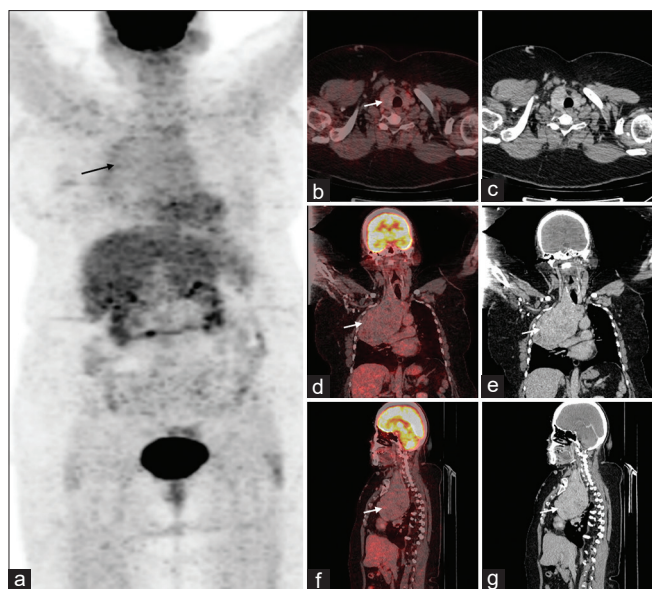
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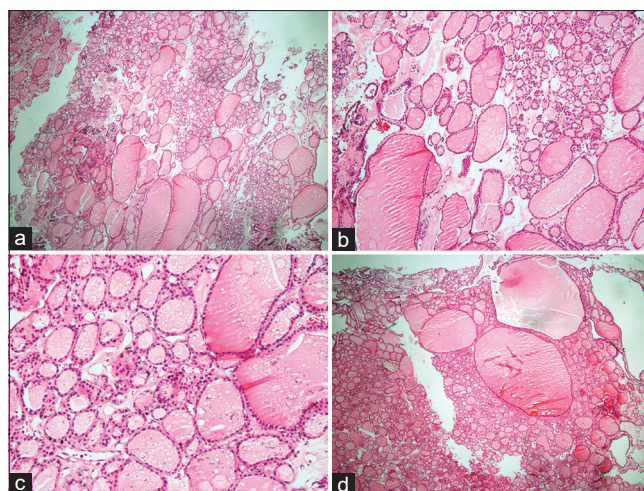


**Figure 1:** Whole-body  $^{18}\text{F}$ -fluorodeoxyglucose positron emission tomography-computed tomography scan; maximum intensity projection image (a), showing mild tracer uptake in the right hemithorax. The hybrid positron emission tomography-computed tomography and transaxial computed tomography images (b and c) reveal a large lobulated mildly fluorodeoxyglucose avid soft tissue mass lesion in the anterior mediastinum, extending into the right hemithorax, corresponding coronal and sagittal hybrid positron emission tomography-computed tomography and computed tomography images; (d-g) images showing the mass is arising from the right lobe of thyroid gland. Histopathological examination of the aforementioned lesion confirmed diagnosis of adenomatous hyperplasia of the thyroid gland

displacing the trachea with luminal compromise, causing symptoms of facial swelling and breathlessness. Left lobe of the thyroid gland appeared unremarkable, and thyroid function tests (serum T4 and TSH) were within normal limits. Histopathological examination [Figure 2] of the aforementioned lesion confirmed diagnosis of adenomatous hyperplasia of the thyroid gland.

## DISCUSSION

The overall prevalence of goiter is approximately 37.6% according to the WHO/UNICEF, with females being more commonly affected.<sup>[1]</sup> The usual presentation of this disease is bilateral, i.e., involvement of the both lobes of the thyroid gland, often in an asymmetrical pattern.<sup>[2]</sup> Multinodular endemic goiter involves multiple stages, including global hyperplasia and colloid storage, leading to thyromegaly. Hemorrhage and central necrosis may occur within and then necrotic lobules coalesce to form nodules surrounded by scar tissue.<sup>[3]</sup> Intrathoracic or mediastinal goiters include 6%–30% of all thyroid goiters. Of these, 75%–90% extend to the anterior mediastinum retrosternally whereas 5%–25% extend into the posterior mediastinum, along the paratracheal plane.<sup>[4]</sup> There is a



**Figure 2:** Histopathological examination sections showing thyroid tissue composed of variably sized follicles lined by flattened to low cuboidal epithelium and filled with colloid suggestive of adenomatous hyperplasia of the thyroid gland (a-d)

paucity of literature in isolated single lobe hyperplasia of the thyroid gland, as seen in our case. Only few cases have been described in the literature of this new entity. Ali and Gadir studied 60 patients, presenting as single lobe disease in cases of advanced endemic goiter, describing as a new phenotype.<sup>[5]</sup> The disease is seen in such advanced stage on the one side with no signs on the contralateral side. The questions arise are as follows: (1) Will the disease develop in contralateral lobe in later stages? (2) Why is there delay in disease process in contralateral lobe, if at all? (3) Will contralateral lobe remain unaffected to the disease? Very few unilateral diseases are reported in the literature which includes asymmetric idiopathic pulmonary fibrosis<sup>[6]</sup> and unilateral polycystic kidney disease.<sup>[7]</sup> Considering the increasing prevalence of isolated single lobe hyperplasia of the thyroid gland, might be consider as a new entity. PET/CT findings provide useful information for the differential diagnosis of anterior mediastinal masses<sup>[8]</sup> and might help in diagnosing the isolated single lobe hyperplasia of the thyroid gland.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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