

# An intra-thoracic follicular carcinoma of thyroid: An uncommon presentation

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## ABSTRACT

Follicular carcinoma of thyroid is the second most common type of carcinoma of thyroid, and it may metastasize to bone, lung, brain, and skin. However, the initial presentation of follicular carcinoma of the thyroid as a large intrathoracic mass without any symptoms of thyroid gland enlargement and dysfunction is very rare. We hereby report a case of a 50-year-old male who presented with chief complaints of chest and low back pain. Preliminary evaluation led to the provisional diagnosis of left-sided intrathoracic mass with vertebral metastasis which was suspected to be a case of bronchogenic carcinoma with distant metastasis. Surprisingly, transthoracic biopsy and histopathology revealed metastasis from follicular carcinoma of thyroid. This prompted us for a retrograde evaluation for a primary thyroid malignancy for which an ultrasound and contrast enhanced computed tomography (CECT) of the neck was done which confirmed the presence of a solitary thyroid nodule. Ultrasonography-guided fine-needle aspiration cytology of the nodule revealed follicular carcinoma of thyroid. Histopathological evaluation subsequent to total thyroidectomy revealed follicular carcinoma thyroid, further confirming the diagnosis. The patient was then referred to Department of Nuclear Medicine and Radiotherapy for radionuclide ablation and chemotherapy. We chose to report this case because of its rare presentation as a large intrathoracic mass and the retrograde diagnosis of follicular carcinoma of thyroid. To the best of our knowledge, this is the first report of such a rare case.

**KEY WORDS:** Follicular carcinoma of thyroid, intrathoracic mass, thyroid malignancy

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## INTRODUCTION

Thyroid cancer is the most common malignancy of endocrine origin. Follicular carcinoma of thyroid is next only to papillary carcinoma of thyroid, in terms of prevalence. Among thyroid malignancies, follicular carcinoma of thyroid account for 10–20% and is most often seen in patients over 40 years of age.<sup>[1]</sup> It usually presents as an asymptomatic solitary intra-thyroid nodule. Lung and bone are the most common site of metastasis which usually is through hematogenous route. At the time of diagnosis, distant metastasis

is reported in 11–20% of patients.<sup>[2]</sup> Unusual bony metastases of follicular carcinoma of thyroid have been reported in skull, mandible, maxilla, spine, and orbit.<sup>[2]</sup> In about 20% of cases, simultaneous lung metastasis have been reported in follicular carcinoma of thyroid with a mean age at presentation of over 50 years.<sup>[3]</sup> However, the initial presentation of follicular carcinoma of thyroid as a large intrathoracic mass without any symptoms of thyroid gland enlargement and dysfunction has still not been reported to the best of our knowledge.

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**CASE REPORT**

A 50-year-old, ex-smoker, nondiabetic, nonhypertensive male presented with complaints of chest and low back pain for last 6 months. Respiratory examination revealed dullness on percussion and decreased breath sounds on auscultation in the left infraclavicular, suprascapular regions with no features of mediastinal shift which was suggestive of a space occupying lesion. The clinical examination of the rest of the system revealed no abnormality. Routine blood investigations were within normal limits. Being a tertiary care center, the patient presented to us with Chest X-ray and magnetic resonance imaging (MRI) thorax. Chest X-ray posteroanterior view [Figure 1] and MRI thorax [Figure 2] were suggestive of left sided homogenous opacity in the upper and mid zone probably an intrathoracic large, irregular, pleural based mass lesion in the upper lobe of left lung invading the chest wall probably of neoplastic origin? Bronchogenic carcinoma with suspicion of vertebral metastasis. Since

the patient already had MRI thorax, he was not subjected to CECT thorax. Transthoracic fine needle aspiration cytology (FNAC) and tru-cut biopsy of the left lung mass was done for histopathological confirmation both of which surprisingly revealed metastasis from follicular carcinoma of thyroid [Figures 3 and 4]. Thus, we started a retrograde evaluation for a primary thyroid malignancy. High-resolution ultrasonography (USG) neck [Figure 5] was suggestive of solitary nodule in the left lobe of thyroid. For confirming the nature of thyroid nodule, CECT-neck [Figure 6] was obtained which revealed a small heterogeneously enhancing soft tissue attenuation lesion with a focus of calcification and few hyperdense areas seen in the left lobe of thyroid. Thyroid profile was within normal limits. USG-guided FNAC of thyroid nodule was suggestive of follicular carcinoma of thyroid [Figure 7]. At this stage, patient was referred to surgery for total thyroidectomy for histopathological confirmation and staging of cancer. Surgery, by reducing the bulk of the tumor, increases the efficacy of treatment

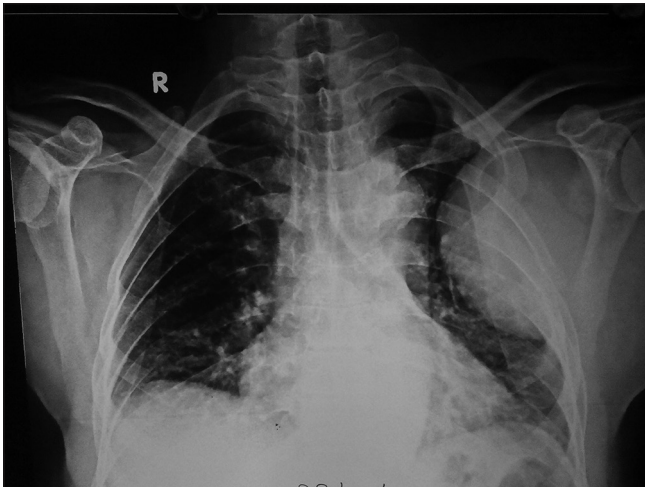


Figure 1: Chest X-ray posteroanterior view

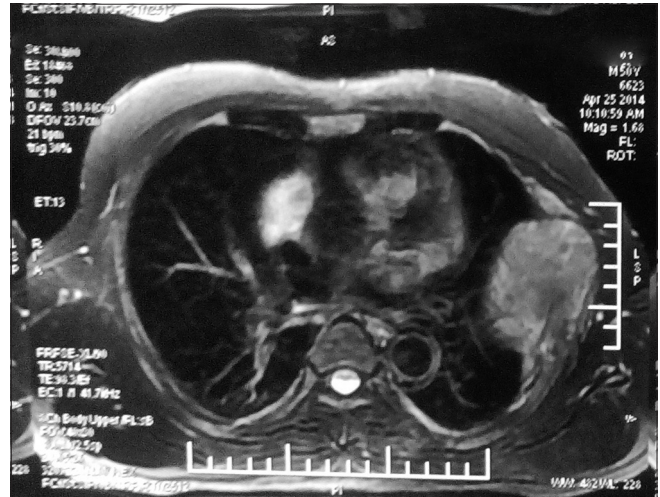


Figure 2: Magnetic resonance imaging thorax

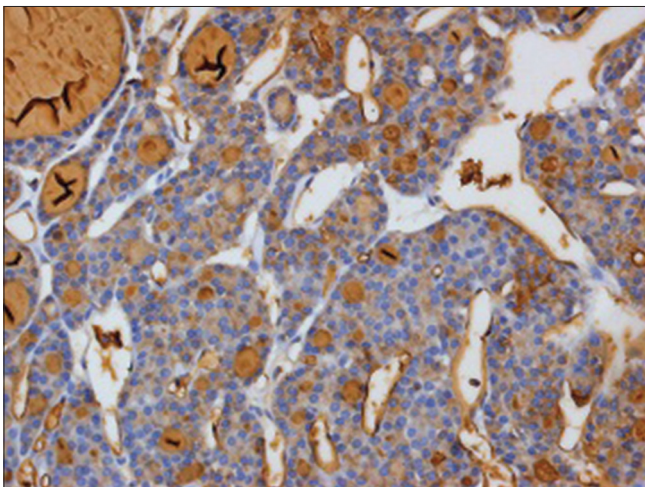


Figure 3: Fine needle aspiration cytology of intrathoracic mass: Section shows follicles lined by cells showing cytoplasmic positivity for thyroglobulin (di aminobenzidine, x200)

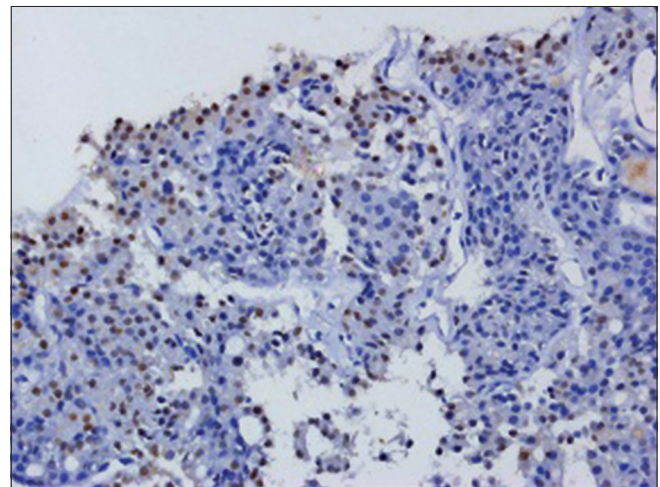
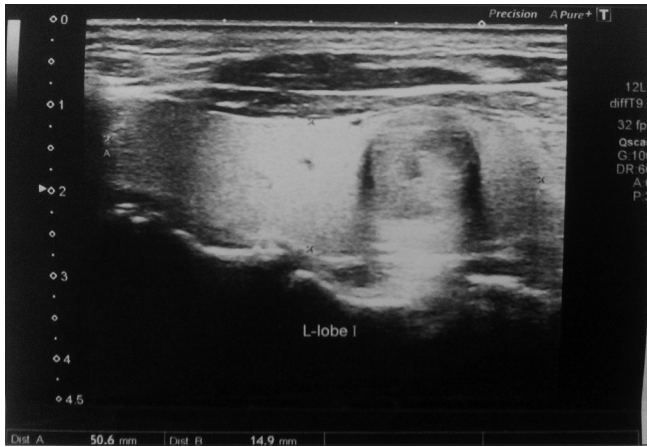
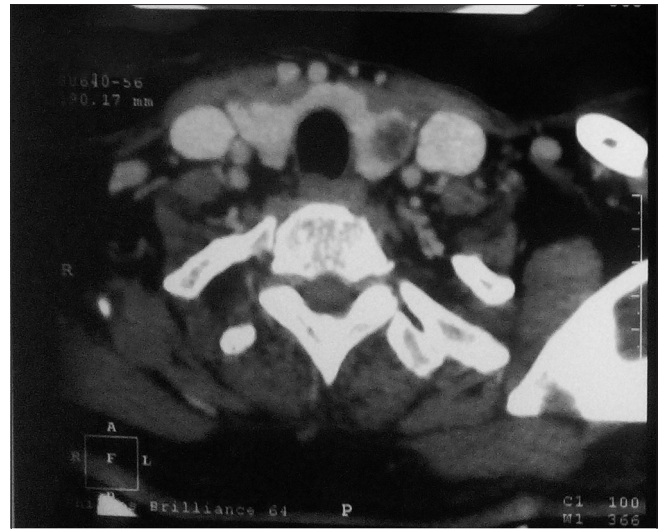


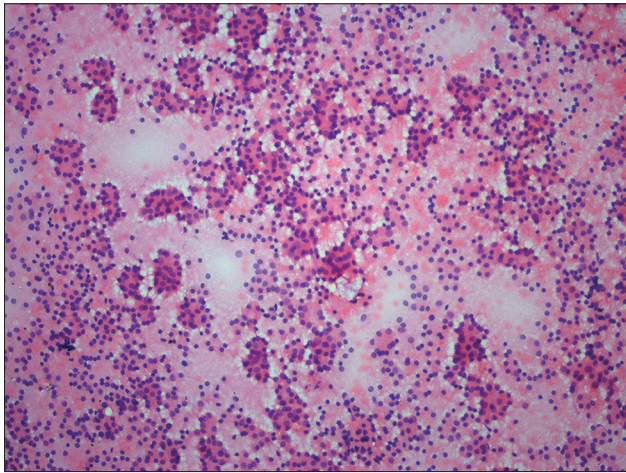
Figure 4: Tru-cut biopsy of intrathoracic mass: Section shows follicular lining cells staining positively for thyroid transcription factor-1 (diaminobenzidine, x200)



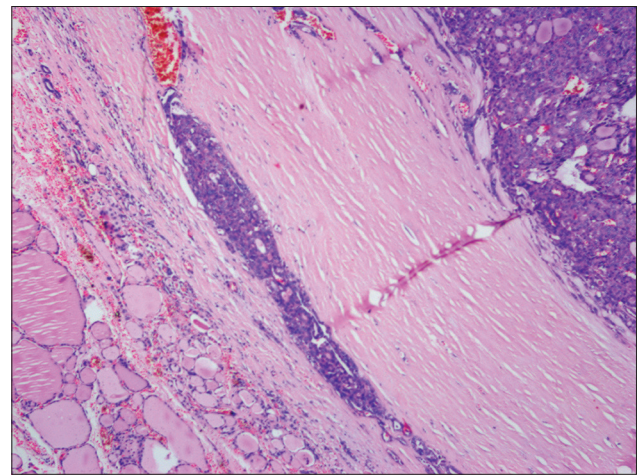
**Figure 5:** High resolution ultrasonography neck showing nodule in the left lobe of thyroid



**Figure 6:** Contrast enhanced computed tomography neck revealed a small heterogeneously enhancing soft tissue attenuation lesion with a focus of calcification and few hyper dense areas seen in the left lobe of thyroid



**Figure 7:** Ultrasonography-guided fine needle aspiration cytology of thyroid nodule was suggestive of follicular carcinoma of thyroid



**Figure 8:** Histopathology of surgically resected specimen of thyroid revealed malignant epithelial cells arranged in a microfollicular and macrofollicular pattern with scanty colloid

by radionuclide ablation. Histopathology of a surgically resected specimen of thyroid revealed malignant epithelial cells arranged in a microfollicular and macrofollicular pattern with scanty colloid [Figure 8]. This was suggestive of follicular carcinoma of thyroid with pathological stage pT1bNxMx (clinical stage T1bN0M1). The patient was then referred to Department of Nuclear Medicine and Radiotherapy for treatment.

## DISCUSSION

Follicular carcinoma of thyroid originates from follicular cells and resembles the normal microscopic pattern of the thyroid. It is usually a well-differentiated tumor. It is next only to papillary carcinoma of thyroid, in terms of prevalence.<sup>[4]</sup> Among thyroid malignancies, follicular carcinoma of thyroid account for 10–20% and is most often seen in patients over 40 years of age.<sup>[1]</sup> Thyroglobulin, an immunohistochemical marker for follicular carcinoma of thyroid, is present in more than 95% of cases.<sup>[5]</sup> Usually, the tumor presents as an asymptomatic solitary intra-thyroid

nodule. It has an aggressive course and metastases by hematogenous route,<sup>[6,7]</sup> lung and bone being the common site. 10–15% of patients have distant metastases with differentiated thyroid carcinoma.<sup>[8]</sup> At the time of diagnosis, distant metastases are reported in 11–20% of cases.<sup>[2]</sup> Unusual bony metastases of follicular carcinoma of thyroid have been reported in skull, mandible, maxilla, spine, and orbit.<sup>[2]</sup> In about 20% of cases, simultaneous lung metastasis has been reported in follicular carcinoma of thyroid with a mean age at presentation of over 50 years.<sup>[8]</sup> However, the initial presentation of follicular carcinoma of thyroid as a large intrathoracic mass without any symptoms of thyroid gland enlargement and dysfunction is an unlikely occurrence. Disseminated metastases from follicular carcinoma of thyroid at the time of diagnosis remain exceedingly rare.

The optimal therapy for differentiated thyroid cancer includes thyroidectomy and radiotherapy. The presence of distant metastases is associated with poor prognosis. An overall 10-year survival rate of 27% has been reported for bone metastasis of differentiated thyroid carcinoma. An early diagnosis and treatment of metastatic disease improve the overall survival rate and treatment outcome. Thyroidectomy was performed in this case to decrease the amount of radioactive iodine ( $I^{131}$ ) required for ablation as high doses have been linked to an increased risk of leukemia, bone, soft tissue, colorectal, and salivary gland cancers.<sup>[9]</sup> In addition to thyroidectomy and  $I^{131}$  treatment, some authors support the use of external beam radiation therapy for both loco-regional control and control of inoperable metastases.<sup>[10,11]</sup> This type of initial presentation of follicular carcinoma of thyroid as a large intrathoracic mass is very rare, and hence we decided to report the case. This case highlights the importance of obtaining a biopsy and histopathological examination in a case of an intrathoracic mass. Tissue diagnosis should be obtained whenever possible for confirmation and to rule out other possibilities.

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#### Conflicts of interest

There are no conflicts of interest.

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