

# Small Cell Carcinoma Metastasis to Thyroid Gland: A Case Report

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## Abstract

Lung carcinomas are rarely responsible for the metastatic disease of the thyroid gland. Despite high potential for metastasis of small cell lung carcinoma (SCLC), thyroid remains a rare site for metastatic disease. Literature review showed only a few cases of small cell carcinoma metastasizing to the thyroid. We present case of a male patient who presented to us with neck swelling which initially posed a great diagnostic difficulty but later diagnosed as metastatic small cell thyroid carcinoma on incisional biopsy.

**Keywords:** Lung carcinomas; Thyroid gland; Small cell lung carcinoma (SCLC); Neck swelling; Metastatic disease

## Introduction

Although thyroid gland has prolific blood supply, incidence of metastatic disease to thyroid remains meager [1]. Factors contributing to low rate of metastasis include iodine found in thyroid gland and fast arterial supply, which create unfitting backdrop for tumor implantation and progression [2]. However, a number of malignancies from various systems including renal cell, colorectal and others can metastasize to thyroid gland [3]. Lung carcinomas are responsible for 8.3% of the metastatic disease of the thyroid gland [3]. Adenocarcinomas constitute the most frequent subtype of pulmonary malignancy metastasizing to thyroid, while small cell metastasis to thyroid is least commonly occurring phenomena. Other pulmonary malignancies metastasizing to thyroid gland include squamous cell and large cell carcinomas [4]. Small cell lung cancer is a rapidly growing malignancy with poor prognosis. Some well-known sites for small cell carcinomas include adrenal gland, lymph nodes, liver and bone but metastasis to thyroid gland is an exceptional clinical occurrence [5,6].

Literature review showed only a few cases of small cell carcinoma metastasizing to the thyroid. In this article, we present case of a male patient who presented to us with neck swelling and was diagnosed as a case of small cell metastasis to thyroid gland.

## Case Presentation

A 45 years male, smoker for last 15 years with history of ischemic heart disease and coronary artery bypass grafting done 3 years back presented to surgical clinic with complaints of swelling in front of neck for past 10 years, swelling had rapidly enlarged over a period of past 3 months. It was associated with respiratory difficulty which was more pronounced on lying down flat.

There were no systemic signs and symptoms associated with it. Ultrasound of swelling was done which showed predominantly solid mass in left lobe of thyroid gland with irregular margins and coarse calcifications. Fine needle aspiration cytology (FNAC) of mass was inconclusive. Computerized tomography (CT) scan of neck was done findings of which showed locally infiltrative mass of thyroid approximately 3 × 3 cm in size, pushing the laryngeal apparatus to right side and associated cervical lymphadenopathy (Figures 1 and 2).

He was planned for incisional biopsy. Biopsy and immunohistochemistry of thyroid was consistent with metastatic small cell carcinoma (Figure 3). Subsequently CT scan chest was done which showed 3x3 cm contrast enhancing lesion in middle lobe of right lung consistent with primary focus of small cell carcinoma. Bronchoscopy was done and transbronchial biopsies were taken from lesion and histopathology confirmed the diagnosis of small cell carcinoma of



**Figure 1:** X-ray thoracic inlet showing marked tracheal deviation towards right side.

lung (Figure 4). Patient was admitted and elective tracheostomy of patient was done as he had severe respiratory difficulty after which he was referred to oncologist for chemotherapy and radiotherapy. Unfortunately patient died of massive myocardial infarction during the course of treatment.

## Discussion

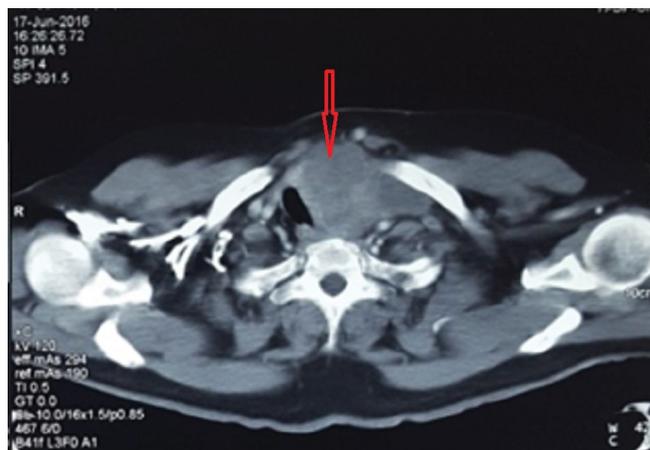
Lung cancer is 2nd most common malignancy worldwide and prime cause of cancer related deaths in US. Small cell lung carcinoma (SCLC) account for 13% cases of total lung carcinomas. It frequently metastasizes to brain liver and bones [7]. Although SCLC shows excellent response to chemotherapy even in advanced disease but the prognosis remains poor nonetheless [8]. Despite high potential for metastasis of SCLC, thyroid remains a rare site for metastatic disease

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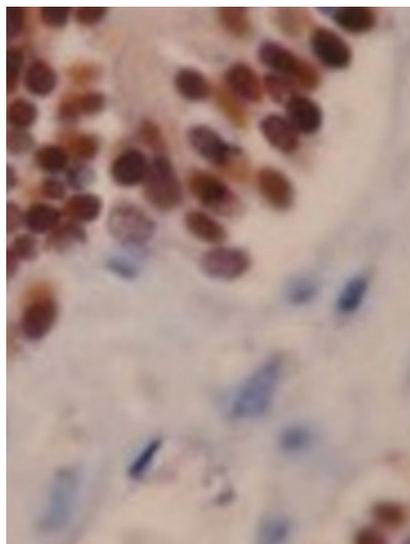
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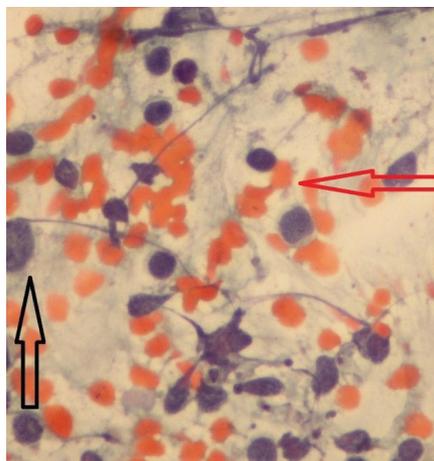
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**Figure 2:** CT scan neck showing large mass in left lobe of thyroid gland compressing trachea and pushing major vessels in neck laterally on right side.



**Figure 3:** Histopathology of thyroid lesion showing small cell carcinoma.



**Figure 4:** Histopathology of pulmonary lesion showing small cell carcinoma.

[9]. Although, clinical detection of thyroid metastasis is rare event, autopsy reports indicate incidence of metastasis as high as 8.6%. More detailed autopsy reports which review at least 1 slide for 5 gram of thyroid tissue have revealed rate as high as 24.2% [10]. Studies have suggested that metastatic disease to thyroid may be more common in diseased thyroid such as thyroiditis or goiter [11]. One recent literature review suggests that 44.2% of metastasis occurred in diseased thyroid gland [3]. It is important to highlight here that our patient also has a history of long standing goiter which developed metastatic disease later in the course. By thorough literature review, we could only find two previously reported cases of small cell CA metastasizing to thyroid. Both patients were male, > 55 years of age, smoker, diagnosed by FNAC. Neither of them underwent thyroidectomy and median survival was 14 months [5,6]. The patient being reported in this case review was 45 years male, smoker and diagnosed by biopsy instead of FNAC. As surgery is not recommended for small cell carcinoma, our patient was not operated upon either; instead, he was referred to medical oncologist after elective tracheostomy. Metastasis to thyroid can be entirely asymptomatic or can present with compression related symptoms later in course of disease. Thyroid profile may be normal as in our case. Ultrasound may demonstrate a hypo echoic lesion, but presence of calcification represents most specific ultrasound feature of malignancy with sensitivity as high as 85.8 to 95% [6]. Ultrasound report of this patient showed a solid mass with punctuate and coarse calcifications suggestive of malignancy. However, initial diagnostic test of choice is FNAC. Chung et al reviewed patients of metastatic disease to thyroid from non-thyroid malignancies and reported that FNAC provided exact diagnosis in 73.7% of the patients [3]. If inconclusive, biopsy and immunohistochemistry should be performed [12]. In our case, FNAC was inconclusive. Biopsy and immunohistochemical analysis was done to reach the diagnosis. Our patients tumor stained positively for chromogranin A and synaptophysin suggesting its pulmonary origin.

## Conclusion

It can be safely concluded that rapidly enlarging thyroid swelling in settings of diseased thyroid can point towards metastatic deposits in thyroid. In rare setting primary malignancy can be pulmonary in origin. Surgeons must be wary of this possibility while chalking out the management plan for patient.

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