

# Thyroid Metastasis from Non-Small Cell Lung Cancer:

## A Case Report

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### Introduction

Metastases to the thyroid from lung cancer is rare. In this case report, we present a case of thyroid metastasis from poorly differentiated lung carcinoma.

### History

73 year old Caucasian man with history of COPD (emphysema), former smoker (50 pack-years) and hyperlipidemia developed Stage IIB (T2bN0M0) poorly differentiated carcinoma with neuroendocrine features of left lower lobe (LLL) favoring large cell neuroendocrine carcinoma in July 2019. He was treated with stereotactic body radiation therapy (SBRT) from 8/28/19 to 9/18/19 and then four cycles of chemotherapy Cisplatin/Etoposide from 10/8-12/13/19.

Re-staging PET Scan on 12/27/19 demonstrated a 2.6 cm fluorodeoxyglucose (FDG)-avid L thyroid nodule concerning for malignancy [standardized uptake value 14.1]. TSH was normal (0.63 mIU/ml). Fine Needle Aspiration (FNA) biopsy of the thyroid nodule performed on 2/4/20 showed carcinoma, favoring metastasis from lung.

Re-staging PET Scan on 3/3/20 demonstrated a large bulky intensely hypermetabolic L thyroid mass (6.7 x 5 cm) consistent with thyroid malignancy, markedly increased in size compared to the prior study, hypermetabolic lung metastases and hilar metastases. On physical exam 3/17/20, a 3 cm fixed anterior midline neck mass was appreciated.

Patient underwent radiation to thyroid mass 300 cGy x 10 fractions from 4/6/20 to 4/17/20. Patient reported improvement in swallowing, but continued to experience retrosternal dysphagia and heartburn.

On 5/1/20, patient presented to EOVA with shortness of breath. CT scan showed a 9 x 4 cm large heterogeneous mass involving the left lobe of the thyroid gland and multiple new metastases. Patient decided to pursue hospice care.

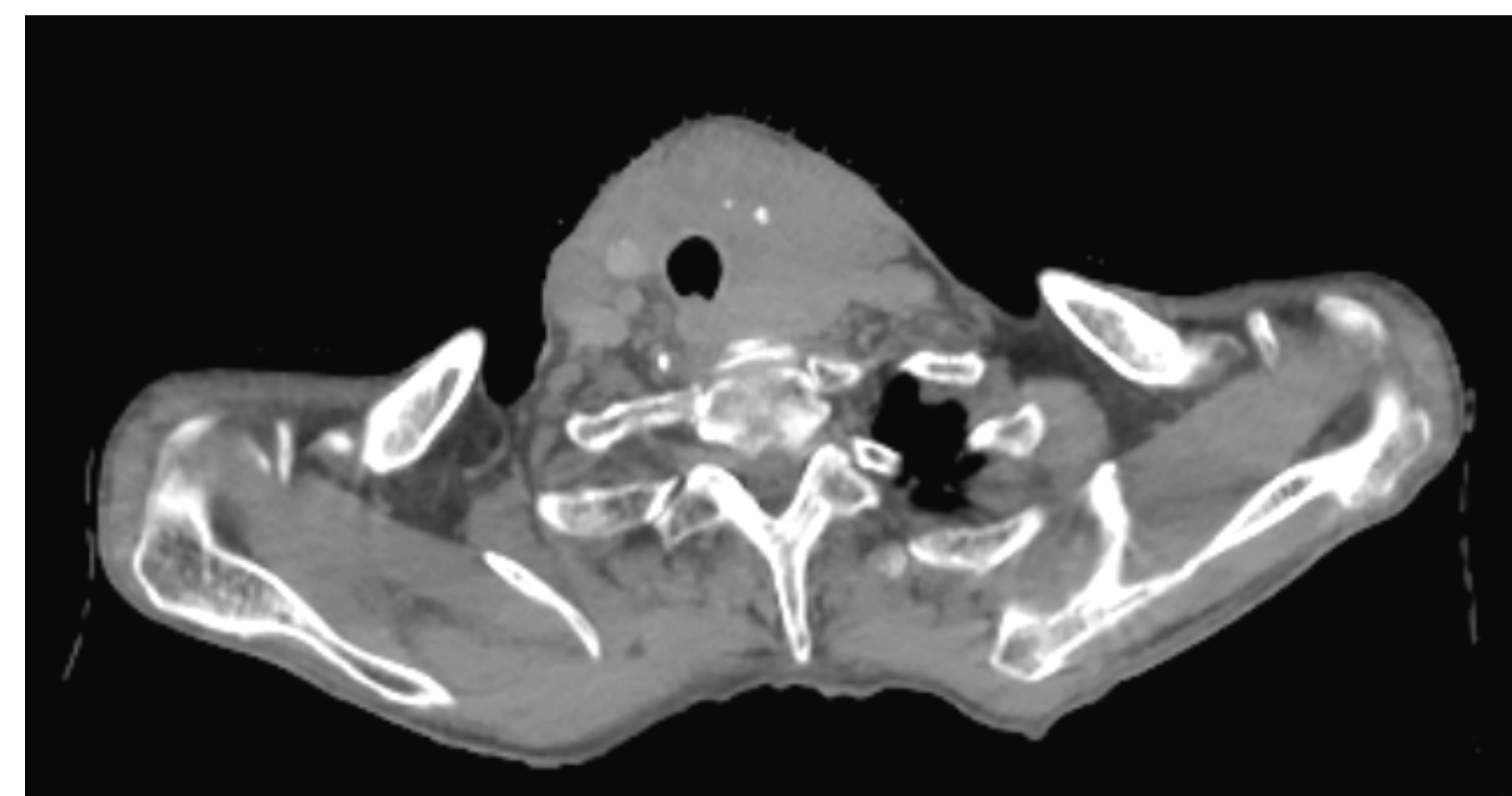
### Imaging

#### PET Scan (3/3/20)



Large bulky intensely hypermetabolic L thyroid mass consistent with thyroid malignancy. It measures 6.7 x 5 cm.

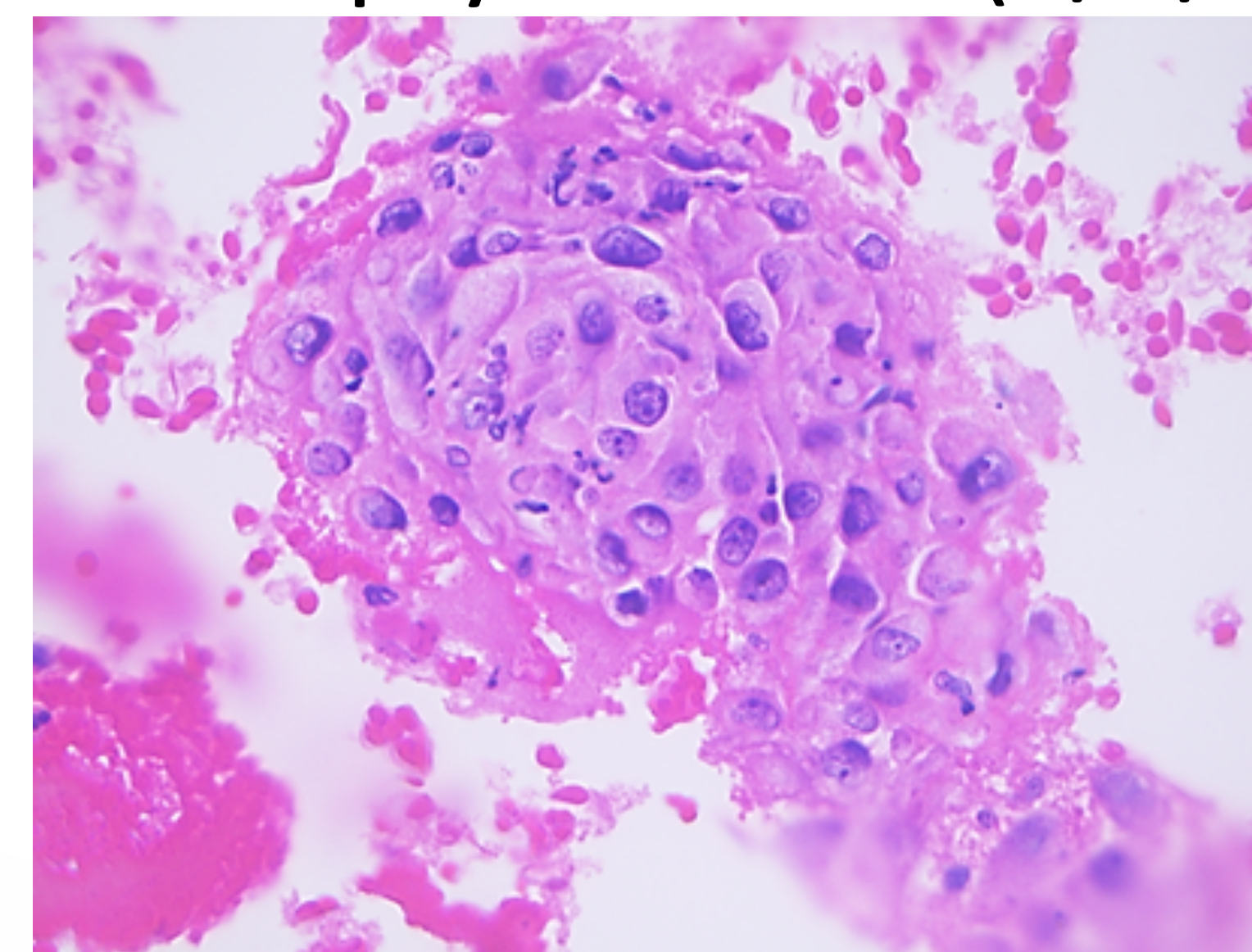
#### CT Chest (5/1/20)



Heterogeneous mass involving the left lobe of the thyroid gland with displacement of the esophagus and trachea towards the right. It measures 9 x 4 cm.

### Pathology

#### FNA Biopsy with IHC (2/4/20)



H&E 40X High Power

Tumor cell clusters with pleomorphic nuclei, coarse chromatin, prominent nucleoli. Tumor cells are negative for PAX-8, thyroglobulin, TTF-1. With these negative results, thyroid origin of malignancy was excluded.

### Discussion

The thyroid is not a frequent organ for primary cancer, and it is an even less frequent site of metastatic cancer. The reported incidence of thyroid metastatic lesions among the living is 2-3% of all thyroid malignancies (1).

Among the patients with lung cancer metastasizing to thyroid, adenocarcinoma is the most common histological type (1). Neuroendocrine tumors (including those of the lung), rarely metastasize to the thyroid and only a few cases have been reported (2). Our patient's lung cancer was treated as large cell neuroendocrine carcinoma. Despite this cancer being a non-small cell lung cancer, it behaves and is treated similarly to small cell lung cancer.

Clinical manifestations of metastatic thyroid lung tumors include hard, fixed, rapidly growing masses of the thyroid gland. Most patients complain of dyspnea, dysphonia or dysphagia, the latter demonstrated in our patient's case (1).

A thyroid nodule detected in a patient with a recent or remote cancer should be considered for FNA to rule out metastatic disease in the thyroid (3). FNA with immunohistochemistry (IHC) can distinguish between metastatic tumors and primary thyroid tumors (1). Negative staining of thyroglobulin and TTF-1 in our patient suggested high probability of lung origin of thyroid metastasis. A PET Scan may show a hypermetabolic mass indicative of the thyroid metastasis (3), also seen in our patient's case.

The diagnosis of metastatic thyroid cancer carries a worse prognosis than primary thyroid cancer - 10 year survival rate of 85% for primary thyroid cancer versus 5 year survival rate of 5% for metastatic thyroid cancer (1). Despite the poor prognosis of thyroid metastasis, thyroid hormone levels are usually within normal limits (1,3). It is important to consider the possibility of metastasis in patients with thyroid nodules and history of primary malignant tumor (1,2), as demonstrated in this case report.

### References

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