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Metastasis to Thyroid - A Series of Two Case Reports Diagnosed by Fine Needle Aspiration Cytology

Shipra Singhal[1], Somshankar Chowdhury[1], Sachin Kolte[2], Sufian Zaheer[2]

[1]Senior Resident, [2]Professor,
Department of Pathology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi-110029

Corresponding Author: Shipra Singhal

ABSTRACT

Metastasis to the thyroid is uncommon but the numbers of cases seem to have increased in recent years. This increase may be related to more frequent use of fine-needle aspiration cytology (FNAC) in any suspected case. Breast cancer is the most common tumour that metastasizes to the thyroid. They usually occur when there are metastases elsewhere, sometimes many years after the diagnosis of the original primary tumour and show poor prognosis in general. Here we describe two unusual cases of metastatic lung carcinoma and metastatic renal cell carcinoma to thyroid gland which were diagnosed by fine needle aspiration cytology and confirmed by histopathology and immunohistochemistry.

Key words: Metastasis, thyroid, fine-needle aspiration cytology, FNAC

INTRODUCTION

Metastasis to thyroid gland is very rare. They represent less than 4% of all thyroid malignancies in clinical studies. [1] The most common tumours which are reported to metastasize to thyroid are breast and kidney malignancies. [2]

Here we describe two cases of metastasis to thyroid gland from unusual primary sites. The first case with metastasis by adenocarcinoma of lung to thyroid gland and a second case of renal cell carcinoma with metastasis to thyroid gland and cervical lymph nodes are described which were diagnosed by fine needle aspiration cytology and confirmed by histopathology and immunohistochemistry.

CASE REPORTS

Case 1

A 50-year-old male with type 2 diabetes mellitus, chronic kidney disease, fracture hip joint and with a past history of Koch's lung presented with shortness of breath, swelling of the whole body and weakness.

He was admitted in the ICU. All relevant investigations were done. The patient was started on IV antibiotics/IV diuretics and other supportive management.

The patient's reports were suggestive of sepsis with MODS along with acute chronic kidney disease. CT chest showed a mass in the right lung extending medially into the mediastinum at the level of tracheal bifurcation, encasing the right main pulmonary tree. There was minimal bilateral pleural effusion. Thyroid gland showed hypodense nodules in both the lobes measuring 9 x 9 mm in the right lobe and 19 x 16 mm in the left lobe.

He was advised fine needle aspiration cytology of the lung mass. FNAC smears were paucicellular with few cohesive clusters of cells. The patient was advised histopathological correlation.

USG guided biopsy was performed under aseptic precautions and it showed a tumour in which the cells were arranged in clusters and sheets. These cells were having round to oval vesicular nucleus with distinct nucleoli. They had moderate to abundant cytoplasm which was pale eosinophilic and finely vacuolated.

Immunohistochemistry was done and these tumour cells came out to be positive for TTF-1 and Muc-1. They were negative for p63.

According to the histopathological and immunohistochemical evaluation a diagnosis of adenocarcinoma, right lung was made.

FNAC from left thyroid nodule was performed and it revealed presence of tumour cells in cohesive clusters. The cells were having scant amount of cytoplasm with round to oval vesicular nucleus and prominent nucleoli. There was marked pleomorphism (figure 1). A diagnosis of metastatic adenocarcinoma from lung was suggested.

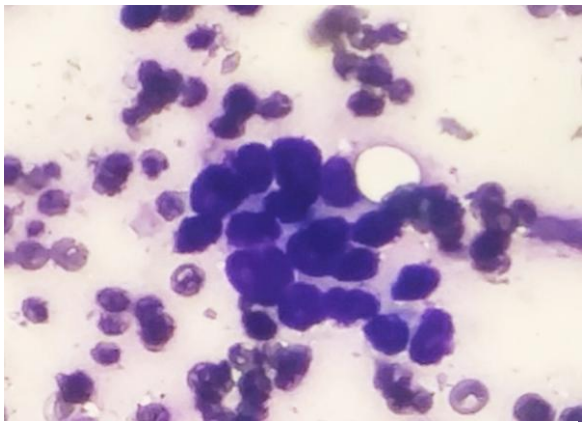

Figure 1: FNAC smears from thyroid nodule showing cluster of tumour cells (giemsa 40X)

After a board meeting, and the decision of a surgical excision of the pulmonary mass was made and the patient underwent a segmentectomy. The patient was referred to medical oncology for further management.

Case 2

A 46 year old male who was a follow up case of renal cell carcinoma presented with 2 x 2 cm nodule in the right lobe of the thyroid gland along with an enlarged right upper cervical lymph node measuring 1x1 cm.

FNAC from thyroid swelling and right upper cervical lymph node showed a similar picture. FNAC from thyroid swelling revealed presence of tumour cells in sheets and papillary clusters having prominent nucleoli, abundant basement membrane like material (figure 2). Occasional cluster of thyroid follicular cells could be identified.

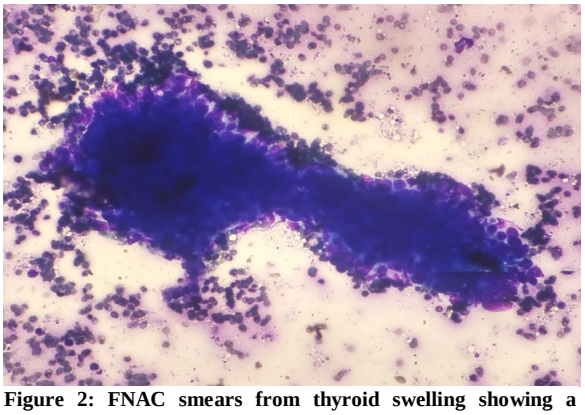

Figure 2: FNAC smears from thyroid swelling showing a papillary cluster of malignant cells (giemsa 40X)

FNAC from the lymph node also showed a similar morphology of tumour cells over the background of lymphocytes. A diagnosis of metastatic papillary adenocarcinoma was given. Possibility of metastasis from renal cell carcinoma was suggested.

The patient was advised core biopsy from thyroid to rule out primary papillary carcinoma thyroid and to confirm metastatic renal cell carcinoma to thyroid.

Sections from core biopsy showed tumour cells arranged in papillae, trabeculae and in small sheets. The individual tumour cells showed presence of clear looking cytoplasm with round vesicular nucleus and prominent nucleoli (figure 3). These tumour cells were positive for CD 10. Based on histopathological and immunohistochemical findings, a diagnosis of metastatic renal cell carcinoma, thyroid was given.

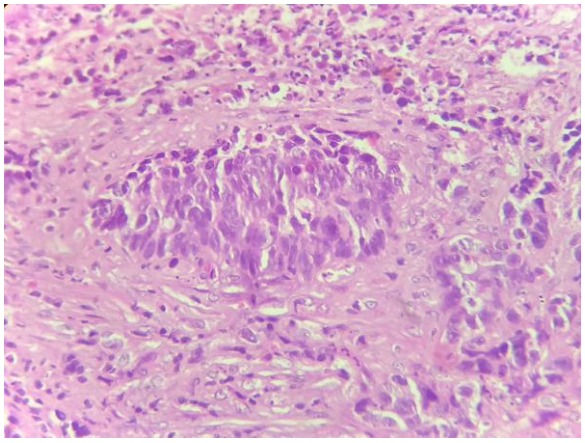

Figure 3: Core biopsy from thyroid showing tumour cells in small cluster (H & E, 40X).

Currently the patient is receiving radiotherapy as the tumour is unresectable.

DISCUSSION

The clinical detection of thyroid metastasis from non-thyroid primary tumours is an extremely rare event and usually, patients with metastatic thyroid lesions present with similar symptoms to primary lesions. In autopsy series, breast and lung were the most frequently observed primary cancers to metastasize to the thyroid. [3,4]

However, in some clinical series, primary renal cell carcinoma is the most common malignancy to metastasise to the thyroid compared to the breast and lung cancer. [5-8] Metastases to the thyroid gland are associated with a poor prognosis in multiple series. [9]

The survival depends on the primary cancer, the treatment approach and the presence of other distant metastases. Primary renal cancer has been reported to be associated with better survival rates when compared to extrarenal locations. [10] Prolonged survival of more than 5 years was observed in the cases where surgical excision is performed. [11-14] The patients with multiple metastases present the worse survival rates (5% at 5 years). [15]

CONCLUSION

Based on these cases, we conclude that it is important to keep in mind that the thyroid gland can be a site of metastases for a variety of tumours when evaluating a thyroid nodule, especially when the patient has a known primary malignancy. In these cases, knowledge of a patient's complete clinical history is extremely useful. In those patients who do not have any other malignancy, clinical features, imaging and fine needle aspiration cytology should be used to distinguish between a primary thyroid cancer and a metastatic disease due to the significant difference in the therapeutic approach.

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