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Malignant thymic tumor masquerading as papillary carcinoma of thyroid on cytology: A case report

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Abstract

Thymic carcinoma with a prevalence of only 5% of all mediastinal tumors is a rare entity in itself. Further its occurrence in the neck as an ectopic mass is quite uncommon. We were presented with a case of anterior neck swelling reported as papillary carcinoma of thyroid on Fine Needle Aspiration Cytology and referred to our hospital. Further investigations at our institute, showed basaloid cells in nesting and trabecular pattern on modified papanicolau smears and it was finally diagnosed as thymic carcinoma using ancillary studies. Thymic carcinoma needs to be considered in the differential diagnosis of a suspected papillary thyroid carcinoma.

Keywords: neck mass, FNAC, papillary thyroid carcinoma, thymic carcinoma

Introduction

Thymic tumors representing 0.2-1.5% of all malignancies commonly occur in the anterior mediastinum of which thymomas account for 20-30% and thymic carcinomas account for 5% of thymomas (1, 2). They can rarely present in the neck when it is found as ectopic thymic tissue in the cervical area or within the thyroid gland (3). Because of their rare occurrence, their cytological features can often be misinterpreted with other commonly occurring lesions of the neck such as thyroid malignancies, the commonest of which is Papillary thyroid Carcinoma which usually presents as neck mass. FNAC, a simple and rapid technique with high sensitivity and specificity makes for an important tool in the accurate diagnosis and early intervention of a neck mass.

Here we discuss the cytology of an anterior neck swelling suspected to be papillary thyroid carcinoma, but ultimately diagnosed as Thymic carcinoma.

Case Report

A 68 year old woman presented with midline neck swelling and breathlessness since 6 months, which moved with deglutition. Ultrasonography and Computed tomography of the head and neck revealed a 4.7 x 4.7 cm heterogenous exophytic lesion with dense internal echoes, septations and vascularity in the left lobe of thyroid gland with retrosternal extension. Lesion abutted the right lobe and isthmus of thyroid showing internal necrosis and calcification. Rest of the thyroid gland, larynx, and major vessels on both sides were normal. Findings suggested malignant lesion of left lobe of thyroid gland.

Thyroid function tests, serum calcium, serum thyroglobulin and serum calcitonin were within normal limits.

Outside fine needle aspiration was reported as Papillary Carcinoma of Thyroid, thus case was referred to our institute as our hospital is a tertiary cancer care centre of West India.

Repeat fine needle aspirate stained with modified papanicolau done at our institute revealed relatively monotonous population of basaloid type epithelial cells showing mildly hyperchromatic nuclei with fine nuclear chromatin and inconspicuous or absent nucleoli (Fig.1). Nuclear grooving (Fig.2) was evident in many cells. No intranuclear inclusions, or thyroid follicular cells were seen. No colloid material seen in background in any smears. Lymphoid cells were consistently seen in the background. The possibility of a lesion of thymic origin could not be excluded. Clinikoradiological correlation and biopsy was advised. An ultrasound guided biopsy was done and the probable diagnosis given was poorly

differentiated carcinoma of thyroid origin, immunohistochemistry was advised. Immunohistochemistry (Fig. 3) given on the biopsy came negative for thyroid transcription factor 1, thyroglobulin, epithelial membrane antigen, vimentin, actin, CD34, CD5, calcitonin, synaptophysin and positive for PAX8, Bcl 2, cytokeratin AE1, MIB1 (40-50)%. Final diagnosis given was thymic carcinoma.

Patient thereby underwent sternotomy, and thymic tissue along with mass abutting the right lower lobe of thyroid was excised. Microscopically tumor lobules were separated by wide fibrous bands and scattered lymphocytic infiltration was seen. Lymphatic permeation and areas of hyalinization were present. There was no perineural invasion, vascular permeation or necrosis. Tumor reached and encircled the thyroid gland, multiple foci of tumor was also present within the thyroid gland (fig.4). Parathyroid gland was seen at the periphery of the tumor. The final diagnosis given was Thymic Carcinoma. Following the operative procedure patient underwent adjuvant radiotherapy and is presently in stable condition.

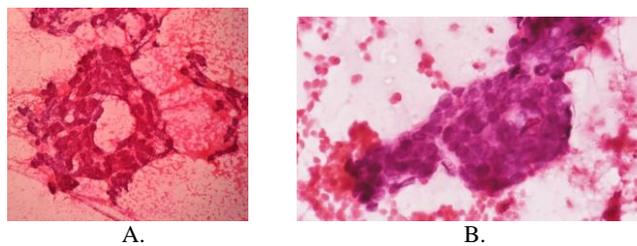


Fig 1: (a)x40 (b)x100 of nested pattern

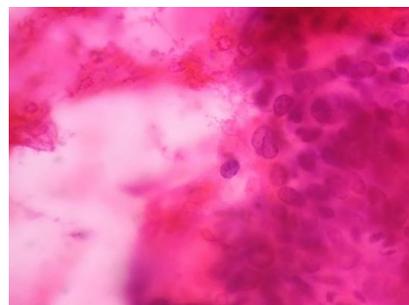


Fig 2: H&E x100 showing intranuclear grooving

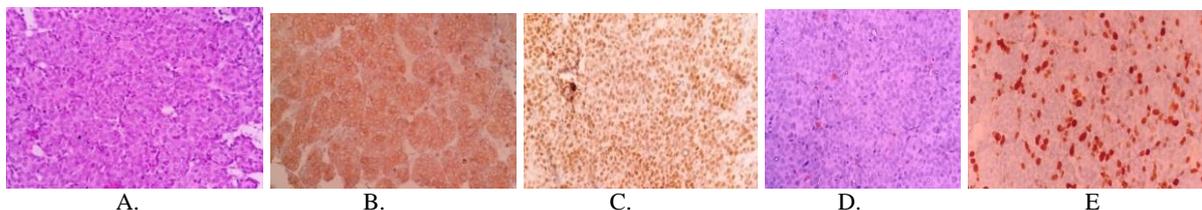


Fig 3: Immunohistochemical studies a) H&E x40 b) Bcl 2 x 40 c)PAX 8 x40 d) TTF 1 x40 e)MIB 1 x40

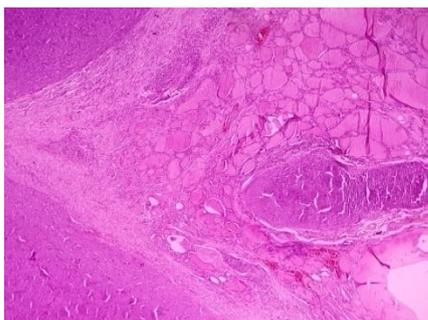


Fig 4: Tumor nodule within thyroid gland without any direct infiltration.

Discussion

Thymic Carcinomas are rare aggressive epithelial tumors of anterior mediastinum. Even more rare is their occurrence as ectopic tissue within the neck and thyroid gland [3]. Making a diagnosis of thymic carcinoma in the neck is difficult due to its unusual location and rare incidence. The cytological features of thymic carcinoma are often indistinguishable from other conditions like thymoma, thymic cyst, lymphomas and thyroid neoplasms especially papillary thyroid carcinoma.

To our knowledge, this is one of few cases to be documented of a thymic carcinoma presenting as a neck mass and mimicking papillary thyroid carcinoma. Thakur *et al* and Matsuura *et al* have reported cases of ectopic cervical thymoma and malignant thymoma mimicking thyroid carcinoma [4, 5]. The presence of tight epithelial clusters with

intranuclear inclusions can be misinterpreted as papillary thyroid carcinoma was established by Taiwee *et al.* [6]. In our case the presence of intranuclear grooves misdirected us. However the absence of papillary structure, colloid, intranuclear inclusions and the consistent presence of lymphoid cells along with epithelial component made us consider a thymic origin.

The use of immunohistochemistry improves the accuracy of diagnosis. The total absence of thyroid specific proteins such as thyroglobulin and thyroid transcription factor 1 helped exclude thyroid. The lack of TTF1 immunoreactivity in a tumor is strong evidence against thyroid origin [7]. Non reactivity to synaptophysin and calcitonin ruled out neuroendocrine origin. Positivity for PAX8, Bcl2, cytokeratin AE1, and strong reactivity to MIB1 along with histological correlation sealed our diagnosis. CD5 is no longer considered specific for diagnosis of primary thymic carcinoma [8-10].

Conclusion

The rarity of thymic carcinomas makes their recognition difficult and challenging, thus requiring a high index of suspicion while evaluating cases of neck mass in cytological examination.

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