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Hyalinizing Trabecular Adenoma: A Diagnostic Dilemma on Cytology

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ABSTRACT

Hyalinizing trabecular tumors (HTT) are rare and almost universally benign neoplasms of the thyroid gland. Its challenging cytologic diagnosis by FNAC is ascribed to its cytomorphologic features which overlap with papillary thyroid carcinoma (PTC) and medullary thyroid carcinoma (MTC). Due to the diagnostic difficulty, many patients receive overtreatment for what is primarily a benign disease. Here, we share our case report of HTT with cytologic evaluation by FNAC in a 28 years old female.

Keywords: HTT, PTC, MTC

INTRODUCTION

Hyalinizing trabecular tumors are benign or low-malignant-potential tumors of the thyroid that were originally reported in 1905[1]; however, they were not described in detail until1987 when Carney et al. introduced the term hyalinizing trabecular adenoma to describe these thyroid lesions with the following features: encapsulation, trabecular architecture with intratrabecular hyaline and colloid, polygonal and spindle cells, nuclei with frequent grooves and cytoplasmic inclusions, occasional psammoma bodies, and a low mitotic rate. The term adenoma was replaced by "tumor" in the recent WHO classification of tumors of endocrine organs, which redefined this lesion as "a rare tumor of follicular cell origin with a trabecular pattern of growth and marked intratrabecular hyalinization"[2].

CASE REPORT

An incidental thyroid nodule was detected in a 28years old female on USG neck. It was a well defined solid, hypoechoic, wider than taller lesion with smooth margins and few punctate echogenic foci in left lobe of thyroid measuring 1 x 0.6 x 0.7 cm. Rest of the thyroid was normal, homogenous in echotexture. It was graded as TR5 according to the ACR-TIRADS scoring and classification system. Subsequently FNAC was done and microscopy revealed moderately cellular smears showing dispersed isolated cells, microfollicles, few trabeculae and loosely cohesive aggregates with intertwined eosinophilic hyaline matrix material. The tumor cells had mildly pleomorphic oval to spindle nuclei with fine granular chromatin, inconspicuous nucleoli, focal intranuclear grooves and occasional intranuclear inclusions with moderate amount of light basophilic cytoplasm with ill defined cell boundaries. Focally, the epithelial cells were seen lying perpendicular to the hyaline material in a palisaded array. Vague curved nuclear palisading present. (Figure 1 and 2) Occasional binucleate cells and focally

present scant thick colloid along with bare nuclei are also seen in a hemorrhagic background. Keeping in view the cytopathological findings the diagnosis of Hyalinizing Trabecular Adenoma was made. The patient is on regular follow-up.

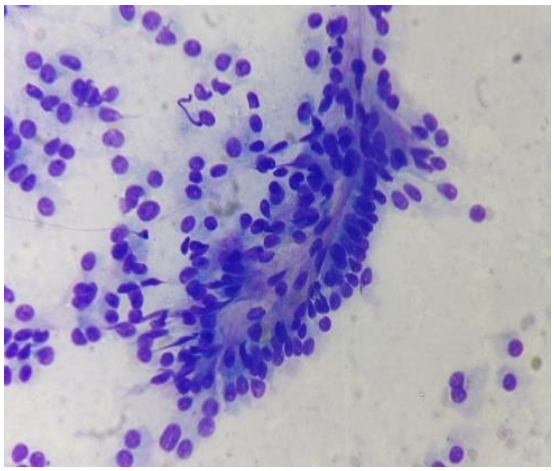

Fig 1: Trabecula with intertwined eosinophilic hyaline matrix material. Epithelial cells lying perpendicular to the hyaline material in a palisaded array.(10x)

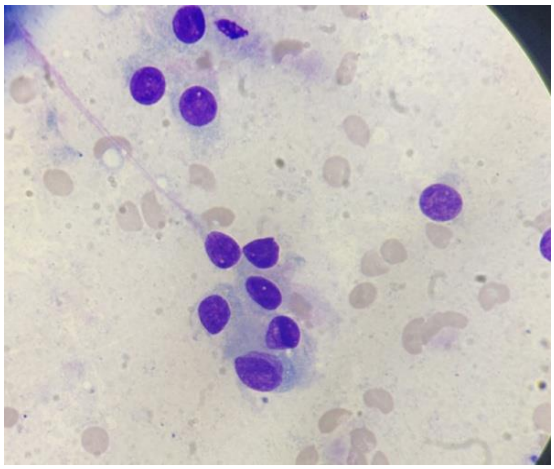

Fig 2: Focal intranuclear grooves and occasional intranuclear inclusions (40x)

DISCUSSION

Hyalinizing trabecular tumor are unusual tumors which usually arise in females. They are misdiagnosed in FNAC specimens because of the confusing similarity of its nuclear features to those of papillary thyroid carcinoma and the presence of a misleading hyaline material that mimics amyloid, often being misdiagnosed as medullary thyroid carcinoma. Although its general structure recalls that of medullary thyroid carcinoma, the tumor cells resemble those of PTC displaying cytoplasmic inclusions and nuclei with longitudinal folds.

On gross examination, hyalinizing trabecular tumors are usually well circumscribed or encapsulated. Their color typically ranges from yellow to tan, although variations have been described. In comparison, papillary thyroid carcinomas are classically white and lack a capsule[3].

Findings on FNAC that favour hyalinizing trabecular tumor are polygonal to elongated cells with a low nuclear-to-cytoplasmic ratio, cellular aggregates around the hyaline material, fine chromatin (in contrast to the optically clear chromatin of papillary thyroid carcinoma), and numerous nuclear inclusions and grooves along with perinuclear clearing, against a bloody background. Yellow cytoplasmic inclusions called ‘yellow bodies' are a distinctive feature unique from papillary thyroid carcinomas and represent lysosomes. Interspersed throughout the stroma, calcifications and psammoma bodies can be seen[4,5].

Hyalinizing trabecular tumor and PTC also share RET/PTC1 translocations. The classical hyalinizing trabecular pattern probably represents the morphologic expression of follicle derived lesion. Some authors consider HTT to be a morphologic variant of PTC or a precancerous lesion. However, recent investigations have revealed differences in immunohisto-chemical staining and molecular profiles between HTT and PTC. These tumors can be distinguished from medullary thyroid carcinoma by Congo red negativity, positive thyroglobulin immunoreactivity, and negative calcitonin immunoreactivity[6].

In contrast to HTTs, Oncocytic (Hürthle cell) tumors are highly cellular comprising of 75% or more Hürthle cells (abundant granular cytoplasm, round nuclei, often prominent nucleoli) which are often discohesive. Some are enlarged and pleomorphic with intracytoplasmic lumens and transgressing vessels are present. No colloid is usually present.

There has been significant debate on the most suitable terminology for these tumors since their original description as hyalinizing trabecular adenomas by Carney et al. in 1987[1]. Due to the concern of a possible relationship with papillary thyroid carcinoma and case reports of malignant variants, the term 'hyalinizing trabecular tumors' was proposed and is currently the classification accepted by the World Health Organization[2].

Hyalinizing trabecular tumors have an exceedingly low to nonexistent malignant potential. In the largest case series by Carney et al. including 119 cases, 118 were benign and found to meet the strict diagnostic criteria for hyalinizing trabecular adenomas. The single malignant tumor was classified as a hyalinizing trabecular carcinoma and was clinically distinct. This tumor did not meet the diagnostic criteria for an adenoma due to evidence of capsular invasion, numerous mitoses, and pulmonary metastasis at presentation. The 118 tumors categorized as hyalinizing trabecular adenomas behaved benignly without recurrence or metastases with up to 48 years of follow-up. Therefore, those tumors meeting the diagnostic criteria for hyalinizing trabecular tumors can be viewed as benign or at least of minimal malignant potential[3]. These tumors can be adequately treated by thyroid lobectomy.

CONCLUSION

Hyalinizing trabecular tumors are rare tumors of the thyroid gland characterized by a trabecular pattern with extensive hyaline and colloid deposits. Their cytologic features overlap with PTC and MTC. An awareness of characteristic features is valuable for their recognition and management so as to prevent overtreatment of this benign entity.

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