Hyalinizing Trabecular Adenoma Masquerading as Papillary Thyroid Carcinoma on Fine Needle Aspiration: A Case Report and Review of the Literature

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Abstract

Objectives: Hyalinizing trabecular adenomas are rare benign neoplasms of the thyroid gland often mistaken for papillary thyroid carcinoma on fine needle aspiration (FNA). We present a case of hyalinizing trabecular adenoma and review their natural history, pathologic findings, and management.

Study Design: Case report and literature review.

Methods: A case report of hyalinizing trabecular adenoma is presented with a review of the literature.

Results: A 57 year old female presented with a 6 cm thyroid mass with substernal extension (Figure 1). She was symptomatic with globus sensation, dysphagia, and exertional shortness of breath. FNA showed cells with cytoplasmic invaginations, numerous nuclear inclusions, and nuclear grooves. A diagnosis of papillary thyroid carcinoma was made. Total thyroidectomy was planned. Intraoperatively a soft tan-brown mass with a thick fibrous capsule was found (Figure 2). The patient recovered with no further intervention. Review of the literature showed hyalinizing trabecular adenoma is an almost universally benign disease and can be appropriately managed by thyroid lobectomy.

Conclusions: Hyalinizing trabecular adenomas are rare benign tumors of the thyroid gland typified by trabecular and alveolar architecture with intrathyroidal hyaline and colloid deposits. Cellular features of cytoplasmic inclusions, small nucleoli, psammoma bodies, and nuclear grooves cause it to be mistaken for papillary thyroid carcinoma on FNA. An awareness of hyalinizing trabecular adenoma as an entity of thyroid masses is valuable to allow appropriate management and prevent overtreatment for benign disease.

Introduction

Hyalinizing trabecular adenomas are benign tumors of the thyroid that were originally reported in 1905 but were not described in detail until 1987 by Carney et al.¹ Due to its histologic features, the tumor is commonly confused with thyroid carcinoma on FNA. This difficulty with pathologic diagnosis often results in overtreatment for what is almost universally a benign disease.

Case Report

A 57 year old Native American female presented with a 6 cm thyroid mass with substernal extension (Figure 1). She was symptomatic with globus sensation, dysphagia, and exertional shortness of breath. FNA showed cells with cytoplasmic invaginations, numerous nuclear inclusions, and nuclear grooves. A diagnosis of papillary thyroid carcinoma was made. Total thyroidectomy was planned. Intraoperatively a soft tan-brown mass with a thick fibrous capsule involving the right lobe of the thyroid was found and was suspicious for an etiology other than papillary thyroid carcinoma. Thyroid lobectomy was performed and frozen section analysis showed features inconsistent with papillary thyroid carcinoma. Total thyroidectomy was postponed pending final pathology. On pathology the mass had a thick fibrous capsule with trabecular arrangements of cells and areas of hyalinization between the trabeculae. The cells had pale eosinophilic cytoplasm and numerous nuclear inclusions with scattered nuclear grooves. A diagnosis of hyalinizing trabecular adenoma was made. The patient recovered with no further intervention. Review of the literature showed hyalinizing trabecular adenoma is an almost universally benign disease and can be appropriately managed by thyroid lobectomy.

Discussion

Hyalinizing trabecular adenomas (HTA) are rare tumors that are often mistaken for thyroid cancer. In 55 patients with hyalinizing trabecular tumors (HTT) the FNA diagnosis was papillary thyroid carcinoma (PTC) or suspicious for PTC in 60% of cases.² On FNA HTA and PTC both demonstrate hypercellularity, psammoma bodies, and cellular atypia including cytoplasmic invaginations, nuclear grooves, and nuclear inclusions causing diagnostic difficulty (Table 1). Additionally, HTAs can have amyloid appearing material (hyaline) causing confusion with medullary carcinoma or microfollicular changes mimicking a follicular neoplasm on FNA.³

On gross examination, a HTA usually has clearly circumscribed or encapsulated borders and is yellowish to tan in color. In comparison, PTC is typically white and lacks a capsule.

Histologically, HTAs have polygonal or elongated cells arranged in a trabecular or alveolar pattern with significant amounts of hyaline material. The hyaline can be both intra and extra cellular in location. The cells have abundant cytoplasm and may show cytoplasmic invaginations. The nuclei often have perinuclear clearing, nuclear grooves, and nuclear inclusions similar to PTC. However, unlike PTC there is no nuclear overlapping. Yellow cytoplasmic inclusions called “yellow bodies” are a distinctive feature unique from PTC. Calcifications and psammoma bodies can be seen interspersed throughout the stroma.

The term HTT encompasses both benign tumors (HTAs) and malignant tumors (hyalinizing trabecular carcinomas). In the largest case series of 119 HTTs all but 1 case were benign. The case of malignant hyalinizing trabecular carcinoma was clinically distinct with capsular invasion on pathology and pulmonary metastasis at presentation. No cases of HTA recurred or metastasized with up to 48 years of follow-up.

HTA represents a benign disease which is adequately treated with thyroid lobectomy. However, due to the difficulty with diagnosis on FNA many patients (44 - 71%)² receive overtreatment with total or subtotal thyroidectomy.

Table 1: Distinguishing Features

<table>
<thead>
<tr>
<th>Features</th>
<th>Hyalinizing Trabecular Adenoma</th>
<th>Papillary Thyroid Carcinoma</th>
<th>Medullary Thyroid Carcinoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumor Type</td>
<td>Benign</td>
<td>Malignant</td>
<td>Malignant</td>
</tr>
<tr>
<td>Capsule</td>
<td>Usually</td>
<td>Occasionally</td>
<td>Occasionally</td>
</tr>
<tr>
<td>Color</td>
<td>Yellow to Tan</td>
<td>White</td>
<td>Gray</td>
</tr>
<tr>
<td>Papillary Structure</td>
<td>Occasionally</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Trabecular Structure</td>
<td>Yes</td>
<td>No</td>
<td>Occasionally</td>
</tr>
<tr>
<td>Nuclear Grooves and Inclusions</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Extracellular Material</td>
<td>Hyaline</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Thyroglobulin Stain</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Calcitonin Stain</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Conclusion

Hyalinizing trabecular adenomas are rare benign tumors of the thyroid. Histologically, they share many features with thyroid carcinomas. This can cause a dilemma in diagnosis and management. An awareness of hyalinizing trabecular adenomas distinctive features allows appropriate management and assists in preventing overtreatment for a benign disease.

References


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