DOI: 10.21088/ijprp.2278.148X.14125.3

Indian Journal of Pathology: Research and Practice
Volume 14 Number 1 January – April 2025

REVIEW ARTICLE

Oncocytic (Hurthle Cell) Adenoma: A Rare, Benign Tumor of Thyroid-Case Report and Review of Literature

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HOW TO CITE THIS ARTICLE:
Sunil V. Jagtap, Shubham S Jagtap, Maanasi R Bhade *et al*. Oncocytic (Hurthle Cell)Adenoma: A Rare, Benign tumor of thyroid-case report and Review of literature. Ind Jr of Path: Res and Practice 2025;14(1)21-25.

ABSTRACT

Oncocytic (Hurthle cell) adenoma is A Rare, Benign tumor of the thyroid gland. A 66-year-old woman presented with midline painless neck swelling over the past 3 months. The swelling moves up and down with her swallowing. On examination the swelling measured about 3x3x2.4 cm in size, in the right lobe of the thyroid gland. There was no symptoms of palpitation, hoarseness, or any pressure related signs. There was no family history of thyroid cancer. The ultrasonography showed right thyroid well circumscribed, heterogenous nodular mass lesion measuring 3.0x3.6 cm. Fine niddle aspiration cytology showed moderately cellular smears composed predominantly of Hürthle cells with abundant fine granular cytoplasm. Cellular atypia was noted. On cytology reported as suspicious for a follicular neoplasm with Hürthle cell type. Our patient underwent simple lobectomy. On histopathological findings reported as Oncocytic cell adenoma thyroid. Patient showed a good postoperative prognosis. This article presents a case of Oncocytic/Hurthle cell adenoma of the thyroid gland with a review of literature.

KEYWORDS

• Oncocytic adenoma • Hurthle cell • Thyriodtumors • Thyrotoxic

INTRODUCTION

The fifth edition of the World Health Organization (WHO) 2022, histologic classification of thyroid neoplasms includes newly recognized tumor types, subtypes, and a grading system for a standardized histopathological diagnostic approach.[1]

The term "Hürthle cells" is replaced with "oncocyticcells. "The various site for oncocytictumors are in thyroid and other endocrine

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Received on: 28.01.2025 **Revised on:** 01.02.2025 **Accepted on:** 05.03.2025

tissues like parathyroid, pituitary, adrenal cortex, pancreas, gut, and lung. Hürthle cell neoplasms are follicular neoplasm composed of more than 75% oncocytes defined as Oncocytic Adenoma.[2] These tumors are generally benign and often with surgical treatment shows a good postoperative prognosis. This article presents a case of Oncocytic /Hurthle cell adenoma of the thyroid gland with a review of literature.

CASE REPORT

A 66-year-old woman presented with midline painless neck swelling over the past 3 months. The swelling moves up and down with her swallowing. On examination the swelling measured about 3x3x2.4 cm in size, in the right lobe of the thyroid gland. There was no symptoms of palpitation, hoarseness, or any pressure related signs. There was no family history of thyroid cancer. Shehad no features of thyrotoxicity or hypothyroidism. The thyroid function test was normal, other laboratory investigations were normal.

The ultrasonography thyroid showed that right thyroid lobe was enlarged, the surface was smooth. The right lobe showed a well circumscribed, heterogenous nodular mass lesion measuring 3.0x3.6cm. Also colloid nodule measuring 1.2x0. 9cm is noted. Advised clinical corelation and excisional biopsy. Fine niddle aspiration cytology was done. Aspirates were moderately cellular and are composed predominantly of Hürthle cells with abundant fine granular cytoplasm. Along with micro follicle and scattered cells are noted. Cellular atypia was noted. On cytology reported as suspicious for a follicular neoplasm with Hürthle cell type. Our patient underwent simple lobectomy. On gross received right thyroid lobe, the external surface was smooth. The cut section showed a well circumscribed nodular mass lesion measuring 3.6x3.0x2.5cm, having thin fibrous capsule (Figure 1). On histopathology showed a predominantly solid pattern and microfollicular pattern of Oncocytic cell (80%). In areas showed cords, nests and papillary growth patterns (Figure 2). The nuclei of oncocytic cells were large, round, and hyperchromatic, with prominentmacronucleoli. (Figure 3). Cell with distinct cell borders, deeply eosinophilic and granular cytoplasm and form tight intercellular junctions were seen. The mitotic rate was low. (Figure 4). There was no invasion of tumor into capsule, lymphatics and/or blood vessels. Tumor showed scant colloid content. On histopathological findings reported as Oncocytic cell adenoma thyroid. Patient responded well to treatment and kept on follow up.

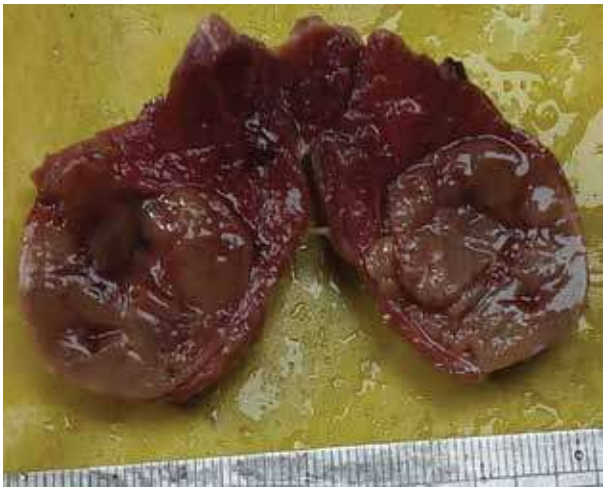

Figure 1: Right thyroid showing well circumscribed nodular mass lesion measuring 3. 6x 3. 0x2. 5 cm, havingthin fibrous capsule

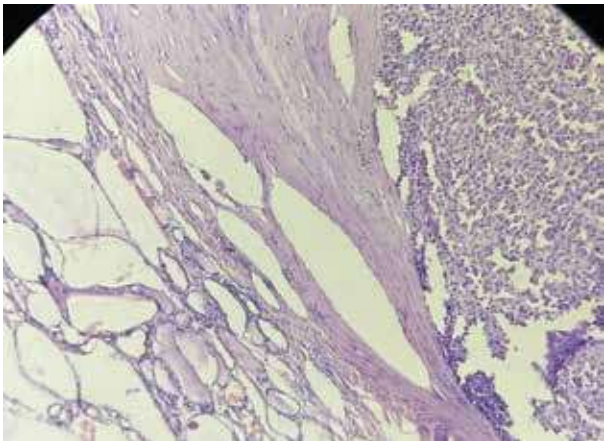

Figure 2: histopathology shows capsulatedthyriodtumor having solid and microfollicular pattern (Haemtoxylin & Eosin stain, 10x)

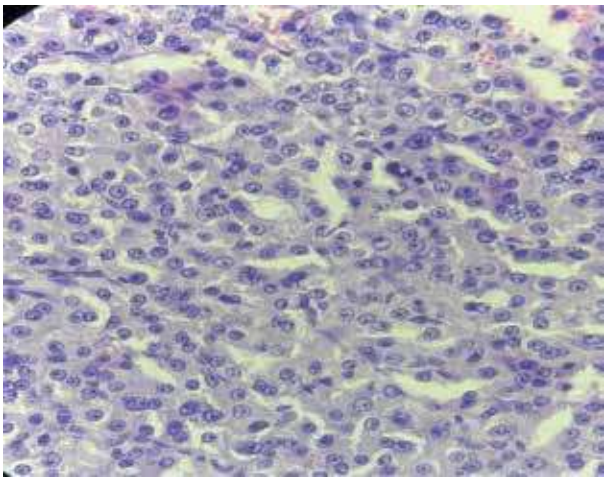

Figure 3: The nuclei of oncocytic cells are large, round, and hyperchromatic, with prominentmacronucleoli (Haemtoxylin & Eosin stain, 100x)

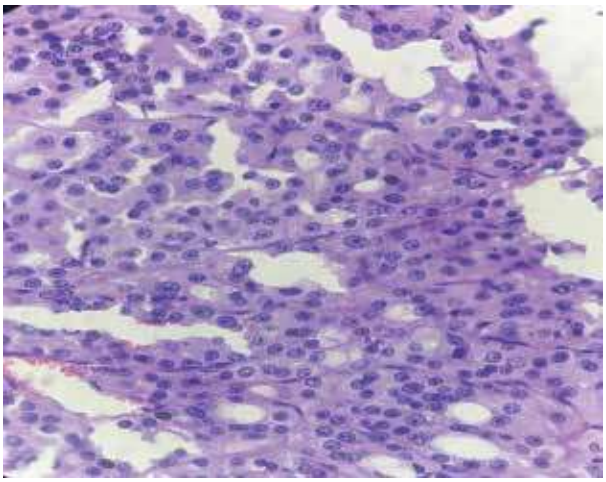

Figure 4: The oncocytic cells are large, round with distinct cell borders, deeply eosinophilic and granular cytoplasm (Haemtoxylin & Eosin stain, 100x)

DISCUSSION

Hürthle cells are eosinophilic, follicular-derived cells that are associated with a variety ofthyroid nonneoplasticautoimmune thyroiditis, multinodular goiterand neoplasticlesions such as Hürthle cell adenoma, Hürthle cell carcinoms,oncocytic variant of medullary carcinoma, several variants of papillary thyroid carcinoma.

Oncocytic cell adenoma is A Rare, Benign tumor of the thyroid gland. The incidence of of the thyroid is low,accounting for less than 5% of all thyroid tumors. [3]Oncocytic cells are large, polygonal cells with abundant granular, eosinophilic cytoplasm due to the presence of numerous mitochondriaalso with germline mutations of the *Gene associated with Retinoid-Interferon-induced Mortality (GRIM)-19* . 4

The Hürthle cell has consistently been the center of debate in the discussion of nonneoplastic and neoplastic lesions of the thyroid ever since it was first described in 1894 by Hürthle. Literature has used the terms oncocytic, eosinophilic, oxyphilic, Hurthle, and Ashkanazyvariably. The thyroid oncocytes were described by Askanazy, who more appropriately deserves the recognition. 5

Oncocytes are characterized by their abundant granular, eosinophilic cytoplasm, and large hyperchromatic nuclei. Oncocytic change occurs in nontumorous thyroid disorders, in benign and malignant tumors of thyroid follicular cells, in tumors composed of thyroid C cells, and intrathyroidal parathyroid proliferations as well as in metastatic lesions

Clinically thetumor remains undetected. Initial presentation is thyroid enlagement without pain. The location and size of the tumor may cause pressure and pain in later stage. These lesions may be inactive or active in producing thyroid hormones.

On cytology ,smears are moderately to highly cellular. The aspirates composed exclusively of cellsoncocyticcells having abundant granular cytoplasm, round nuclei, often prominent nucleoli. 6 Cellular atypia may be seen. No colloid, lymphocytes, histiocytes, plasma cells or ordinary follicular cells are seen. On cellular features it is difficult to determine benign or malignant nature of lesion. The term "suspicious for a follicular neoplasm, Hürthle cell type (SFNHCT)" may be more convenient than "follicular neoplasm, Hürthle cell type. The confirmatory diagnosis requires histopathological study.

On gross appearance, oncocytic cell adenomas typically present as well-circumscribed, solitary, round or oval nodules having thin, fibrous capsule that separates the tumor from the adjacent thyroid parenchyma. The size of the tumorsmay vary, but they are usually small in size. The cut surface of the tumor is solid or lobulated, firm, tan bright brown to mahogany to reddish-brown color.

The histopathological diagnostic criteria for Oncocytic of the thyroid are as follows: thyroid tumor cells consist entirely or predominantly (>75%) of follicular cells, characterized by eosinophils and the thyroid tumor tissue has an intact capsule and no vascular invasion. 7

On histopathology ,theoncocytic cell adenomas shows apredominantly solid pattern and microfollicular pattern. Alsotumor cellsarranged in trabecular, sheets, cords, nests or papillary growth patterns were noted. Oncocytic cell adenomas have scant to absent colloid content. Occasional nuclear grooves or nuclear pseudoinclusions were noted. The arbitrary cut-off of 75% oncocytic change to classify a lesion as an oncocytic variant brings another complexity to the classification scheme of tumors that frequently have mixed oncocytic and non-oncocytic components.

The nuclei of oncocytic cells are large, round, and hyperchromatic, with prominent cherry red macronucleoli. They typically have distinct cell borders, deeply eosinophilic and granular cytoplasm and form tight intercellular junctions. The mitotic rate in oncocyticcell adenomas is usually low. The presence of invasive of tumor into capsule, lymphatics and/or blood vessels, is a criterion for

an oncocytic cell carcinoma. Tumor size, nuclear atypia, multinucleation, pleomorphism, mitoses or histologic pattern of the lesion are not determinants of malignant.

The differential diagnosis oncocytic hyperplastic nodules, Nodular goiter with prominent oncocytic cells, Hashimo to thyroiditis associated with extensive Hürthle cellmetaplasia, Papillary thyroid carcinoma-oncocytic variant, Medullary carcinoma with Hürthle cell-like cells.[8] The distinction between oncocytic hyperplastic nodules and oncocytic adenomas may be challenging. Features favoring the diagnosis of adenoma include the presence of a well-defined fibrous capsule, architectural and cytological differences from the surrounding gland, closely packed follicles, trabeculae, or solid sheets In nodular goiter with prominent oncocytic cells shows abundant colloid, follicular cells and histiocytes mixed with oncocytic cells. In Hashimoto thyroiditis associated with extensive Hürthle cell metaplasia shows, in a background of dense lymphocytic inflammation with germinal center formation and admixed plasma cells. Papillary thyroid carcinoma, oncocytic variant shows tumor cell with nuclear features of papillary carcinoma. Medullary carcinoma with Hürthle cell-like cells is another differential. It shows calcitoni, CEA, thyroglobulin positivity.

On immunohisto chemistry, on cocytic adenomastumor shows positive stains for Thyroglobulin, TTF 1, CK 7, while CK20 negative.

The management of thyroid nodules with oncocyte cell–predominant is challenging given the wide spectrum of possible etiologies, ranging from benign conditions to Hurthle cellcarcinomas. Oncocytic adenomas are treated with a simple lobectomy or nodulectomy.[9] The lobectomy have proved adequate and minimized the risks of surgical complications and postoperative hypothyroidism.

It is essential for the pathologist to determine whether the tumor is benign or malignant, on the evaluation capsule and vascular invasion of tumor. Oncocytic adenoma is benign tumor, no recurrence after excision is usually noted. The overall prognosis is good. There is a significant debate in the literature on the incidence of malignancy in Hürthle cell neoplasms. Various studies showed that a multiple Hürthle cell nodules found in the background of goiter or chronic lymphocytic thyroiditis indicate that more than 80% of Hürthle cell neoplasms are benign.[10] While other studies shown that the rate of malignancy is higher in Hürthle cell than classic follicular neoplasms (2%–3% vs 30%– 45%) cases.

Hürthle cell tumor with minimal capsular invasion but evidence of vascular invasion should be classified as angioinvasive Hürthle cell carcinoma. In recent study from Ghossein et al on 50 patients with encapsulated.

CONCLUSION

Oncocytic morphology is seen in a variety of thyroid conditions that are associated with a broad differential diagnosis and care must be used for accurate diagnosis. Oncocytic cell adenoma is a rare benign tumor of the thyroid gland, no recurrence after excision is usually noted. The overall prognosis is good. This article presents a case of Oncocytic / Hurthle cell adenoma of the thyroid gland with a review of literature.

Conflicts of Interest: None

Financial support: None

Ethical approval: NA

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