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Case report

Encapsulated Oncocytic Variant Of Papillary Thyroid Carcinoma With Extensive Infarction: A Diagnostic Dilemma.

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Abstract

Oncocytic variant of Papillary Thyroid carcinoma (PTC) is a rare subtype of PTC. Diagnosis is based on the oncocytic tumor cells showing nuclear features of PTC in more than 75% of the tumor. We describe one such rare occurrence in a 45 year old male who was diagnosed as a hurtle cell neoplasm on Fine Needle Aspiration and underwent hemithyroidectomy. Gross specimen revealed near total infarction of tumor due to prior FNA. However careful and extensive sampling of the periphery of the tumor revealed oncocytic tumor cells with classic nuclear features of PTC showing positivity for CK7, CK19, CD56, TTF-1. There was no evidence of capsular or vascular invasion. Thus the case was diagnosed as encapsulated oncocytic variant of PTC. The pitfalls in diagnosis are discussed in detail.

Keywords: oncocytic variant, hurtle cell variant, papillary, carcinoma, thyroid

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INTRODUCTION

The oncocytic variant of papillary thyroid carcinoma (PTC) is a rare subtype accounting for 1–11% of all PTC. This variant has shown variable biological behaviour in various reports.[1] The histopathological criteria for the diagnosis of this tumor includes the presence of oncocytes with the nuclear features of PTC comprising at least 75% of the tumour.[2] We encountered one such rare tumor with complete encapsulation and extensive infarction in 45 year old male. Cytological, histopathological and IHC findings of the case is presented.

CASE REPORT

A 45 year old male presented with swelling in the midline of the neck since 9 months which was insidious in onset and gradually progressive. On examination swelling was 6x5 cm in size slightly more towards right side, firm in consistency, nontender and was moving with deglutition. USG revealed a well defined hypoechoic, predominantly solid mass lesion in the right lobe of thyroid measuring 41x27 cms(TIRADS V). FNA smears from the swelling revealed cellular smears comprising of nests, sheets and isolated population of oncocytic cells showing pleomorphism, nuclear overlapping, fine nuclear chromatin, occasional nuclear grooves and intranuclear inclusions.(Figure 1)

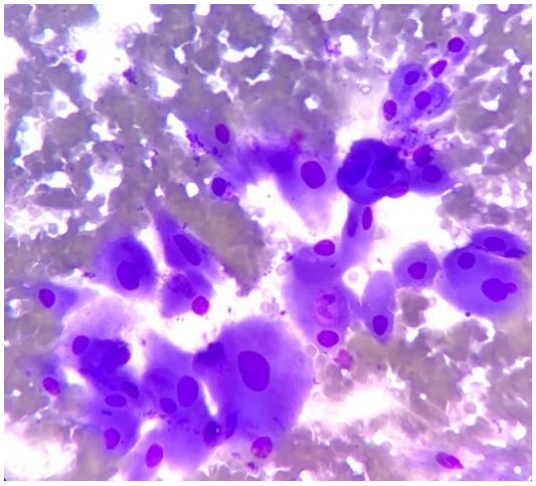

Figure 1: FNA smears showing nests, sheets and isolated population of oncocytic cells showing pleomorphism, nuclear overlapping, fine nuclear chromatin, occasional nuclear grooves. (Giemsa, 40x)

Possibility of oncocytic variant of papillary carcinoma was suggested. Right hemithyroidectomy was performed and the specimen revealed a well circumscribed, well encapsulated tumor measuring 3.5 x 3 cms reaching up to the thyroid capsule. Cut surface was grey tan in colour and friable with extensive areas of necrosis. (Figure 2)

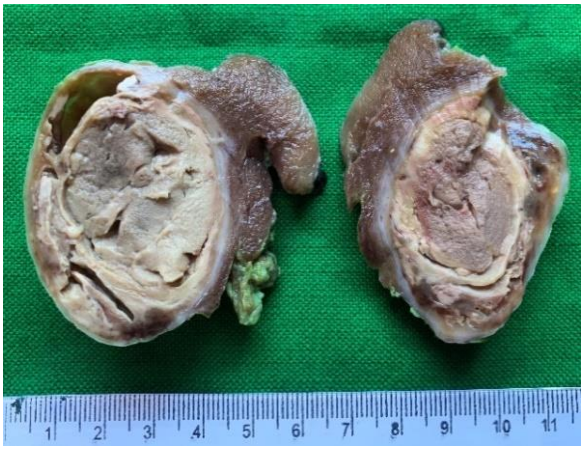

Figure 2: Gross specimen showing well encapsulated tumor with friable tan grey cut surface with with extensive areas of necrosis.

Microscopic examination revealed an encapsulated tumor with extensive areas of infarction. There was only a thin rim of viable tumor cells at the periphery. The tumor cells entirely composed of oncocytic/hurthle cells focally revealing pleomorphism, nuclear membrane, irregularity, nuclear clearing, occasional nuclear grooves and intranuclear pseudo inclusions. (Figure 3)

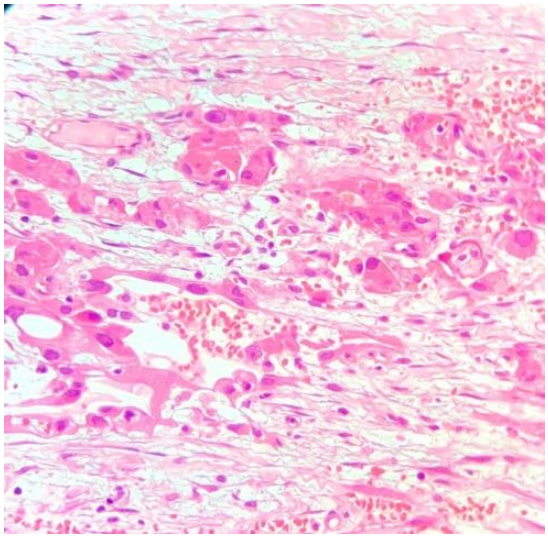

Figure 3: Oncocytic tumor cells focally revealing pleomorphism, nuclear membrane, irregularity and nuclear clearing (H&E. 40x)

In many areas nuclei were larger, pleomorphic, hyperchromatic with eosinophilic nucleoli. There were numerous psammoma bodies. There was no evidence of capsular or vascular invasion. IHC revealed positivity for TTF-1, CK7, CK 19 and CD56 in these tumor cells. (Figure 4)

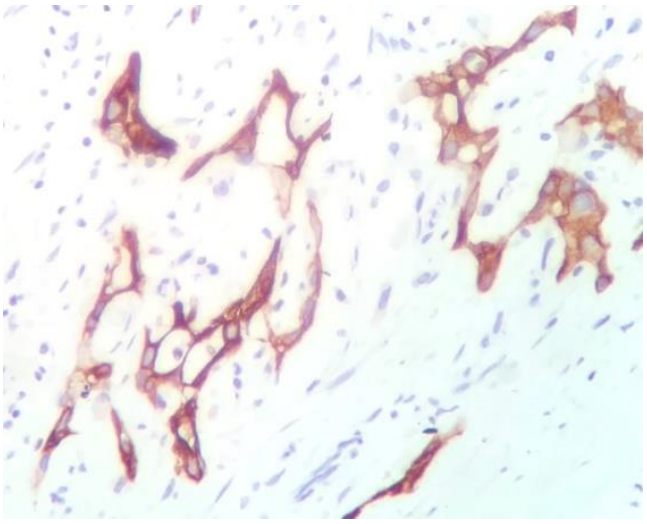

Figure 4: Tumor cells showing CK19 positivity. (IHC, 40x)

With these histological and IHC findings the case was reported as encapsulated oncocytic variant of papillary thyroid carcinoma.

DISCUSSION

The rare oncocytic variant of papillary carcinoma represents a morphologically distinctive variant of papillary thyroid carcinoma. These tumors may have papillary/ follicular architecture and rarely they have solid architecture. The classical nuclear features identified in papillary carcinoma are usually seen in Oncocytic papillary carcinomas.[3] But they may also resemble the pleomorphic nuclei of Hürthle cells, being large, hyperchromatic, and pleomorphic.[4] In majority of cases, the nuclei are enlarged, elongated, irregular in shape, crowded, and show overlapping, with prominent grooves and intranuclear pseudoinclusions. There is clearing of nucleoplasm and peripheral margination of chromatin(orphan Annie nucleus). The threshold for these alterations varies among experts. For example, the identification of irregularity of nuclear contours is sufficient for some pathologists when it results in a ragged nuclear outline that resembles “crumpled paper”. Others require more florid features, such as nuclear grooves. Some investigators do not recognise the morphology until the grooves become so pronounced that they fill with cytoplasm and form pseudoinclusions. In the present case oncocytic cells revealed nuclear enlargement, irregularity, with focal clearing, occasional nuclear grooves and pseudoinclusions.

Cytopathological diagnosis of an oncocytic variant of PTC is difficult as large number of thyroid lesions show oncocytic cells. The cytological features of oncocytic PTC has not been well described in the literature. For differentiating hurthle cell adenoma from hurthle cell carcinoma, some of the significant features are hypercellularity, presence of syncytia, predominance of isolated smaller cells, increased nucleocytoplasmic ratio, nuclear pleomorphism, nuclear membrane irregularities, intranuclear cytoplasmic inclusions, and multiple nucleoli.[5] Findings of papillary configuration or nuclear features like presence of nuclear grooves and inclusions alone do not confirm the diagnosis of PTC. These features have also been described in a variety of other lesions of the thyroid gland. All the required characteristics for the diagnosis of oncocytic variant of PTC, i.e., highly cellular smears with presence of tumor cells with abundant granular cytoplasm, with characteristic nuclear features of PTC were present in our case.

Oncocytic tumors of thyroid are prone to infarction or hemorrhage, especially after FNA or core biopsy.[6,7] If the subsequent histopathological examination of the lesion only reveals infarcted tissue, it becomes difficult for a pathologist to make a diagnosis. In such a setting, a thorough histopathological examination of the periphery of the lesion and cyto-histologic correlation are extremely important for the diagnosis. We report a case signed out as Hurthle cell neoplasm on FNAC and the histopathological examination of which revealed almost complete infarction of the tumor nodule with only thin rim of viable tumor tissue at the periphery just beneath the capsule.

The diagnosis of Oncocytic/Hürthle cell variant of papillary carcinoma remains controversial. The application of ret/PTC analysis by reverse transcription polymerase chain reaction (RT-PCR) allowed the recognition of a follicular variant of Hürthle cell papillary carcinoma as a group of lesions with no invasive behaviour at the time of diagnosis but which harboured a ret/PTC gene rearrangement.[8,9] Many of these lesions exhibit irregularity of architecture, with hypereosinophilic colloid and nuclear features of papillary carcinoma, but these can be obscured by the hyperchromasia and prominent nucleoli of oncocytes. Nevertheless, they can be recognised when there is a high index of suspicion and with the addition of immunohistochemistry for HBME-1, galectin-3, cytokeratin 19 (CK19), and ret, or by RT-PCR studies of ret rearrangements. These tumours have the potential to metastasise,[10] explaining the occurrence of malignancy in patients with a histopathological diagnosis of adenoma.

Abouhashem et al[11] have evaluated the utility of Cytokeratin 19 (CK19) and CD56 immunostains as useful diagnostic markers in distinguishing papillary thyroid carcinoma from other mimicking thyroid lesions. On distinction between papillary carcinoma (Hurthle cell variant) and Hurthle cell adenoma, sensitivity, specificity, and diagnostic accuracy were 100%, 75% and 83.3% respectively, with CK19/CD56 staining combination. In the present case also the tumor cells were positive for both CK19 and CD56.

Most (95%) of the patients with oncocytic papillary thyroid carcinoma remained disease-free at four years in a study conducted by Carr AA et al[12] which is similar to the outcome of classical PTC. This study suggests that oncocytic variant may not represent a more aggressive variant.

Thus, for patients with oncocytic papillary thyroid cancer, more aggressive treatment or follow-up is not necessary.

CONCLUSION

The histopathologic features of the tumor cells entirely composed of oncoytic/hurthle cells focally revealing pleomorphism, nuclear membrane, irregularity, nuclear clearing, occasional nuclear grooves and intranuclear pseudo inclusions along with the presence of psammoma bodies. The Immunohistochemical features of positivity for TTF-1, CK7, CK 19 and CD56 in these tumor cells confirmed the diagnosis. This case report emphasizes the importance of careful histopathologic examination and Immunohistochemical evaluation to clinch the diagnosis.

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Nil

CONFLICTS OF INTEREST

There are no conflicts of interest

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