



Case Report

Medullary carcinoma of the thyroid - an unusual case of hyalinizing trabecular adenoma - like variant (encapsulated)

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ABSTRACT: Medullary thyroid carcinoma is a neoplasm occurring in sporadic and familial patterns. A rare variant of medullary thyroid carcinoma shows microscopic features similar to hyalinizing trabecular adenoma of thyroid. Detection of this variant requires a high index of suspicion and immunohistochemical confirmation by calcitonin positivity. We present a 36 years old female patient with a thyroid nodule which, on microscopy, displayed an encapsulated tumor with elongated cells arranged in trabecular pattern separated by hyalinized fibrous septae simulating a hyalinizing trabecular adenoma. Also present were spindle cells arranged in an organoid fashion. Most of the cells showed salt and pepper chromatin pattern. The lesion was negative for amyloid but showed diffuse calcitonin positivity indicative of a tumor of C-cell origin i.e. medullary carcinoma of thyroid – hyalinizing trabecular variant.

KEY WORDS: *Thyroid; Medullary carcinoma; Hyalinizing trabecular adenoma*

INTRODUCTION

Most Medullary Thyroid Carcinomas (MTC) can be diagnosed by their unique morphological and immunohistochemical features. However several unusual variants of MTC including encapsulated tumors, anaplastic variants, oxyphilic variants, tumors with mixed follicular and parafollicular cell differentiation as well as melanin producing MTCs have been reported.¹ Additionally other tumours such as hyalinizing trabecular adenomas (HTA) or carcinomas and especially paragangliomas of the thyroid can be confused with MTC and present considerable diagnostic difficulty. We herein present a sporadic case of MTC hyalinizing trabecular adenoma-like variant which is encapsulated.

CASE DETAILS

A 36 year old female presented with a thyroid swelling of 6 years duration. Examination revealed

a solitary nodule measuring 4 x 4 cm in the right lobe. No lymph nodes were palpable. The patient was clinically diagnosed as nodular goitre. Her laboratory investigations revealed a euthyroid state. There was no family history of thyroid swelling. Thyroid scan revealed an enlarged gland with hypofunctional (cold) nodule in the right lobe of the thyroid. FNAC revealed spindle cells of bland morphology and a diagnosis of benign spindle cell lesion was made. Serum calcium and calcitonin were not measured.

Gross: Received right hemithyroidectomy specimen measuring 5.5 x 4 x 3 cms. The outer surface was well encapsulated with a cystic feel. Cut surface showed a well circumscribed nodule measuring 3 x 3 cms, grey white in colour with cystic change (**Figure 1**).

Microscopy: Multiple sections showed a well encapsulated tumor composed of neoplastic cells arranged in sheets, nests and in organoid patterns (**Figure 2 and 3**). Cell nests were separated by thin fibrous bands and, at places, pink hyaline material. Cells were predominantly spindle to oval, with spindle to ovoid nuclei having granular, “salt and pepper” chromatin and pink, moderate amount of eosinophilic cytoplasm (**Figure 4**). Some of the cells showed refractile perinuclear cytoplasmic

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round bodies. Congo Red stain and polarizing microscopy for amyloid were negative. Immunohistochemistry revealed diffusely positive calcitonin staining and was negative for thyroglobulin (Figure 5).



Figure 1: Well circumscribed grey white nodule with foci of cystic change

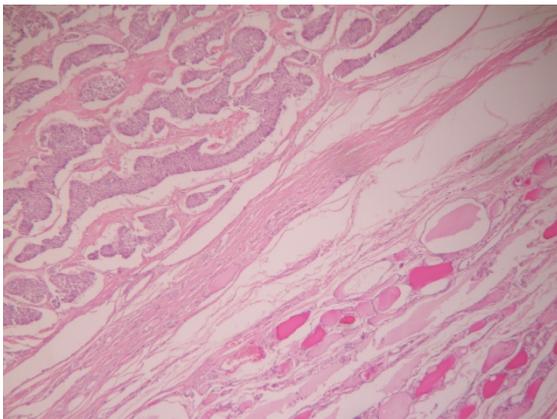


Figure 2: Shows encapsulated tumor with adjacent normal thyroid tissue (Haematoxylin and Eosin, x20)

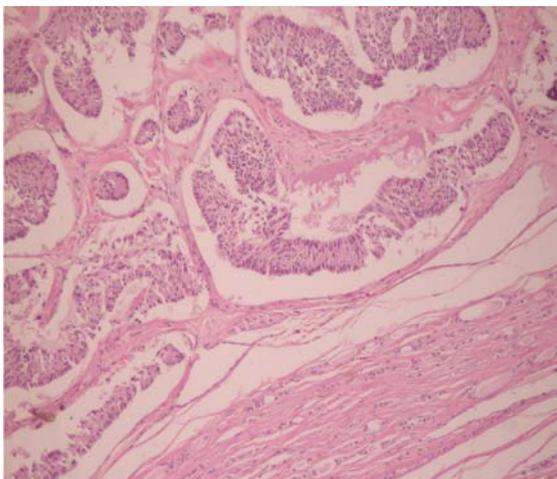


Figure 3: Cells arranged in nests and organoid pattern (Haematoxylin and Eosin, x20)

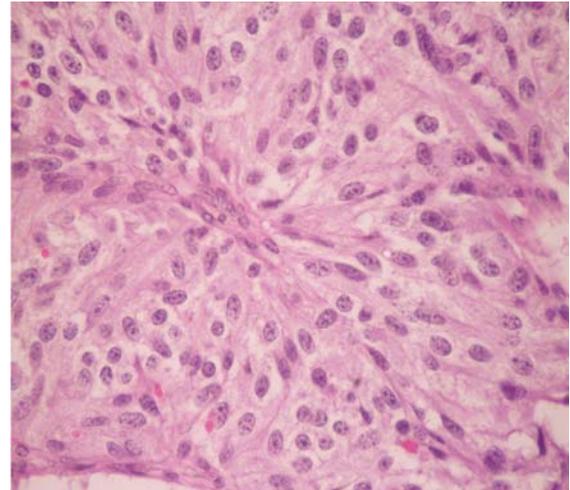


Figure 4: Nuclei showing "salt and pepper" chromatin (Haematoxylin and Eosin, x40)

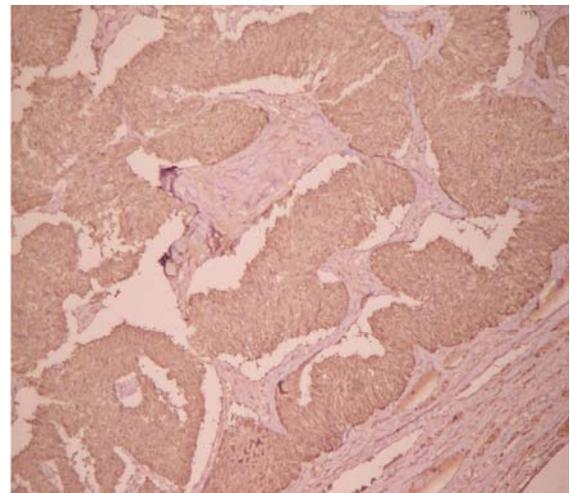


Figure 5: Diffuse positivity for calcitonin (IHC, X40)

DISCUSSION

Medullary thyroid carcinoma comprises only 3-12% of all thyroid carcinomas.² Despite its rarity it has attracted great attention because of its distinctive biological, morphological and functional features. Medullary carcinoma occurs both in a sporadic and inherited form and has an equal sex ratio.²⁻⁴ One of the rare morphologic variants which resembles hyalinizing trabecular adenoma of thyroid (paraganglioma-like) was reported in 2 cases by Huss et al in 1990.⁵ It exhibited organoid and trabecular pattern with hyalinized stroma, positive immunostaining for calcitonin and negative staining for thyroglobulin.

The current case is a sporadic occurrence in a middle aged woman. The well encapsulated nature, organoid pattern of cell arrangement, granular chromatin and hyalinized stroma raise a differential diagnosis of hyalinizing trabecular adenoma and paraganglioma. In our case the absence of detectable amyloid highlights the difficulty in

distinguishing this rare variant of medullary carcinoma, from a hyalinizing trabecular adenoma and paraganglioma of thyroid. On histology the HTA will show polygonal oval and elongated tumor cells arranged in trabeculae, clusters or both and are often inserted vertically into capillaries. The sharply outlined cells will have finely granular cytoplasm that is either acidophilic, amphophilic or clear⁶⁻⁷ Typical features include oval and elongated nuclei, paranuclear inclusion bodies called “yellow bodies”, acidophilic nuclear inclusions, fine nuclear grooving and infrequent mitotic figures⁸ Whereas paragangliomas are well encapsulated and show typical nesting (zell-ballen) pattern, the tumor shows small to medium sized cells with granular amphophilic cytoplasm.⁹

Immunohistochemistry helps arrive at a definitive diagnosis as HTA is positive for thyroglobulin, TTF-1 and negative for calcitonin. Paragangliomas will show positivity for neuron-specific enolase, chromogranin A and synaptophysin as well as S-100 protein positivity for sustentacular cells and are negative for thyroglobulin and calcitonin.⁹⁻¹⁰ Confirmation of medullary carcinoma requires unequivocal positivity for calcitonin immunostaining which was present in this case.

CONCLUSION

The diagnosis of this rare variant of medullary carcinoma of thyroid is of high clinical importance as it may mimic HTA which is considered to be a benign tumor of thyroid. The distinction between these tumor types is a crucial one, given the prognostic implications of medullary carcinoma.

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