

CASE REPORT

HYALINIZING TRABECULAR NEOPLASM OF THYROID

Saima Riaz, Humayun Bashir, Sidra Jahangir*, Muhammad Khalid Nawaz

Department of Nuclear Medicine, *Pathology, Shaukat Khanum Memorial Cancer Hospital and Research Centre, Lahore, Pakistan

Hyalinizing trabecular neoplasm (HTN) is an uncommon, controversial lesion of thyroid. In its cytological and histopathological features, HTN mimics papillary and medullary carcinoma and usually misdiagnosed on fine needle aspiration cytology specimens. Pure HTN lesions are neoplasms of very low malignant potential. Hemithyroidectomy is an adequate treatment; however, misinterpretation leads to total thyroidectomy and or followed by radioactive iodine ablation therapy. Correct histopathological diagnosis potentiates conservative management. We present a case in a 32-year-old female patient with review of diagnosis, management and one year follow up.

Keywords: Hyalinizing trabecular neoplasm, thyroid, papillary, medullary

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INTRODUCTION

Hyalinizing trabecular neoplasm (HTN) is an uncommon and conceivably a unique neoplasm of thyroid. It is thought to be a distinct tumour of thyroid gland. It is a neoplasm of follicular derivation and its original descriptions talks about its benign characteristics. Some researchers considered this neoplasm a distinctive entity whereas some others considered it a non-specific configuration with thyroid lesions. This benign tumour represents a variation of papillary carcinoma of thyroid due to similar nuclear morphology and immune profile. It contains hyaline material that often confuses it for medullary carcinoma because it mimics amyloid. HTN is usually misdiagnosed on fine needle aspiration cytology (FNAC).¹

This type of neoplasm has been described as a tumour with malignant and uncertain potential. Revising all its characteristics and potentials, it is believed that a criterion for treating HTN has yet to be determined.² This report describes a case of uncommon neoplasm HTN, that was initially diagnosed as papillary carcinoma thyroid, and the subsequent management was undertaken.

CASE REPORT

A 31 years old woman presented to our department with the diagnosis of papillary carcinoma of thyroid. She underwent thyroidectomy for asymptomatic right thyroid nodule which was noticed approximately ten years back. The histopathology was consistent with follicular variant of papillary carcinoma. Final histological analysis at our centre, however, revealed a hyalinising neoplasm with tumour size of 5.0 cm, with no vascular or capsular invasion. Prominent trabeculae of follicular epithelium were identified in abundant hyalinised stroma. Chromatin clearing, intra-nuclear grooves and inclusions were characteristics of nuclei (Figure-1a, b & c). Subsequently, post-operative ultrasound neck and MRI scan revealed a 20mm nodule in the left thyroid bed (Figure-2). Aspiration cytology of

this nodule turned out to be follicular neoplasm (Bethesda category 4).

No further surgery was planned. As per our multidisciplinary thyroid clinic, patient is on follow-up with ultrasound neck and tumour marker (thyroglobulin). Follow up ultrasound neck in March 2013 showed interval shrinkage of the left thyroid bed nodule to 12 mm. Currently patient is on T4 replacement.

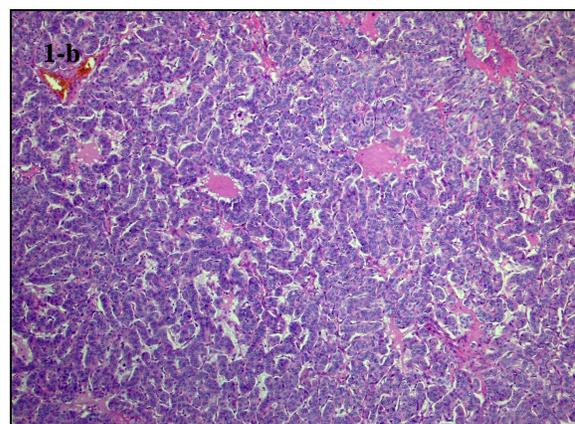
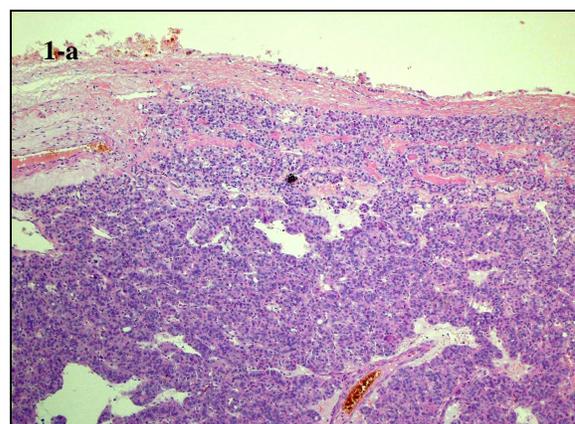


Figure-1(a & b): Lower magnification: Prominent trabeculae of follicular epithelium in abundant hyalinized stroma

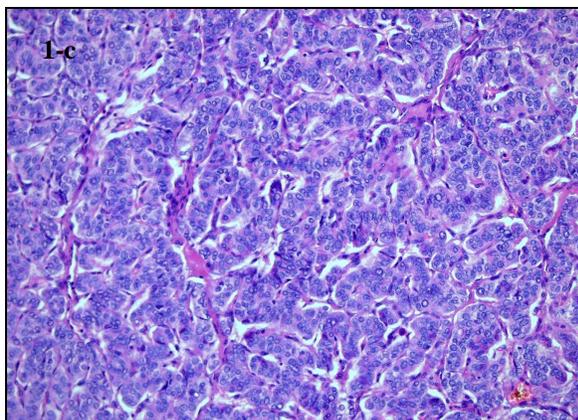


Figure-1(c): High magnification: Tumour cells are polygonal to spindle-shaped with elongated nuclei showing chromatin clearing, intra-nuclear grooves and inclusions. No capsular or vascular invasion seen

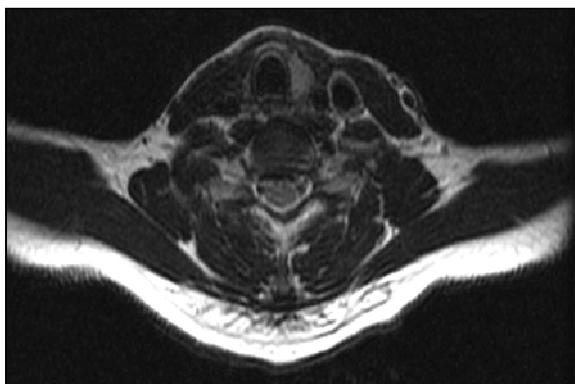


Figure-2: Changes of thyroidectomy with a well-defined nodule in the surgical bed on left side, measuring 20 mm approximately and has a clear plane of separation from adjacent vessels

DISCUSSION

Hyalinizing trabecular neoplasm of the thyroid gland was originally defined as an infrequent but potentially a confusing neoplasm. It was first described by Carney *et al.* in 1987 as “Hyalinizing trabecular adenoma” that is a distinct lesion or a non-specific pattern.³

Hyalinizing trabecular adenoma was replaced by Hyalinizing trabecular neoplasm in the recent World Health Organization (WHO) classification of tumours of endocrine organs. This classification has defined this terminology as “a rare tumour of follicular cell origin with a trabecular pattern of growth and marked intratrabecular hyalinization”.⁴ WHO classification has assigned it the term, i.e., Hyalinizing trabecular tumour (HTT).⁵

The uncommon Hyalinizing trabecular neoplasm is a controversial lesion of the thyroid gland. It has been reflected as a variant of papillary carcinoma whereas still some others have considered it a nonspecific pattern with thyroid lesions variation.³

HTN is typically misdiagnosed on FNAC specimens. However, FNAC is a reliable, quick and safe way in which this lesion can be evaluated. HTN shares nuclear features of papillary thyroid carcinoma (PTC), and morphological and architectural similarities with medullary thyroid carcinoma.

There are several characteristics that are commonly shared by HTN and PTC. These characteristics include fine psammoma bodies, nuclear grooving and intranuclear inclusions, etc. A third of thyroid glands containing HTN also contain PTC.

RET/PTC (rearranged in transformation/papillary thyroid carcinomas) rearrangements are the most recurrent genetic alterations. RET/PTC are the characteristic of specific molecular events of PTC. These rearrangements have been noted in HTN samples through immunohistochemistry staining and reverse transcription-polymerase chain reactions. These observations have strengthened the fact that HTN is a variant of PTC.⁶

Similarly, the miRNA reporting of hyalinizing trabecular tumours compared with benign thyroid lesions as well as PTC have failed to reveal the characteristic up-regulation found in PTC.⁷ HTN is misinterpreted as medullary thyroid carcinoma because of the existence of hyaline fibrosis that mimics amyloid.⁸ Casey *et al.* have reported that the combination of a bloody background, cells with ample cytoplasm, radially oriented cohesive cells, nuclei with regular cytoplasmic inclusions and grooves, and the presence of hyaline should suggest the presence of HTN.⁹

After its first description as a benign tumour, no case demonstrated capsular invasion, vascular invasion, recurrence and metastases in the follow-up period of many years. But in the recent years, HTN has been reported presenting vascular or capsular invasion and metastases.¹⁰

The category of pure HTN lesions in the absence of co-existing thyroid cancers are the neoplasms of “very low malignant potential”. But in comparison, total thyroidectomy or hemithyroidectomy signify suitable treatments. Radioiodine ablation is the radiation therapy that involves the administration of radioactive iodine to ablate the residual healthy thyroid tissues after thyroidectomy. But radioiodine ablation is not the standard as there have been no cases neither defined nor recommended for post-operative radionuclide ablation in treating HTN.

Finding the difference between HTN and PTC has remained imperfect. Once this relationship is clarified with more details, treatment can be better tailored from the beginning. In this way patients will feasibly avoid a total thyroidectomy and radioactive iodine ablation, as currently indicated for PTC.¹¹

As HTN is a benign neoplasm or a neoplasm of extremely low malignant potential, its clinical management should be conservative. The management may include a precautionary annual follow-up in order to eliminate the very rare possibility of its recurrence, as exceptionally reported.^{5,12}

CONCLUSION

Hyalinizing Trabecular Neoplasm (HTN) is a rare neoplasm of thyroid which is usually misdiagnosed on FNAC. It is considered to be benign with very low malignant potential. Surgery is the first line of management. The guidelines for the management and follow up for HTN are still under way. No definitive recommendations for radioactive iodine ablation therapy have been made as yet.

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Address for Correspondence:

Dr. Humayun Bashir, Department of Nuclear Medicine, Shaukat Khanum Cancer Hospital and Research Centre, Lahore, Pakistan.

Cell: +92-302-4474042

Email: bashir.humayun@gmail.com