International Journal of Medical and Pharmaceutical Case Reports
9(1): 1-4, 2017; Article no.IJMPCR.33912
ISSN: 2394-109X, NLM ID: 101648033

SCIENCEDOMAIN *international*
www.sciencedomain.org

Thyroid Hyalinizing Trabecular Tumor: A Case Series

Andreas Kiriakopoulos[1*], Efthimios Poulios[1], Georgios Giannopoulos[1] and Dimitrios Linos[1]

[1]5th Surgical Clinic, Evgenidion Hospital, National and Kapodistrian University of Athens Medical School, Athens, Greece.

Authors' contributions

This work was carried out in collaboration between all authors. Author AK designed the study and wrote the first draft of the manuscript. Authors EP, GG and DL managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/IJMPCR/2017/33912
Editor(s):
(1) S. Sundaresan, Department of Medical Research Centre, SRM Medical College, SRM University, India.
Reviewers:
(1) Yu Koyama, Niigata University Graduate School of Health Sciences, Japan.
(2) Pietro Giorgio Calò, University of Cagliari, Italy.
(3) Huseyin Eken, Erzincan University, Turkey.
(4) Ana Pires Gonçalves, Centro Hospitalar Lisboa Norte, Portugal
Complete Peer review History: http://www.sciencedomain.org/review-history/19160

Case Study

Received 3rd May 2017
Accepted 18th May 2017
Published 22nd May 2017

ABSTRACT

Aim: Hyalinizing Trabecular Tumor (HTT) of the thyroid gland is an unusual and rare follicular derived neoplasm, which was first described from Carney and colleagues in 1987. We aim to present two cases of HTT diagnosed as papillary thyroid carcinomas in preoperative FNA cytological findings, although the postoperative histological examinations revealed the presence of Hyalinizing Trabecular tumors. Moreover, a short review regarding the diagnostic and clinical aspects of this rare thyroid tumor is also presented.

Cases Presentation: A 30 year old and a 33 year old females were referred as having papillary thyroid carcinomas on preoperative FNA. Total thyroidectomy was offered in both. Histologic sections revealed the presence of HTT with the characteristic trabecular arrangement of polygonal/spindle cells and positive staining for MIB-1. Both patients remain disease free at a follow up of 5 years.

**Corresponding author: E-mail: AKiriakopoulos@hygeia.gr;*

Discussion: Although HTT diagnosis and differentiation from other thyroid tumors remains a topic of controversy, immunochemistry and molecular analysis may provide adequate information for HTT distinction from papillary thyroid carcinoma (PTC), medullary thyroid cancer (MTC) and paragaglioma. Therefore, suspicious cases based on preoperative FNA, require careful evaluation and cooperation of pathologists, endocrinologists and endocrine surgeons for optimal diagnosis and treatment.

Conclusions: HTT is a rare, mostly benign neoplasm with favorable prognosis Preoperative identification of HTT is significant since its extremely low malignant potential and its favorable prognosis may lead to less extended operations and avoidance of postoperative radioiodine administration.

Keywords: Hyalinizing trabecular tumor; thyroid tumors; FNA biopsy; MIB-1 staining.

1. INTRODUCTION

Hyalinizing trabecular tumor of the thyroid gland (HTT) is a rare thyroid tumor that was described by Carney in 1987 [1]. It is a neoplasm of follicular origin and is surrounded by many controversial aspects in regards to its diagnosis, classification, differential diagnosis and malignant potential. In particular, the preoperative diagnosis is challenging and its accurate classification either as a fully distinct entity or as a variant of papillary thyroid carcinoma has been a topic of controversy in the literature [2,3,4]. Moreover, the differential diagnosis from other thyroid neoplasms such as Papillary Thyroid Carcinoma (PTC) or Medullary Thyroid Carcinoma (MTC) or even paraganglioma is difficult as well and relies on immunohistochemistry staining methods which are also helpful for the differential diagnosis of various tumors [5,6]. Nonetheless, the malignant potential of the tumors are minimal and most reported cases in the literature are benign [7].

2. CASES PRESENTATION

2.1 Case 1

A 30-year-old female was referred with the diagnosis of papillary thyroid neoplasm on preoperative Fine Needle Aspiration Biopsy (FNAB). The preoperative ultrasound revealed a 11,4 mm solid hypoechoic nodule in the left thyroid lobe with high internal vascularity without central or lateral lymph node involvement. The patient underwent total thyroidectomy.

Histologic sections: Histologic sections revealed a well-defined, encapsulated 0.8 cm hyalinizing thyroid tumor in a chronic lymphocytic thyroiditis background with no evidence of capsular or vascular invasion. The tumor cells formatted trabecular structures separated by fibrous diaphragms with intra-trabecular hyalinization [Figs. 1,2]. The nuclei were hyper-chromatic, diffusely enlarged with irregular borders and occasional pseudoinclusions. Immunochemistry of the tumor was positive for thyroglobulin and MIB-1 monoclonal antibody, and negative for HBME-1 and chromogranine [Fig. 3]. The patient was discharged in excellent condition on the first postoperative day without any complications. One year postoperatively, the patient had no signs of recurrence on neck Ultrasound and the serum Thyroglobulin levels were also within normal levels. Five years postoperatively, the patient has no evidence of local recurrence or distant metastatic disease.

2.2 Case 2

A 33 years-old female was presented with the diagnosis of a 18 mm papillary thyroid carcinoma on preoperative FNAB. The preoperative ultrasound revealed a hypoechoic nodule with well defined borders in the right thyroid lobe. No central or lateral lymph node involvement was noted. The patient underwent total thyroidectomy.

Histologic sections: Histopathological sections demonstrated the presence of an Hyalinizing Thyroid Tumor with the characteristic trabecular arrangement of polygonal and spindle cells immersed on an hyaline material. Enlarged oval nuclei with inclusions were also found. There was no evidence of capsular or vascular invasion. Immunohistochemistry was positive for thyroglobulin and MIB-1 and negative for chromogranine and Collagen IV. The patient was discharged on the first postoperative day without any complications. At the 1 year follow up, the patient exhibited no signs of local recurrence on the neck ultrasound and the serum Thyroglobulin level was within normal range. Five years

postoperatively, no signs of local recurrence or metastatic disease are found.

3. DISCUSSION

Hyalinizing Trabecular Tumor is a rare neoplasm of follicular origin which appears predominately in middle-aged women. Preoperatively, the diagnosis remains challenging. In the majority of cases, the ultrasonography features are not specific for malignancy and the tumor appear as a solid hypoechoic lesion with well-defined borders and absence of micro-calcifications [8]. In FNA smears, the cytologic findings are similar to other neoplastic thyroid lesions, such as clear nuclei with hyperchromaticity, grooves and pseudo-inclusions. Currently, permanent histological sections and immunohistochemistry offer the best chance for a correct diagnosis [4,9]. In histologic sections, HTT presents with a trabecular growth pattern along with hyalinization of the tumor cell cytoplasm. The differential diagnosis of this trabecular pattern includes PTC, MTC and rare neoplasms like paragangliomas. The HTT cells express a unique positive MIB-1 staining (a monoclonal antibody against Ki-67 antigen) even in FNA biopsy smears. Casey et al advise MIB-1 staining in cases of aspirates which are hypocellular, not bloody or both, with an unexpectedly large number of nuclear grooves and/or inclusions and when hyaline material is sparse or absent. However, that positive stain is not found in PTC cells [10]. Additionally, the absence of BRAF and RAS mutations and the weak expression of CK19 and galectin-3 markers in HTT patients [11] offer another point of distinction from PTC. Finally, HTT can be differentiated from MTC by stain negative for calcitonin. The malignant potential of HTT is extremely rare and only few cases have been described to be carcinomas. In the largest series with 119 HTT patients, only one had vascular/capsular invasion and pulmonary metastasis [7]. Given these considerations, in our series the follow-up management paradigm has moved away from diagnostic whole body RAI scanning and toward a greater reliance on neck ultrasonography and serial serum Tg measurements. At the 1 year follow up, neck ultrasound performed by an experienced radiologist and thyroglobulin measurement failed to detect any sign of local/locoregional or distant metastasis.

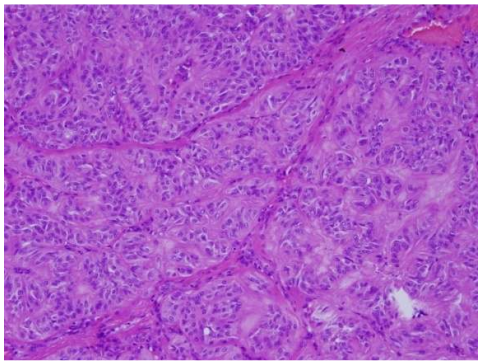

Fig. 1. Trabecular structures separated by fibrous diaphragms with intra-trabecular hyalinization

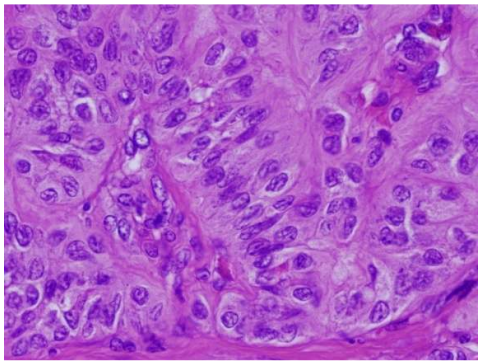

Fig. 2. Hyper-chromatic nuclei, diffusely enlarged, with irregular borders and occasionally pseudo-inclusions

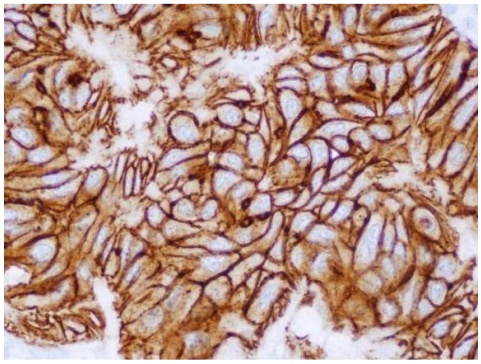

Fig. 3. MIB-1 staining showed a distinctive membranous pattern

4. CONCLUSION

HTT is a rare, mostly benign neoplasm with favorable prognosis. The preoperative diagnosis and differentiation from other thyroid neoplasms and especially PTC remains challenging. Permanent histologic sections with

immunochemistry and molecular analysis provide definite information for HTT recognition and distinction from PTC, MTC and paraganglioma. Given its favorable prognosis, in case of preoperative FNA findings suggestive for a HTT tumor on MIB-1 staining, a less aggressive treatment is warranted.

CONSENT

All authors declare that 'written informed consent was obtained from the patients for publication of this paper and accompanying images.

ETHICAL APPROVAL

All authors confirm that they have obtained all necessary ethical approval for the study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Carney JA, Ryan J, Goellner JR. Hyalinizing trabecular adenoma of the thyroid gland. Am J Surg Pathol. 1987;11:583-91.
2. Papotti M, Volante M, Giuliano A, et al. RET/PTC activation in hyalinizing trabecular tumors of the thyroid. Am J Surg Pathol. 2000;24:1615-1621.
3. Sambade C, Fransila K, Cameselle-Teijeiro J, et al. Hyalinizing trabecular adenoma: A misnomer for a peculiar tumor of the thyroid gland. Endocr Pathol. 1991;2:83-91.
4. Katoh R, Jasani B, Williams ED. Hyalinizing trabecular adenoma of the thyroid: A report of three cases with immunohistochemical and ultrastructural studies. Histopathology. 1989;15:211-224.
5. Isik A, Gursul C, Peker K, Aydın M, Fırat D, Yılmaz İ. Metalloproteinases and their inhibitors in patients with Inguinal Hernia. World J Surg. 2017;41(5):1259-1266.
DOI: 10.1007/s00268-016-3858-6.
6. Isik A, Soyturk M, Süleyman S, Firat D, Peker K, Yilmaz İ, Celebi F. Correlation of bowel wall thickening seen using computerized tomography with colono-scopies: A preliminary study. Surg Laparosc Endosc Percutan Tech; 2017.
DOI: 10.1097/SLE.0000000000000389
7. Carney JA, Hirokawa M, Lloyd RV, et al. Hyalinizing trabecular tumours of the thyroid gland are almost all benign. Am J Surg Pathol. 2008;32:1877-89.
8. Lee S, Han BK, Ko EY, et al. The ultrasonography features of hyalinizing trabecular tumour of the thyroid are more consistent with its benign behaviour than cytology or frozen section readings. Thyroid. 2011;21:253-9.
9. Casey M, Sebo JT, Carney JA. Hyalinizing trabecular adenoma of the thyroid gland: cytologic features in 29 cases. Am J Surg Pathol. 2004;28:859-67.
10. Casey M, Sebo JT, Carney JA. Hyalinizing trabecular adenoma of the thyroid gland. Identification through MIB-1 staining of fine-needle aspiration biopsy smears. Am J Clin Pathol. 2004;122:506-510.
11. Salvatore G, Chiappetta G, Nikiforov YE, et al. Molecular profile of hyalinizing trabecular tumours of the thyroid: High prevalence of RET/PTC rearrangements and absence of B-raf and N-ras point mutations. Eur J Cancer. 2005;41:816-21.

Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/19160