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Hyalinizing Trabecular Tumor of the Thyroid Gland

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A Hyalinizing Trabecular Tumor (HTT) is a very rare tumor. We report one case that was confirmed to be HTT after an operation. A 44-year-old female visited our hospital with about a 1.3-cm-sized mass on the left thyroid. Fine Needle Aspiration Biopsy (FNAB) indicated papillary thyroid cancer. After a left hemithyroidectomy, a frozen section biopsy reported the possibility of HTT. Therefore, we did not proceed with the surgery. According to the final report, she was diagnosed with HTT. Five lymph nodes were dissected and were found to be benign. Thyroid transcription factor-1 and neuron specific enolase were positive, and in addition calcitonin was negative. Ki-67 was recorded to be less than 5%. She was discharged without any complication. HTT is benign in most cases, but the possibility of malignancy should be considered. Because it is hard to differentiate between it and PTC or MTC, an accurate diagnosis through histologic examination of specimens and surgical resection is necessary. **(Korean J Endocrine Surg 2012;12:112-114)**

Key Words: Hyalinizing trabecular tumor, Papillary thyroid cancer, Medullary thyroid cancer

INTRODUCTION

Although hyalinizing trabecular tumor (HTT) was reported first in 1905, its characteristics had not been determined and it was not named at that time.(*1*) Ward et al.(*2*) referred to hyalinizing cell tumor associated with the accumulation of excessive microfilaments in the cytoplasm in 1982, and Carney et al.(*3*) revealed that it contained a capsule, which had a trabecular shape with colloid and spindle cells and showed hyalinization, as well as exhibited slow differentiation by analyzing 11 cases and thus, was named as hyalinizing trabecular adenoma.

This is a very rare tumor. It was called as adenoma first, but it has been named as tumor by following 2004 WHO classification. It is defined as tumor originating in the follicle cells associated with hyalinization of the trabeculae.(*3*)

HTT has similar cytological characteristics with papillary thyroid carcinoma (PTC) and medullary thyroid carcinoma (MTC), which makes it difficult to diagnose. Actually, it is mistaken for carcinoma in fine needle aspiration, so that it is hard to be treated.(*4*)

In our hospital, there was one case, which had been suspected to be PTC through FNAB, but was found to be HTT in the permanent pathologic report. Here, its diagnosis process and treatment are reported.

CASE REPORT

A 44-year-old female visited our hospital with a mass that is about 1.3 cm on the left thyroid, which was discovered during an ultrasonography (Fig. 1). The patient complained of discomfort around the neck for about two months and a fine needle FNAB had been conducted in another hospital and it had been sus-

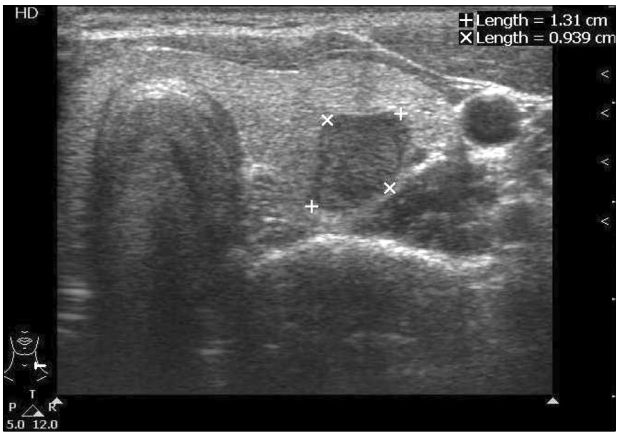

Fig. 1. Ultrasonographic finding of HTT. About 1.3 cm sized mass is showed in left thyroid.

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pected as PTC. At the first visit to our hospital, she showed no specific abnormality except discomfort on the neck and the mass was not palpated.

Preoperative thyroid function test revealed that T3, free T4 and TSH levels were normal by recording 0.920 ng/ml, 1.08 ng/ml and 1.43 μIU/ml, respectively, and there was no specific finding in the history.

Surgery, using the conventional incision, was performed for her and the left hemithyroidectomy, as well as the left lymphadenectomy were performed together, with planning total thyroidectomy. After performing the left hemithyroidectomy, frozen section biopsy was conducted and it was reported to be HTT as an atypical tumor, rather than PTC. So, we did not proceed with the surgery any further and waited for the permanent pathologic report.

The patient recovered without any complication and the final pathologic result was reported, during hospitalization period. According to the report, she was diagnosed as a single nodular HTT with 1.2 cm in size.

Totally five lymph nodes were resected and all of them were benign. Immunohistochemistry found that thyroid transcription factor-1 (TTF-1) and neuron specific enolase (NSE) were positive and calcitonin suggesting MTC was negative. Ki-67 or a tumor marker was recorded to be less than 5% (Fig. 2).

She was discharged and has been followed up until now with no specific treatment.

DISCUSSION

HTT is a rare tumor in the thyroid. Although it can occur in all age groups, it is found frequently among females in their 40 s and 50 s.(*4*)

A single or multiple HTT is observed. It is known to have a clear boundary and to be covered well by the capsule. Hyalinization of cytoplasm and matrix, a nuclear groove and intra-nuclear cytoplasmic inclusion are frequently found, as shown in PTC.(*5*)

In addition, BRAF and N-ras mutation that is shown in PTC are not found in HTT. Therefore, it is different from PTC. In particular, BRAF is known to be specific to PTC by recording up to 40～50% in PTC, so that it is useful for the distinction between the two.

However, because histologic findings of HTT, as mentioned before, can be confused with those of PTC, an accurate diagnosis is necessary. Moreover, HTT can also be confused with MTC, as severe hyalinization is mistaken for amyloid.(*4-6*)

Although some authors suggested that it should be classified as a morphologic subtype of PTC because RET/PTC rearrangement was observed, that is still controversial, as RET/PTC rearrangement is not specific only to PTC and is found in other diseases, such as Hashimoto's thyroiditis.(*7*)

According to a current report published in Korea, out of 10 cases of HTT, all of them were suspected or confirmed to be PTC in FNAB, and some of them were mistaken for follicular neoplasm in ultrasonography or were diagnosed as PTC or MTC in a frozen section biopsy that was conducted during surgery. Therefore, seven patients underwent total thyroidectomy.(*8*) Like this, HTT is hard to be diagnosed accurately, before surgery in many cases, and that affects its treatments.

In some cases, it is confused with paraganglioma, and checking the expression of neuroendocrine marker to distinguish be-

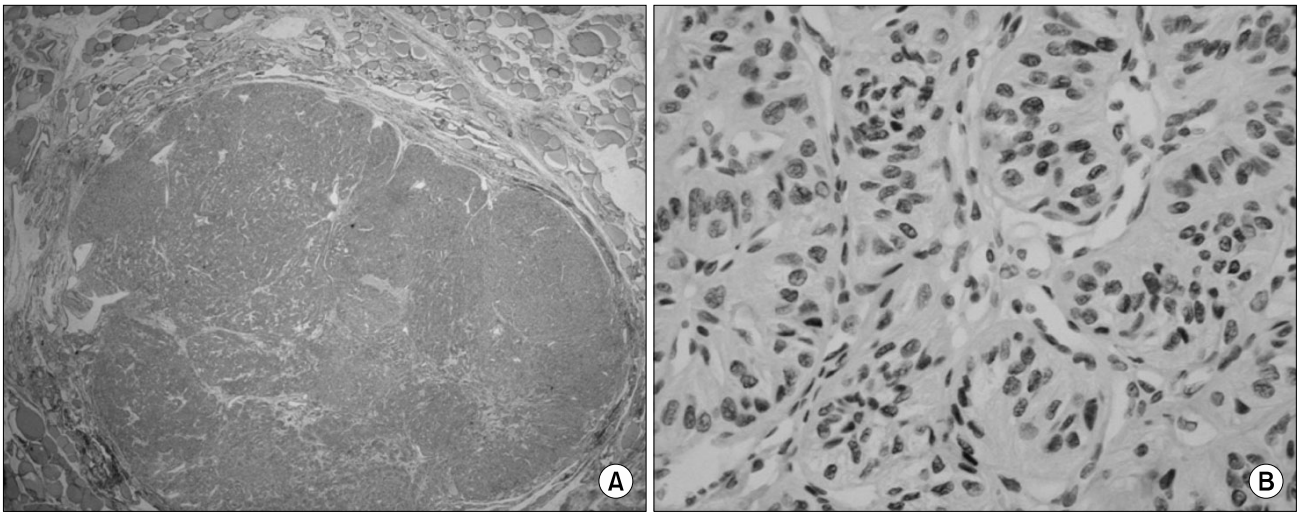

Fig. 2. Microscopic finding of HTT. (A) Hematoxylin-eosin stain of HTT (H&E, ×40). (B) Immunohistochemical stain of TTF-1 protein (H&E, ×400).

tween them is important. They can be differentiated, as thyroglobulin is positive for HTT, and paraganglioma does not produce colloid histologically.(*8,9*)

Moreover, MTC is known to be identified by using the expression of calcitonin. Congo-red staining shows positive and negative results, in MTC and HTT, respectively.(*8*)

Important markers of HTT are known to be TTF-1 and thyroglobulin, and Ki-67 is also increased. NSE and choromogranin were reported to be positive in some cases and galectin-3 was also positive in over 40%.(*9*) In our hospital, TTF-1 and NSE were positive and calcitonin was negative, so the possibility of MTC could be excluded.

Its causes have not been determined clearly, but chronic lymphocytic lymphadenitis, multinodular goiter and PTC are known to be related with it.(*9*) In addition, its correlation with history of the exposure to radiation and severe thyroiditis was reported.(*10*)

Although HTT is benign in most cases, it may be malignant in rare ones. Sambade et al.(*11*) found the capsule invasion and the metastasis to neighboring lymph glands in one of nine HTT cases, Molberg et al.(*12*) revealed the capsule invasion and the vascular invasion, in three out of four HTT cases, and named them as minimally invasive carcinoma. The other one HTT was reported to be associated with micropapillary carcinoma.

Carney et al.(*13*) also reported that lung metastasis was found in one of 118 HTT cases and it was diagnosed as hyalinizing trabecular carcinoma (HTC) in 2008. This carcinoma includes alveoli, hyalinization, hyalinization of the trabeculae, a nuclear groove and intranuclear cytoplasmic inclusion, and has similar properties with those of HTT. However, for HTC nucleoli are superior, clusters of chromatin showing mitosis and the capsule, as well as the vascular invasion are observed. Further, no expression of MIB1 (Ki-67) on the cell membrane, which was shown in HTT was observed.(*14*) Moreover, due to the possibility of malignancy, although it is very rare, its pathologic diagnosis should be made more carefully.

For treatment, it needs surgical resection because it is mistaken for other malignant tumors, at the FNAB, in many cases. In addition, it is considered to be cured completely only with hemithyroidectomy, which contains the tumor except malignant ones, since most of it is benign.

In conclusion, HTT is a very rare disease found in the thyroid, which is benign in most cases, but the possibility of malignancy should be considered. Because it is hard to distinguish between it and PTC or MTC, an accurate diagnosis through histologic examination of specimens obtained through surgical resection is necessary.

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