

# CO-EXISTENCE OF THYROID NODULE and THYROID CANCER IN CHILDREN and ADOLESCENTS WITH HASHIMOTO THYROIDITIS: A SINGLE-CENTER STUDY

Melikşah Keskin, Senay Savas Erdeve, Zehra Aycan

Dr. Sami Ulus Obstetrics and Gynecology, Children's Health and Disease Training and Research Hospital, Pediatric Endocrinology Department, Ankara, Turkey

## INTRODUCTION

There is currently an inadequate number of studies on nodule and malignancy development in children and adolescents with Hashimoto thyroiditis (HT). The aim of our study was to determine the rate of thyroid nodules and the nodule malignancy rate in our pediatric HT patients.

## MATERIAL AND METHODS

A total of 300 cases under the age of 18 years who were diagnosed with HT in a 9-year period between 2004 and 2013 were included in the study. The HT diagnosis was made with heterogenous appearance on thyroid ultrasonography and the elevation of anti-thyroid peroxidase (anti-TPO) and/or anti-thyroglobulin (anti-TG) antibodies. Serum free T3, free T4, and TSH levels of all patients were evaluated at the diagnosis. Patients who underwent physical examinations at 3- to 6-month periods together with thyroid function tests and thyroid ultrasonography at 12- to 24-month periods and who had at least one year of follow-up were included in the study. Cases with a history of previous chemotherapy or radiotherapy and a family history of thyroid cancer were excluded from the study.

## RESULTS

The 300 patients included in the study consisted of 238 (79.4%) females and 62 (20.6%) males. The mean age at diagnosis was  $12.1 \pm 3.1$  (5-18) years and mean follow-up duration  $3.1 \pm 1.8$  (1-9) years. At diagnosis, the thyroid function status was euthyroid in 164 (54.7%), hypothyroid in 114 (38%) and hyperthyroid in 22 (7.3%). At the time of diagnosis, the euthyroid patients' mean TSH level was  $2.92 \pm 1.3$  (0.6-5.6)  $\mu\text{IU/mL}$  and the mean free t4 level  $1.26 \pm 0.22$  ng/dL (0.9-1.8). These values were  $28.4 \pm 34.9$   $\mu\text{IU/mL}$  (5.7-150) and  $0.95 \pm 0.35$  ng/dL (0.1-1.6) for hypothyroid patients and  $0.11 \pm 0.7$   $\mu\text{IU/mL}$  (0.1-0.4) and  $2.03 \pm 0.7$  ng/dL (1.1-4.1) for hyperthyroid patients.

A thyroid nodule was found in 39 cases consisting of 6 males and 33 females with a mean age of  $12.08 \pm 2.8$  (6-16.5) years during the diagnosis or follow-up. A thyroid nodule was seen at the time of the HT diagnosis in 18 patients but developed later in 21 patients. Evaluation of thyroid function at the time of diagnosis in cases where a thyroid nodule was detected showed that 21 were euthyroid, 16 hypothyroid and 2 hyperthyroid.

The mean TSH level was  $9.58 \pm 8.33$  (0.1-32.8)  $\mu\text{IU/mL}$  in the 18 patients with a thyroid nodule and  $12.7 \pm 25.7$  (0.1-150)  $\mu\text{IU/mL}$  in the 282 patients without a thyroid nodule at the time of diagnosis. We did not find a statistically significant difference ( $p:0.75$ ).

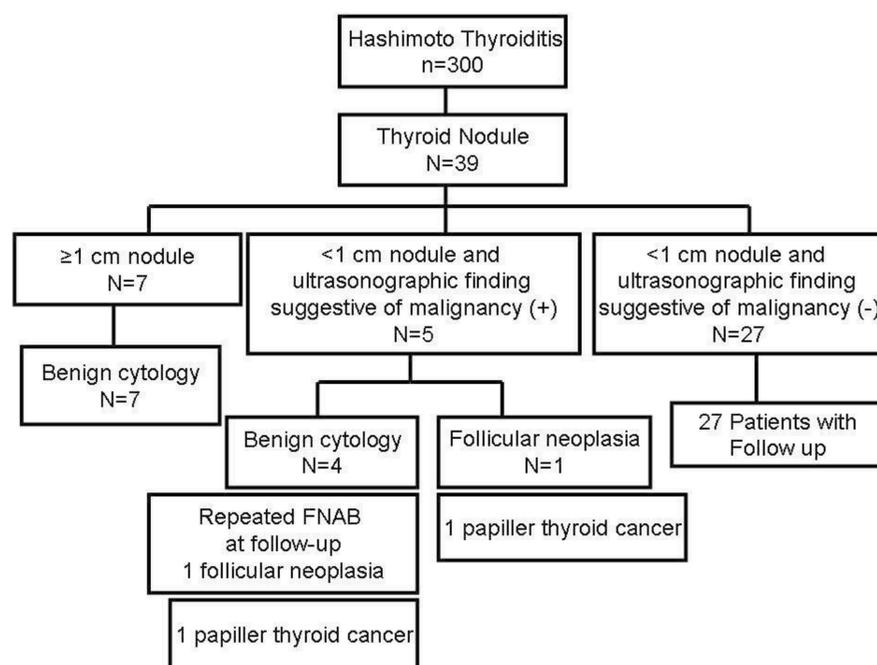


Figure 1. The nodule characteristics and FNAB results in our Hashimoto thyroiditis cases

Table 1. Clinical characteristics of the patients diagnosed with thyroid cancer

HT Diagnosis age/gender	Thyroid Cancer Diagnosis age	USG performed at diagnosis	USG performed in the 1st year	FNAB performed in the 1st year	USG performed in the 2 <sup>nd</sup> year	FNAB performed in the 2 <sup>nd</sup> year
13.5 years Male	15	Solid hypoechoic Nodule 5*4 mm in size with punctate calcification areas in the middle section of the right lobe.	Solid hypoechoic nodule 5*4 mm in size with calcification areas in the middle section of the right lobe.	Follicular neoplasm		
13.5 years Female	16	Solid hypoechoic Nodule Containing surrounding and internal calcifications, 5x3 mm in size, in the left lobe isthmus junction	Hypoechoic nodule Containing millimetric calcifications in the middle and at the border, 5x4 mm in size, in the left lobe isthmus junction	Benign cytology	A nodule with no halo or flow found on RDUS, Containing hypoechoic, Peripheral Punctate calcifications, measured as 5x4x5mm in size, in the left lobe Isthmus junction	Follicular neoplasm

## CONCLUSION

Thyroid nodule frequency on at HT background was found to be 13% and the thyroid malignancy frequency 0.67% in our study. A diagnosis of thyroid cancer in a nodule was made in %5.1 of the patient with HT. Our results show that the malignancy risk of thyroid nodules developing on an HT background in childhood is lower than the 26% rate generally reported for all children with nodules.

The thyroid cancer most commonly seen on an HT background was PTC and no relationship was found with the serum TSH level. We recommend that ultrasonographic characteristics and especially microcalcification are considered in addition to the size of the thyroid nodule in HT patients followed-up for malignancy.

