Baseline serum TSH and risk of thyroid microcarcinoma in non-toxic nodular thyroid disease

Dimitrios Askitis [1], Eleni I. Efremidou [1], Michael Karanikas [1], Grigorios Tripsianis [1], Alexandros Polychronidis[1], Nikolaos Lyratzopoulos [1]

[1] First Surgical Department, University Hospital of Alexandroupolis, Greece

Introduction- Objective

Thyroid cancer comprises the most common endocrine malignancy and a variety of studies have examined the role of TSH as an independent risk factor for the manifestation of differentiated thyroid cancer in otherwise benign thyroid disorders. [1,2] Objective of the current retrospective study was the assessment of a possible relation between baseline serum TSH and incidental thyroid microcarcinoma (mTC <10 mm) diagnosed after total thyroidectomy (TT), in a patient cohort with non-toxic thyroid disorders, without any preoperative suspicion or cytological establishment of thyroid malignancy.

Patients and methods

A 5-year retrospective study (2005-2010) was conducted in a total of 186 patients (146 female/ 40 male) who underwent TT indicated for non-toxic nodular thyroid diseases (non toxic multinodular goiter- NTMG or non functioning solitary thyroid nodule- STN). The pre-op diagnosis was NTMG in 152/186 pts (81.7%) and STN in 34/186 pts (18.3%). All surgical specimens were histopathologically examined at the University Pathology Department. Pre-op TSH levels were estimated in all patients as median value and interquartile range (laboratory's reference range 0.38–3.8 μIU/ml) and results were evaluated regarding pre-op diagnosis and also the finding of incidental mTC. P value <0.05 was concerned as statistically significant.

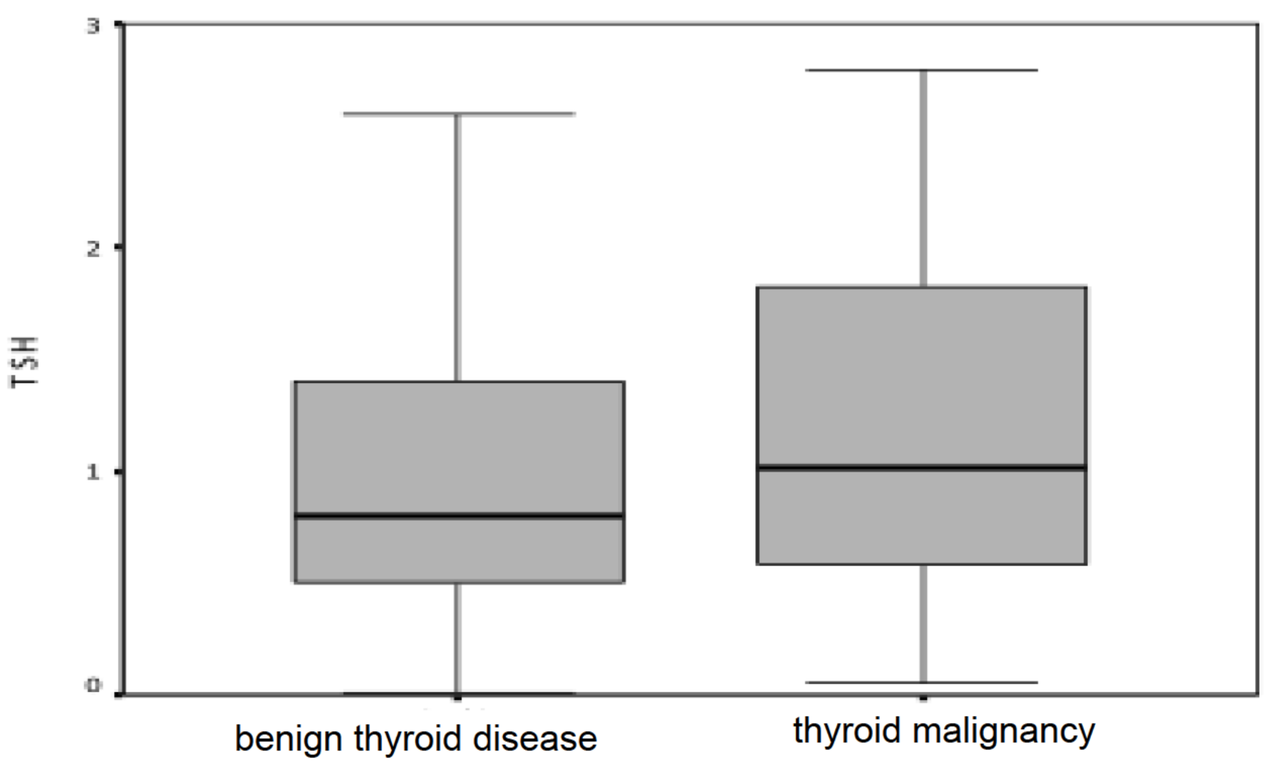
Results

Incidental mTC was diagnosed in 32/186 pts (17.2%) (rate females:males 2.2:1)- group A. In the rest 154/186 pts (82.8%)- group B a benign thyroid disorder was established. The median value of baseline serum TSH was higher in group A but not statistically significant compared to group B (1.02 vs 0.80; p=0.293). Regarding pre-op diagnosis, STN pts were found with elevated TSH in group B (1.3 vs 0.83; p=0.289), whereas pts with NTMG had higher TSH levels in group A. This last finding was marginally non statistically significant between group A and group B (1.16 vs 0.75; p=0.05).

DIAGNOSIS	No. of PATIENTS	Ca (%)	BENIGNITY (%)
STN	34	11 (32.4)	23 (67.6)
NTMG	152	21 (13.8)	131 (86.2)
Total	186	32 (17.2)	154 (82.8)

The comparison of median TSH values between the groups of histopathologically established benignity and malignancy, totally and regarding preoperative diagnosis, gave the following results:

	BENIGNITY	MALIGNANCY	p value
TOTAL TSH (μIU/ml)	0.8 (0.5 – 1.42)	1.02 (0.56 – 1.84)	0.293
STN	1.3 (0.73 – 2.15)	0.83 (0.6 – 1.73)	0.289
NTMG	0.75 (0.48 – 1.23)	1.16 (0.65 – 1.7)	***0.05***



Conclusions

Elevated basal serum TSH has not been proven as an independent risk predictor for the co-existence of thyroid microcarcinoma in non-toxic nodular thyroid diseases. However, **a significant trend of higher TSH levels was shown in non-toxic multinodular goiter harbouring malignancy.**
Further clinical studies evaluating the role of TSH in thyroid cancer may be required.

Literature: 1. Boelaert K. The association between serum TSH concentration and thyroid cancer. Endocr Relat Cancer. 2009 Dec;16(4): 1065-72
2. Shi L1, Li Y, Guan H, Li C, Shi L, Shan Z, Teng W. Usefulness of serum thyrotropin for risk prediction of differentiated thyroid cancers does not apply to microcarcinomas: results of 1,870 Chinese patients with thyroid nodules. Endocr J. 2012;59(11): 973-80