

# Preoperative TSH value, does it predict the surgical findings in papillary thyroid cancer?

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*M. Paja, M. Pérez de Ciriza, E. Etxeberria, L. Calles, N. C. Iglesias, A. Lizarraga, C. Moreno, J., Espiga, A. J. Isusquiza . Endocrinology Department. Bibao, Spain*

Hospital de Basurto



TSH level has been proposed as a thyroid malignancy predictor in nodular disease. In addition, several clinical studies have reported that higher preoperative [TSH] levels were associated with more advanced stages of differentiated thyroid cancer (DTC) at the time of diagnosis.

**Material and methods** – We collected retrospectively preoperative serum [TSH] from patients diagnosed of papillary thyroid cancer (PTC) who had undergone total thyroidectomy during the period 2001-2013 in a single tertiary center. We recorded demographic data, nodule number, tumor size and neoplasm features in surgical pathology. Patients with Graves's disease or primary hypothyroidism under treatment prior to surgery were excluded.

Results - 348 patients were included: 92 with incidental microcarcinoma (IMC), 54 with non-incidental microcarcinoma (NIMC) and 202 with PTC larger than 1 cm, 105 of them larger than 2 cm. There were no significant differences in TSH levels among incidental and non-incidental cases. Differences in [TSH] among CPT grouped by size were non-significant.

	INCIDENTAL (< 1CM)	NON INCIDENTAL GLOBAL	PTC <1 cm	PTC > 1cm	PTC > 2cm
n	92	256	54	202	105
Mean [TSH] (SD)	2,13 (2,2)	2,53 (2.1)	2.85 (2,4)	2.44 (2,0)	2,31 (1,7)
	p = 0.12		p = 0.20		
	p = 0.67				

Neoplasm feature	PRESENT	ABSENT	p (ALL/UNINODULAR)
MULTIFOCALITY	2.62 (2.4)	2.32 (1.9)	0.20 / 0,48
N 1	2.78 (2.4)	2.39 (2.1)	0.16 / 0,08
ETE	2.82 (2.5)	2.38 (2.5)	0.14 / 0,45
AGRESSIVE	2.01 (2.4)	2.44 (2.1)	0.49 / 0,42
Ac TPO	4,36 (3.1)	2,49 (1,6)	0.003 / 0,001
LINF	4.13 (3.3)	2.3 (2)	<0.001 / <0.001

Mean (SD) [TSH] in all cases according to histopathological features

- Neither the presence of multifocality, nor extrathyroidal extension (ETE), nor lymphatic invasion (N1) were associated with TSH levels, although higher [TSH] was found when one of those features was present.
- Aggressive cellular variant or vascular invasion showed lower [TSH].
- Only the presence of antimicrosomal Abs (AcTPO) or diffuse lymphocytic infiltration (LINF) was significantly associated with higher TSH level.
- These results did not change when considering exclusively uninodular non-incidental disease in the analysis.

**Conclusions** – Our series suggests that high TSH levels may be involved in the presence of pathological characteristics associated with worse outcome in PTC, but with no statistical significance, unlike to other published series. The only feature actually associated to higher TSH was the presence of autoimmunity. Size of the neoplasm doesn't relate to preoperative TSH level.