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Changes in thyroid ultrasound during the first trimester of pregnancy are not related to levels of TSH

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INTRODUCTION

- The changes observed in thyroid ultrasound during pregnancy are related to the nutritional status of iodine, but its association with TSH levels or the presence of thyroid peroxidase antibodies (TPOAb) is unclear

OBJETIVE

- To compare the relationship between the findings in thyroid ultrasound and thyroid function tests in the first trimester of pregnancy in an iodine sufficient area.

SUBJECTS AND METHODS

- We conducted an observational cohort study and included 205 pregnant women (mean age 32.9 ± 5.0 years) in the 1(st) trimester, recruited from universal screening. We performed a nutritional survey and we measure urinary iodine, TSH, free T4, free T3 and TPOAb. Through a thyroid ultrasound we evaluate the thyroid volume, ultrasound textura and the number and size of thyroid nodules. We performed the comparison between the different variables according to their levels of TSH, and established three subgroups: TSH≤ 2.5, 2.6-4 and > 4 mU/l, with 65, 70 and 70 pregnant women in each group respectively.

RESULTS

- We found no statistically significant differences between pregnant women by levels of TSH in age, urinary iodine, percentage of positive TPOAb, thyroid volume, thyroid texture, and number of nodules. The pregnant woman with higher TSH levels had higher BMI, higher levels of free T4, higher titers of TPOAb and increased consumption of iodized salt. In the univariate analysis only the presence of positive TPOAb (and not the presence of elevated TSH levels) was associated with the presence of goiter (r=0,26; p< 0.01) and heterogeneous echotexture (r=0.72; p< 0.001).

Variables	TSH levels		
	≤ 2,5mUI/L	2,5-4 mUI/l	≥ 4 mUI/l
Age(years) mean SD	32,3 4,3	33,5 4,6	33,1 5,9
Goiter, n (%)	2 (3,1%)	2 (2,9%)	2 (2,9%)
VT(ml) mean SD	9,6 3,7	9,1 3,0	8,8 3,4
UIC(µg/l) median IQR	190,2 349,1	190,1 253,8	196,1 194,1
TSH(mUI/l) mean SD	1,44 0,54	3,21 0,46	5,52 1,65
T4l(ng/dl) mean SD	0,66 0,18	0,75 0,17	0,71 0,12
TPOAb + n (%)	12 (18,5%)	18 (25,7%)	14(20%)
Ecoestructura tiroidea heterogénea n (%)	6 (9,2%)	9 (12,9%)	11 (15,7%)
Number nodules n (%)	7 (10,8%)	7(10%)	8(11,4%)

Table 1: Descriptive analysis of the variables in pregnant according to TSH levels

Variables	TSH levels			P
	≤ 2,5mUI/L	2,5-4 mUI/l	≥ 4 mUI/l	
n	65	70	70	
TSH(mUI/l)	1,44±0,54	3,21±0,46	5,52±1,65	<0,001*
T4l(ng/dl)	0,66±0,18	0,75±0,17	0,71±0,12	<0,001*
BMI (Kg/m²)	23,0±1,9	23,5±1,1	24,1±2,7	0,03*
TPO Ab (UI/L) (titers)	15,8±53,9	57,7±167,5	52,4±153,7	0,055*
Consumption iodized salt n (%)	29(44,6%)	50(71,4%)	48(68,6%)	0,004*

Table 2: Statistically significant variables in pregnant according toTSH levels

	Positive TPOAb	P
Goiter	R= 0.26	<0,01
Heterogeneous echotexture	R=0,72	< 0,001

Table 3: Univariate analysis betwen positive TPOAb and goiter and heterogeneous echotexture

CONCLUSIONS

- We found no significant differences in the nutritional status of iodine, in the thyroid volume, in the prevalence of goiter or nodule prevalence in pregnant women according to their levels of TSH. Ultrasound abnormalities found in the first trimester of pregnancy appear to be linked with the presence of TPOAb..