

# Thyroid Autoimmunity and Vitamin D Status in Euthyroid Girls with Hashimoto's Thyroiditis

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## INTRODUCTION

Vitamin D is considered one of the natural immune modulators and a regulator of various immune-mediated processes. Many immunocompetent cells express the vitamin D-activating enzyme CYP27B1 and the vitamin D receptor (VDR). Low Vitamin D levels have been identified as a risk factor for various autoimmune diseases such as type 1 diabetes, multiple sclerosis vs. Therefore we planned to investigate vitamin D status in euthyroid girls with hashimoto's thyroiditis (HT).

## SUBJECTS AND METHODS

The study group consisted of 66 euthyroid pubertal girls recently diagnosed with HT and 41 subjects as the control group. Parameters of calcium metabolism, thyroid function tests, thyroid antibodies, and 25-hydroxyvitamin D [25(OH)D] levels were measured. Those with 25(OH) D levels of 21-29 ng/ml were characterized as vitamin D insufficiency while those with equal or less than 20 ng/ml were called vitamin D deficiency.

## RESULTS

There was no difference between the patients and the control group in thyroid hormone levels. As seen in Table 1. vitamin D deficiency rate was not higher in the HT group compared with the control subjects (50.8 % vs. 61 % ,  $p > 0.05$ ). Vitamin D insufficiency rate was also not higher in the patient group than in controls (38.5% vs 35.6,  $p > 0.05$ ). In the HT group, mean 25(OH)D levels were not significantly different compared with the control group (19.9ng/ml vs. 18.7 ng/ml  $p > 0.05$ ), but was inversely correlated with the antithyroglobulin (anti-Tg) levels ( $r = -0.30$ ,  $p = 0.007$ )(Table 2). We also found marked higher PTH and lower Ca levels in our patients than in the controls. The inverse correlation among the patient group's 25(OH)D and PTH levels was worth noting even though it was not statistically significant ( $r = -0.22$ ;  $p = 0.084$ ;  $p > 0.05$ ). The positive correlation between the patient group's 25(OH)D and Ca levels was found statistically significant ( $r = 0.30$ ;  $p = 0.016$ ;  $p < 0.05$ ).

Table 1: Studied variables among Groups.

	Hashimoto Group (n=66)	Control Group (n=41)	p
	Mean±SD (Median)	Mean±SD (Median)	
P	4,31±0,65 (4,2)	4,24±0,57 (4,3)	<sup>a</sup> 0,732
ALP	128,85±80,76 (102,5)	121,72±69,51 (87,0)	<sup>a</sup> 0,868
PTH	52,69±33,24 (47,4)	28,45±15,42 (26,9)	<sup>a</sup> 0,001* *
CA	9,48±0,52 (9,5)	9,80±0,38 (9,8)	<sup>a</sup> 0,001* *
25 OH VitD	19,57±7,34 (19,9)	18,30 (18,7)	<sup>b</sup> 0,344
	n (%)	n (%)	
25 OH VitD			
Insufficiency	33 (50,8)	24 (61,5)	<sup>c</sup> 0,260
Deficiency	25 (38,5)	14 (35,9)	
Normal	7 (10,8)	1 (2,6)	

A:Mann Whitney U Test, b:Student t Test, c:Pearson Ki-square Test, \*\* $p < 0,01$

Table 2: Relationship between 25 OH Vit D and P, ALP, PTH, CA, TSH, FT3, FT4, Anti TPO ve Anti TG among Hashimoto and healthy control groups.

	Total		Hashimoto		Control	
	r	P	r	p	r	p
25 OH VitD- P	0,174	0,078	0,226	0,071	0,083	0,620
25 OH VitD- ALP	0,139	0,162	0,226	0,070	-0,069	0,680
25 OH VitD- PTH	-0,136	0,172	-0,219	0,084	-0,151	0,359
25 OH VitD- CA	0,200	0,043*	0,298	0,016*	0,076	0,651
25 OH VitD- TSH	0,074	0,455	0,109	0,386	-0,107	0,517
25 OH VitD- FT3	0,177	0,072	0,177	0,159	0,120	0,468
25 OH VitD- FT4	-0,063	0,528	-0,070	0,582	-0,077	0,640
25 OH VitD- ANTI TPO	0,034	0,735	-0,041	0,746	-0,125	0,456
25 OH VitD- ANTI TG	-0,056	0,576	-0,315	0,011*	0,036	0,830

$r = \text{Spearman's Correlation Coefficient}$ , \* $p < 0,05$

25 OH VitD: 25-hydroxyvitamin D, P:Phosphorus, ALP:Alkaline Phosphatase, PTH: Parathyroid Hormone, CA: Calcium, TSH: Thyroid Stimulating Hormone, FT3: Free T3, FT4: Free T4, anti TPO: Anti-thyroid Peroxidase Antibody, Anti-TG: Anti Thyroglobulin Antibody

## CONCLUSION

In conclusion, We found similarly high rates of vit D insufficiency and deficiency among otherwise healthy controls and girls with HT. Vitamin D deficiency is a prevalent health problem In Turkey. Lack of vitamin D fortification programs, clothing habits markedly reduce the amount of the vitamin D, which may explain these low levels of vit D. The inverse correlation between vitamin D and anti-Tg suggests that vitamin D deficiency may have a role in the autoimmune process in HT in children.

