Investigation of vitamin d deficiency in autoimmune endocrine disease in terms of frequency and causal or consequential relationship

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Objectives

- Vitamin D have been the focus of a growing number of studies in past years, demonstrating their interaction with the immune system, vitamin D Deficiency has been widely regarded as contributing to autoimmune disease, but low levels of vitamin D in patients with autoimmune disease may be a result rather than a cause like from malabsorbtion due to celiac disease, gastrointestinal disorders related to diabetes or thyroid disease, corticosteroid therapy complications etc...
- Silent celiac disease is common conditions accompanying autoimmune endocrine disorders and clinical outcomes are not very clear.
- In this study, we aimed to investigate vitamin d levels in autoimmune endocrine disorders and relationship with silent celiac disease.

Methods

- A total of 135 subjects (103 patients with monaglandular or polyglandular autoimmune endocrine disorders and 32 control subjects) were enrolled in the study.
- Tissue transglutaminase (tTG) antibody levels were determined for the diagnosis of silent celiac disease. 25OHVitamin D (VD) and PTH levels were measured.
- Patient divide autoimmun disorders and control groups and subsequently compared with tTG antibodies positivity.

Results

- Mean age was 37.8±12.0 years, 105 (77.7%) were female and 30 (22.3%) were male in all subjects.
- Serum VD levels were significantly lower in the patients group than healthy control group (17.2±7.2 and 25.4±7.1ng/mL, p<0.001) and PTH levels were higher (71.2±36.4 and 57.5±22.4pg/mL, p=0.083).
- Impairment of VD and rise in PTH levels were more pronounced in patients with Addison's disease relative to the other endocrinopathies (13.7±7.2ng/mL, 106.7 ± 40pg/mL).
- Serum VD levels were statistically significantly lower in the patients with positive tTG ab compared to negative ones and control groups and lower in the patients with negative tTG ab compared to control subjects [tTGIgA pozitive (n:13)=13.3±7.8, tTGIgA negative (n:90)=17.8±6.9, control (n:32)=25.4±7.1ng/mL].

Table-1: Demographic and clinical characteristics of the study and control groups.

	Study Group	Controls
N	103	32
Age (years)	38.1±12,5	36.8±10,4
Gender (% Male)	16.5	40.6
BMI (kg/m²)	26.3±5.5	25.4±3.3
Creatinin (mg/dl)	0.8±0.1	0.7±0.1

Table-2: Comparison of vitamin D and parathormone levels of the study and the control groups.

	Study Group	Controls	P
25-OH-vit D (ng/ml)	17.2 ± 7.2	25.4 ± 7.1	<0.001
PTH (pg/ml)	71.2 ± 36.4	57.5 ± 22.4	0.083

Table-3: Serum vitamin D and parathyroid hormone levels in autoimmune diseases subgroups

	Type 1 Diabetes n : 44	Addison's Disease n : 17	Hashimoto's Disease n : 68	APS Type 2 n : 36
25-OH-vit D (ng/ml)	16.9 ± 7.3	13.7 ± 7.2	18.0 ± 7.0	17.2 ± 7.9
PTH (pg/ml)	64.4 ± 32.6	106.7 ± 40	69.8 ± 36.1	75.2 ± 47.2

APS: Autoimmune polyglandular syndrome

Table-4: Serum vitamin D and parathyroid hormone levels in the controls, tissue transglutaminase IgA (+) and (-) patients.

	tTG IgA (+) (n:13)	tTG IgA (-) (n:90)	Controls (n:32)	p*	p**
25-OH-vit D (ng/ml)	13.3 ± 7.8	17.8 ± 6.9	25.4 ± 7.1	0.028	<0.001
PTH (pg/ml)	105.9 ± 39.6	67.7 ± 33.1	59.2 ± 22.4	0.002	0.001

* p values between tTG IgA (+) and (-)
** p values between tTG IgA (-) and controls
tTG IgA: Tissue transglutaminase immunoglobulin A; tTG IgG: Tissue transglutaminase immunoglobulin G.

Conclusions

- In our study, vitamin d levels were found significantly lower in patients with autoimmune endocrinopathies than control subjects, patients with Addison's disease compared to other endocrinopathies and tTG antibody positive, than negative ones. In Addison's disease, chronic glucocorticoid therapy may be an additive factor fort his reason. These results suggesting that vitamin d deficiency is both causal and consequential factors in autoimmune endocrine disorders.

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