VITAMIN D AND AUTOIMMUNE THYROID DISEASES

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Introduction

The recent description that several human tissues and cells express the vitamin D (VitD) receptor and 1α-hydroxylase (key enzyme in active VitD synthesis) allows a growing interest in the role of VitD in extra-skeletal condition, such as autoimmune diseases (1). Lower VitD levels have been found in several autoimmune diseases, such as type 1 diabetes, multiple sclerosis, inflammatory bowel diseases, rheumatoid arthritis and, recently, autoimmune gastritis (2). In the case of autoimmune thyroid diseases (AITD), i.e Hashimoto's thyroiditis (HT) and Graves' disease (GD), few studies have reported a putative association between thyroid autoimmunity and VitD with inconclusive results (3-6).

Aim of the study

To measure the serum levels of VitD in a group of healthy subjects and patients affected by HT and GD, and to assess the prevalence of VitD insufficiency/deficiency.

Materials e methods

This study was carried out among 200 individuals, 100 suffering from AITD (50 HT, 50 GD) and 100 healthy subjects, as controls (CTRL).

Serum VitD concentration was measured using a chemiluminescent (ABEI tracer) immunoassay method on Maglumi analyzer (SNIBE, China, distributed in Italy by Medical Systems, Genua); TSH, FT3, FT4 were measured by a chemiluminescent immunoassay method (LOCI) on Dimension Vista analyzer (Siemens HD, Camberley, United Kingdom).

HT patients were classified in two groups, according to their thyroid status: A. Hypothyroidism (TSH > 4.0 mUI/L); B. Euthyroidism (TSH: 0.3-4.0 mUI/L). GD patients were divided in: A. Treated subjects; B. Untreated subjects at the time of sampling.

Serum VitD concentrations of < 30 ng/mL were defined as VitD insufficiency/deficiency.

Data are reported as median and range (min;max). The non-parametric Mann-Whitney Unpaired U-test was performed for comparison of levels between groups.

p value < 0.05 was considered statistically significant for all tests (PRISM GraphPad 4.1).

Results

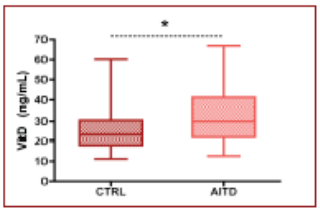

Figure 1. VitD in healthy controls and AITD patients. The median values of VitD in CTRL and in AITD patients were 23.6 ng/mL and 30.1 ng/mL respectively, with a statistically significant difference between the two groups.

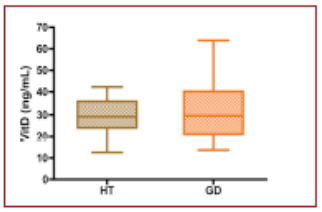

Figure 2. VitD in HT and GD patients. The median values of VitD in HT and in GD patients were 29.6 ng/mL and 30.2 ng/mL respectively, with no statistically significant difference between the two groups.

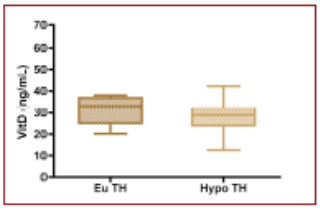

Figure 3. VitD in HT patients. The median values of VitD among HT patients in euthyroidism and in hypothyroidism were 32.8 ng/mL and 28.9 ng/mL respectively, with no statistically significant difference between the two groups.

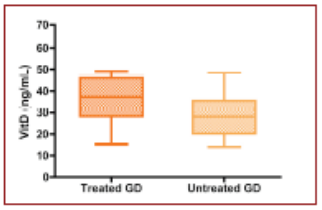

Figure 4. VitD in GD patients. The median values of VitD in treated and untreated GD patients were 39.2 ng/mL and 28.2 ng/mL respectively, with no statistically significant difference between the two groups.

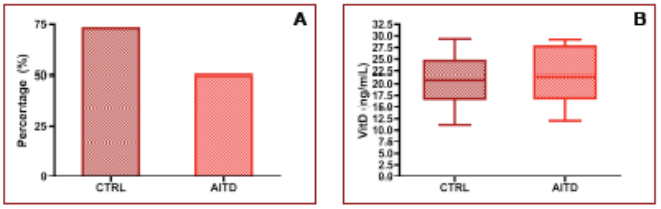

Figure 5. Prevalence of VitD insufficiency/deficiency in healthy controls and in AITD patients. The percentage of VitD insufficiency/deficiency was higher in CTRL as compared to AITD patients (73% vs 50%, respectively) (Figure 5A) but there was not a statistically significant difference between the two groups (20.79 ng/mL vs 21.46 ng/mL, respectively) (Figure 5B).

Discussion and conclusions

The main finding of this study is that VitD levels were not lower in AITD patients than in CTRL, neither in patients with HT nor with GD, rejecting the hypothesis of an association between thyroid autoimmunity and VitD insufficiency/deficiency. Our data don't agree with previous experiences (3-5) but confirm the results of a recent study (6), according to which low VitD levels in adults are not involved in the pathogenesis of AITD. The consequence of our conclusions is that there's no utility in the supplementation of VitD as a preventive action to modify the natural course of AITD.

References

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