# INVESTIGATION THE EFFECTS OF FUNCTIONS OF REGULATORY T CELLS AND VITAMIN D IN CHILDREN WITH CHRONIC AUTOIMMUNE THYROIDITIS

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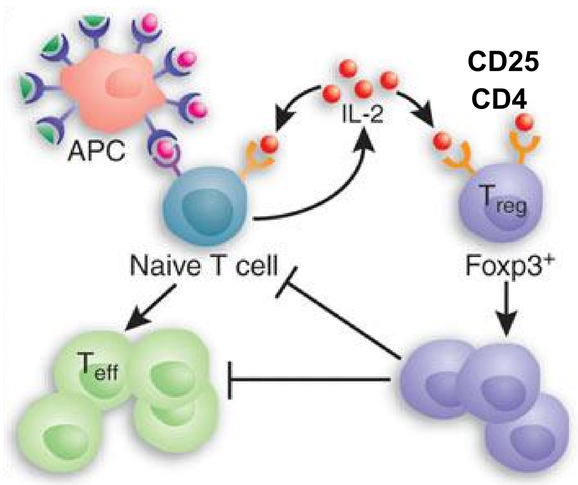
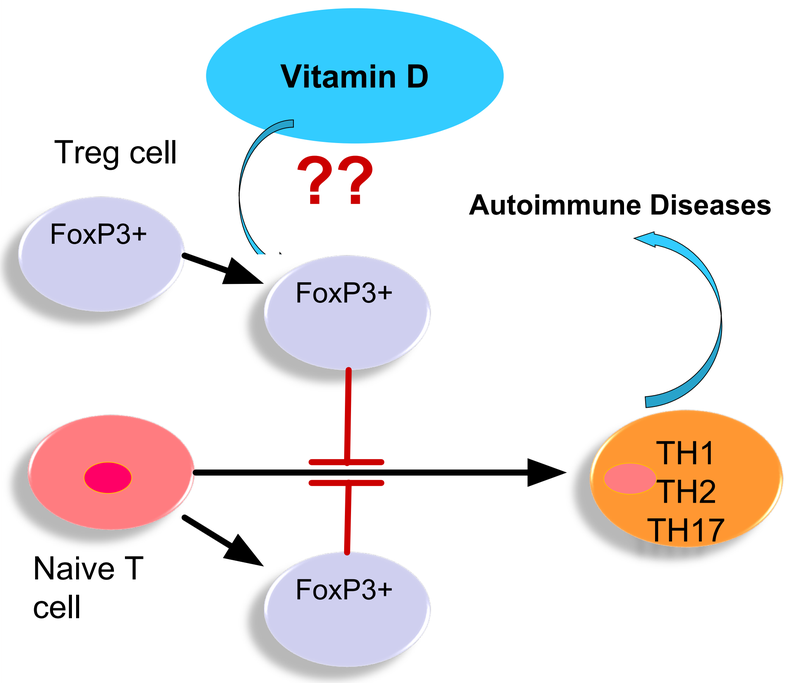
**There is no disclosure*




**Background and aim:** Regulatory T (Treg) cells are characterized by expression of Foxp3 molecule that serve as keys in the maintenance of peripheral tolerance and in controlling the immune response. The exact role of Treg cells in the pathogenesis of chronic autoimmune thyroiditis (CAT) has not been recognized yet.

It is suggested that Vitamin D is one of the factors that can regulate he function of Treg cells. In this study, the relationship between Treg cells (levels and expression) and vitamin D levels was investigated in pediatric CAT patients.




**Materials and Methods:** Thirteen children and adolescents (ages: 5 to 18.4 years) with a diagnosis of CAT and 22 healthy subjects were enrolled to the study. Foxp3 expressing CD4+CD25+T cells were identified as Treg cells. Treg cells are measured by flow cytometry (Beckmancoult the NAVIOS®, USA) using intracytoplasmic staining with tree colors direct immunofluorescence method. At diagnosis, 25 OHD3 levels were determined all patients. Foxp3 expression was measured before and after vitamin D replacement therapy in patients having low levels of 25 OHD3.

**Results:** In study group, Treg cell levels (%) did not differ from the control group, while Foxp3 molecule expression was lower. There was no statistically significant difference between the groups according to vitamin D levels. However, the patients having vitamin D deficiency and CAT who are given vitamin D replacement, the Treg cells level did not change and Foxp3 molecule expression were significantly increased.

Table 1: Charactesitics of Patients

| | Patients with CAT | Control group | P values |
|---|---|---|---|
| Age (year) | 12.5± 1,3 | 13.05±0,62 | 0.39 |
| N (female/male) | 30 (25/5) | 22 (14/8) | - |
| Height SDS (z score) | 0.084±1.24 | 0.087±1.58 | 0.49 |
| BMI (kg/m2) | 22.01±4.08 | 21.14±4.34 | 0.31 |
| TSH (mIU/ml) | 12.63±29.45 | 2.6±1.47 | 0.08 |
| fT4 (pmol/L) | 10.45±2.79 | 12.2±6.05 | 0.14 |
| 25OHD3 (mcg/L) | 18.5±12.7 | 19.6±7.1 | 0.31 |
| Foxp3 molecule expression (%) | 71.2±14.1 | 82.1±14.6 | 0.01 |
| Treg cells (%) | 3.6±1.5 | 3.8±1.5 | 0.25 |

Table 2: The percentage of Treg cells and Foxp3 molecule exression in patients with vitamine D deficiency - before and after treatment

| | Before Treatment | After treatment | P values |
|---|---|---|---|
| Foxp3 molecule expression (%) | 70.7±15.38 | 86.2±6.72 | 0.015 |
| Treg cells (%) | 3,9±1.31 | 4,5±1.5 | 0,23 |

Although the percentage of Treg cells were not different between CAT patients and control group, function of Treg cells seems to be decreased.

**Conclusion:** In the pediatric age group, patients with CAT, FoxP3 expression is decreased. This reduction seems not associated with vitamin D levels, but in patients requiring vitamin D replacement, the expression of FoxP3 molecules showed an increase. This result suggests that vitamin D can play a role in enhancing natural Treg cells functions.