

# The comparison of natural course thyroid autoimmunity in children and adults with type 1 diabetes: from the diabetes onset up to five years of its duration.

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## Background

- Individuals with type 1 diabetes (T1D) are at higher risk of developing other autoimmune disease, including autoimmune thyroid disease.
- The incidence of Hashimoto among people with T1D varies between 8 and 50%, depending on gender, age and ethnicity.

## Aims and Objectives

- To evaluate prevalence of anti-thyroid peroxidase (anti-TPO) and its correlation to the presence of thyroid dysfunction in children and adults at diagnosis of T1D and in the five-year observation.

## Methods

- The study included 367 patients (218 children; 149 adults) at T1D onset.
- Anti-TPO level and thyroid function tests (T4, T3, and TSH) were performed within 5 days of the initial diagnosis of diabetes and during the five-year follow-up period.

## Comments

- Anti-TPO tended to occur more frequently in adults with newly diagnosed T1D without gender association, whereas in children anti-TPO was observed significantly more often in females.
- The presence of a positive anti-TPO titer was related to a higher incidence of HT at T1D onset in adults.
- While, in children, the occurrence of a positive anti-TPO titer at T1D diagnosis was associated with a greater risk of developing HT in 5-year follow-up period.
- The results of the study confirm the validity of screening for AITD at the time of T1D diagnosis and further thyroid function assessment should be recommended.

## Results

- At T1D onset, anti-TPO was reported in 18.5% of patients, more frequently in adults than in children (26.2% vs. 13.3%).
- In children, anti-TPO was observed mostly in girls (62.1% vs. 37.9%,  $p=0.047$ ), while there was no gender association in adults (females 56.4% vs. men 34.6%;  $p=0.754$ ).
- Positive anti-TPO patients had higher occurrence of GADA (83.8% vs. 70%,  $p=0.03$ ) and higher level of its titer [median 38.7 (IQR:5.4-512.4) vs. 6.2 (1.1-40.6),  $p<0.0001$ ].
- Whereas, in children higher titer of IAA was observed [6.5 (5.3-8.2) vs. 5.6 (5.0-6.9), ( $p=0.026$ )].
- Hypothyroidism (HT) at diagnosis of T1D occurred more frequently in adults than in children (9 vs. 2,  $p=0.009$ ), in 3 positive anti-TPO adults autoimmune hyperthyroidism was noted (elevated titers of anti-TSH-R).
- Positive anti-TPO adults had higher TSH concentration as opposed to negative anti-TPO group ( $3.6\pm 0.9$  vs  $1.7\pm 0.9$ ,  $p=0.026$ ), such a relationship was not observed among children.
- HT was diagnosed in 41.4% anti-TPO positive children at T1D onset in the five-year follow-up period, significantly more often in girls than in boys (83.3% vs. 16.7%).
- While, only next 15% of adults with initially positive anti-TPO developed HT during the study period.
- The mean time from T1D diagnosis to HT development was  $2.8\pm 1.7$  years.

