

# THYROID PEROXIDASE AUTOIMMUNITY AND THE EFFECT ON THYROID FUNCTION IN CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES

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**Background:** Autoimmune thyroid disease is commonly associated with type 1 diabetes although reported rates vary.

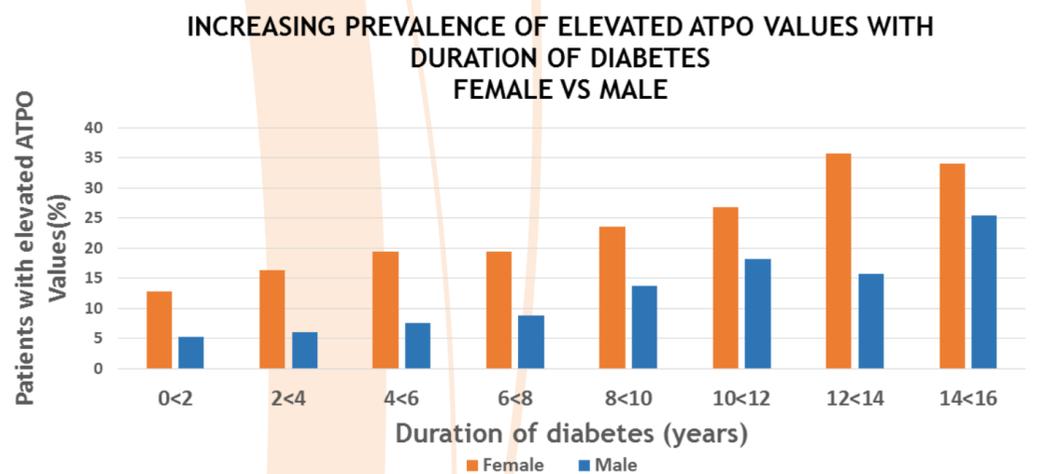
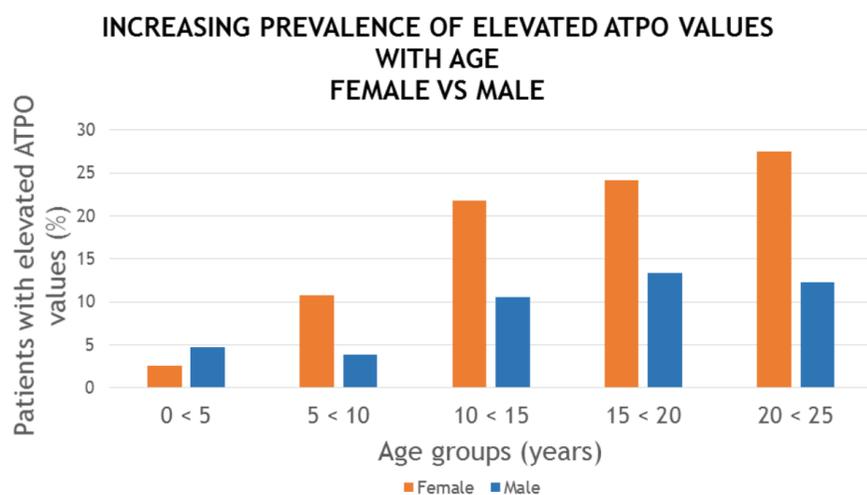
**Objective:** To investigate thyroid peroxidase autoimmunity and the effect on thyroid function in a large cohort of type 1 diabetes children and adolescents.

### Literature:

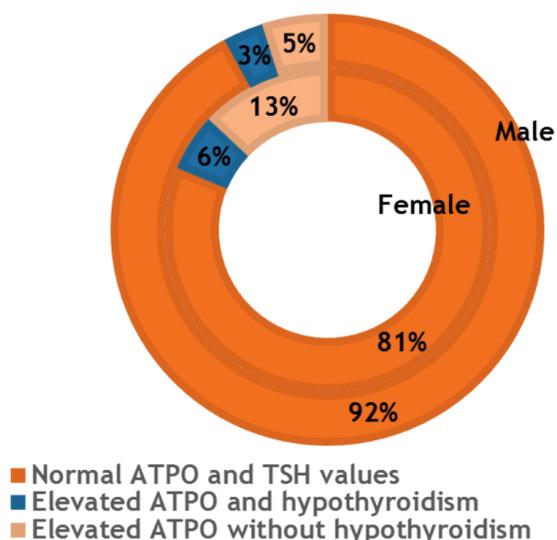
- C.B. Shun et al.: Thyroid autoimmunity in Type 1 diabetes: Systematic review and meta-analysis, Diabetic medicine 2013
- O. Kordonouri et al.: Thyroid Autoimmunity in Children and Adolescents With Type 1 Diabetes, A multicenter survey, Diabetes Care 2002

**Methods:** Single center cohort study of 1553 type 1 diabetes patients (<25 years of age, 49.4% males) treated between January 1993 and December 2014 in our diabetes center. In total 4591 measurements of antibody to thyroid peroxidase (ATPO) were documented, 2270 of males at median age of 14.1 years (IQR 10.2 - 17.5) and 2321 of females at median age of 14.7 years (IQR 11.1 - 18.3). ATPO values  $\geq 60$  U/ml and TSH values  $> 4.4$  mU/l were considered significantly elevated. **Statistical evaluation:** Pearson's chi square, Chi square test for trend, Mantel-Haenszel chi square.

**Results:** ATPO values were elevated at least once in 207 patients (13.3%). Females were 2.4 times more affected compared to males (18.7% vs 7.8%) and ATPO values were significantly higher in females (227 U/ml, IQR 70 - 741 U/ml vs 190 U/ml, IQR 62 - 550 U/ml) irrespective of age and duration of diabetes ( $p < 0.001$ ). In patients with elevated ATPO values hypothyroidism requiring medication occurred in 23 males (38.3%) and 45 females (30.6%).



**PATIENT SUBGROUPS OF ATPO VALUES AND HYPOTHYROIDISM BY GENDER**



### Conclusion:

- A greater risk of thyroid peroxidase autoimmunity is conferred by female gender, increasing age and duration of diabetes.
- Consecutive hypothyroidism occurs in more than 1/3 of male and female patients.
- We suggest cost-effective screening in type 1 diabetes patients by ATPO measurements on a regular/annual basis and to proceed in case of elevated ATPO values with close meshed TSH monitoring only.