

# Childhood thyroid autoimmunity and relation to islet autoantibodies in children at risk for type 1 diabetes in the Diabetes Prediction in Skåne (DiPiS) study.



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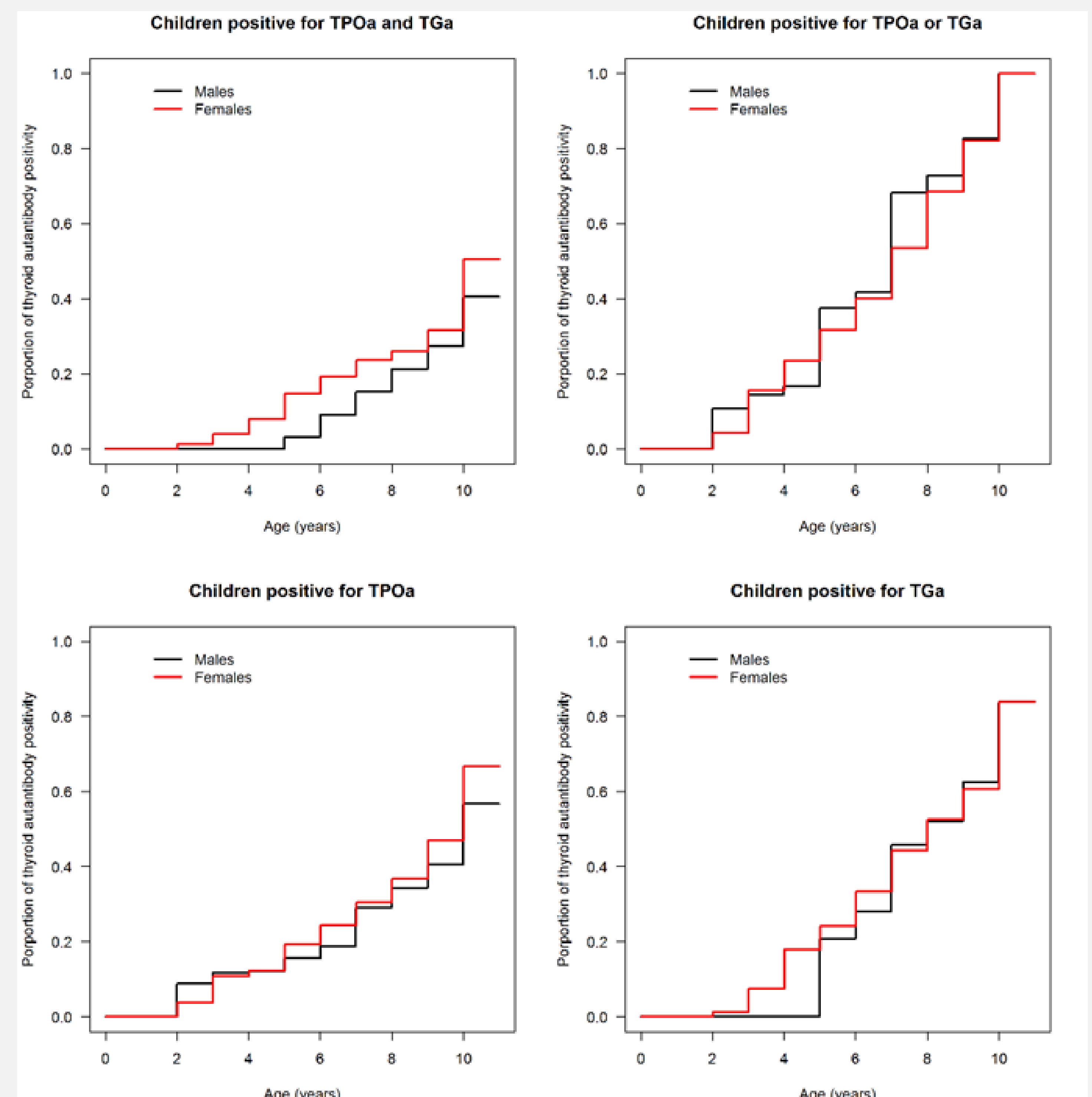
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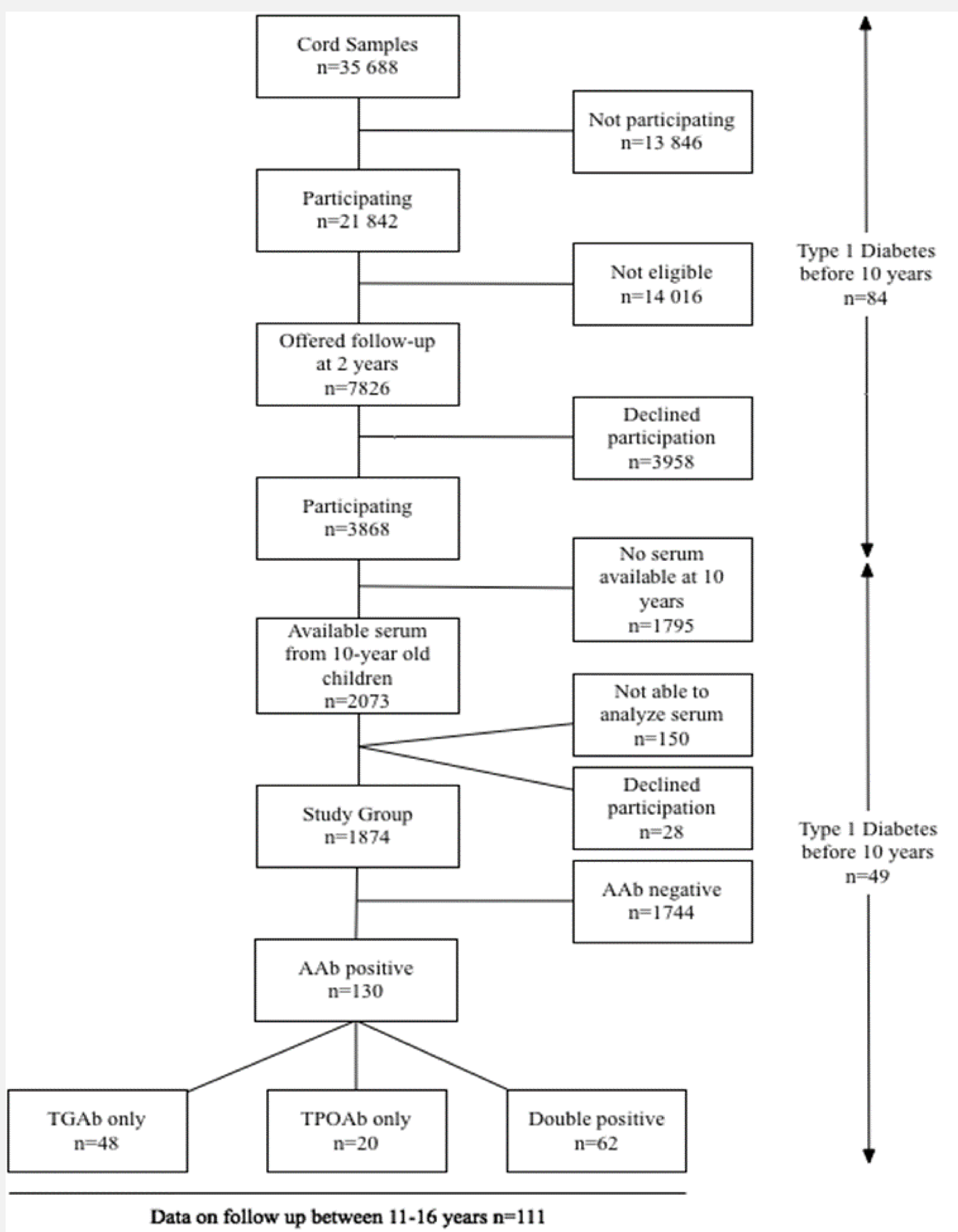
**Background:** The aim was to determine prevalence and age at seroconversion of thyroid autoimmunity in relation to islet autoantibodies, gender and HLA-DQ genotypes in children with increased risk for type 1 diabetes followed from birth.

**Methods:** In 10-year-old children (n=1874), blood samples were analysed for autoantibodies against thyroid peroxidase (TPOAb), thyroglobulin (TGAb), glutamic acid decarboxylase 65 (GADA), Zinc transporter 8 (ZnT8R/W/QA), insulinoma-associated protein-2 (IA-2A), insulin (IAA) and HLA-DQ genotypes. Prospectively collected samples from 2 years of age were next analysed for TPOAb and TGAb and, finally, in confirming samples at 11-16 years of age along with TSH and FT4.

The age of TPOAb and TGAb appearance in thyroid autoantibody positive children. Panel; a) positive for both, b) positive for either c) positive for TPOAb d) positive for TGAb.



Flow chart of children screened at birth and followed in the DiPiS study to 10 years of age, and the distribution of thyroid autoantibodies in the population.



**Results:** The prevalence of thyroid autoimmunity was 6.9%, overrepresented in girls ( $p < 0.001$ ) also having higher TPOAb levels at 10 years ( $p = 0.049$ ). TPOAb was associated with GADA ( $p = 0.002$ ), ZnT8R/W/QA ( $p = 0.001$ ), IA-2A ( $p = 0.001$ ) while TGAb were associated with ZnT8R/W/QA ( $p = 0.021$ ). In boys only, TPOAb were associated with GADA ( $p = 0.002$ ), IA-2A ( $p = 0.001$ ), ZnT8R/W/QA ( $p = 0.001$ ), IAA ( $p = 0.009$ ) and TGAb with GADA ( $p = 0.013$ ), IA-2A ( $p = 0.005$ ) and ZnT8R/W/QA ( $p = 0.003$ ). The frequency and levels of thyroid autoantibodies increased with age. At follow-up, 22.3% had abnormal thyroid function or were treated with thyroxine.

**Conclusions:** Thyroid autoimmunity and high TPOAb levels were more common in girls. In contrast, in boys only, there was a strong association with as well as correlation between levels of thyroid and islet autoantibodies. It is concluded that while girls may develop autoimmune thyroid disease independent of islet autoantibodies, the risk for thyroid disease in boys may be linked to concomitant islet autoimmunity.