Hashimoto’s thyroiditis and thyroid peroxidase autoantibody levels share genetic background

Introduction
Hashimoto’s thyroiditis (HT) is the most common form of autoimmune thyroid diseases (AITD) characterised by progressive destruction of thyroid tissue that usually leads to hypothyroidism. High thyroid autoantibodies against thyroid peroxidase (TPOAb) levels are present in 90% of HT patients and serves as a clinical marker for the detection of early AITD/HT.

Genetic factors that contribute to HT development are poorly understood. The main aim of our study was to test if recently identified genetic variants associated with TPOAb levels are also involved in HT development.

Methods

Design

- We selected and genotyped 14 known TPOAb associated genetic variants.
- Case-control logistic regression model was used to test association of selected genetic variants with HT.
- Additionally, we tested association of the same genetic variants with thyroid related quantitative traits (TPOAb levels, TgAb levels and thyroid gland volume) using linear regression.

Subjects

A total of 538 unrelated individuals, including 200 HT patients and 338 controls, were involved in this study.

Diagnosis of HT cases was based on clinical examination, measurement of thyroid hormones (TSH and FT4) and antibodies (TgAb, TMAb) and ultrasound examination.

Results

- Three genetic variants showed nominal association with HT, rs10774625 in ATXN2 gene (p=0.0132, OR=0.73, CI=0.57-0.94), rs7171171 near RASGRP1 gene (p=0.0194, OR=1.43, CI=1.06-1.94) and rs11675434 in TPO gene (p=0.0489, OR=1.28, CI=1.01-1.64).
- Two of these SNPs (rs1077462, rs11675434) also showed association with TPOAbs levels (p=0.0434, 8=0.39; p=0.0418, 8=0.40, respectively) and one (rs7171171) was associated with thyroid gland volume (p=0.016, 8=0.22).

Conclusion

Our findings suggest that variants inside or near TPO, ATXN2 and RASGRP1 genes are associated with HT. This is the first report that shows common genetic background of TPOAb levels and HT.