A population study of the association between thyroid autoantibodies in serum and abnormalities in thyroid function and structure

Objective Patients with autoimmune overt hypothyroidism may present with goitrous Hashimoto’s disease or autoimmune atrophic thyroiditis. Little is known about the prevalence of subclinical autoimmune hypothyroidism. The aims of this study were to evaluate the association between thyroid autoantibodies in serum and abnormalities in thyroid function and structure, and to study the thyroid volume in subjects with subclinical autoimmune hypothyroidism. Design A population study including 4649 randomly selected subjects. Measurements Blood tests were used to analyse for thyroid peroxidase autoantibodies (TPO-Ab), thyroglobulin autoantibodies (Tg-Ab), TSH, fT3 and fT4. Results Thyroid volume was categorized as small (<6.6 ml) in 4.7%, normal (6.6-14.9 ml) in 60.4% and large (>14.9 ml) in 34.9% of participants. Thyroid nodules were found in 29.7%. Serum TSH was low (<0.4 mIU/l) in 4.7%, normal (0.4-3.6) in 91.0% and high (>3.6) in 4.3%. The prevalence rate of subclinical goitrous Hashimoto’s disease was 0.62% and of subclinical autoimmune atrophic thyroiditis 0.24%. There was a strong association between large volume and autoantibodies, but only in subjects with elevated TSH (P<0.001). An association between thyroid nodules and TPO-Ab in univariate analyses (P<0.001) was due to confounding by sex and age (multivariate model, P=0.23). Conclusion We identified a subgroup of the population with subclinical goitrous Hashimoto’s disease and a smaller subgroup with subclinical autoimmune atrophic thyroiditis. This relationship between small and large thyroid volume in subclinical disease is opposite to that in overt disease, which may suggest that the period between development of a small volume with circulating autoantibodies and overt hypothyroidism is relatively short.