

Prevalence of Thyroid Morphology Changes in an Area with Adequate Iodine Intake

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Abstract:

Aim/Introduction: Ultrasonographically detected morphological changes of the thyroid, such as increased thyroid volume, thyroid nodules and hypoechoic pattern associated with thyroid autoimmunity, are very common. In the general adult population, the prevalence of thyroid nodules is up to 50% and the prevalence of thyroid autoimmunity up to 20%. Iodine supply is an important factor influencing thyroid morphology. Our aim was to evaluate the prevalence of thyroid morphology changes in Slovenia, which has been an area of adequate iodine intake for more than 20 years.

Materials and Methods: The present analysis was a part of Nutrihealth study, where nationally representative sample of 620 adults (18-64 years) and older adults (65-74 years) was invited to participate. In 205 individuals, 126 females and 79 males aged 18 to 74 years (mean 56.1±15.6 years) thyroid ultrasound was performed. In every subject, the presence and number of thyroid nodules and thyroid echogenicity were estimated. Thyroid volume and dominant nodule volume were calculated using standard formula. Thyroid ultrasound characteristics were analysed according to demographic data.

Results: Thyroid nodules were confirmed in 44.9% (92/205) subjects. In 19.5% (40/205) 1 nodule was found, whereas in 25.4% (52/205) of subjects, 2 or more nodules were detected. In 55.1% (113/205) thyroid ultrasound pattern was isoechoic and in 44.9% (92/205) hypoechoic. Mean thyroid volume was 9.8±6.1 ml (range, 0.8-46.7 ml). Mean volume of dominant nodule was 1.7±3.3 ml (range, 0.01-19.0 ml) and only 29.3% (27/92) nodules exceeded the volume of 0.5 ml. Subjects without thyroid nodules were significantly younger than those with nodules (51.1±16.8 vs 62.2±11.4, $p<0.001$). Also, isoechoic ultrasound pattern was associated with younger age than hypoechoic pattern (53.7±16.7 vs 59.0±13.7, $p=0.04$). Females and males did not differ in the presence of nodules and echogenicity ($p=0.32$ and $p=0.12$, respectively). Thyroid volume was significantly smaller in females than in males (8.2±5.6 ml vs 12.3±6.1 ml, $p<0.001$), whereas no association between the volume of dominant nodule and gender was confirmed (1.3±3.0 vs 1.5±3.5, $p=0.88$).

Conclusion: In an area with adequate iodine intake, thyroid volume is smaller than normally reported. Our data confirm a high prevalence of thyroid nodules in the general adult population, but more than 2/3 do not exceed the volume of 0.5 ml. Prevalence of thyroid nodules increases with age. Older age is also associated with hypoechoic ultrasound pattern, which was observed in almost half of the population and may indicate a high prevalence of autoimmune thyroid disease.