

The association between hypoechogenicity or irregular echo pattern at thyroid ultrasonography and thyroid function in the general population.

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Abstract

OBJECTIVE: Patients with overt hypothyroidism show decreased echogenicity of the thyroid at ultrasonography (US). The aim of this study was to investigate the association between echogenicity of the thyroid/irregular echo pattern, and thyroid function in the general population, i.e. subjects without overt thyroid disease.

DESIGN: A cross-sectional investigation of 4649 randomly selected adult subjects.

METHODS: Blood samples were analysed for serum TSH, thyroid hormones and thyroid autoantibodies. US of the thyroid was performed.

RESULTS: Participants with decreased echogenicity (n=379) had a higher mean TSH (1.65 mU/l) compared with subjects with normal echogenicity (1.21 mU/l, $P<0.0001$). The association was stronger in subjects with markedly decreased echogenicity (4.20 mU/l, $P<0.0001$). A similar association was seen when the subjects were divided into subgroups according to the level of TSH; more subjects with high levels of TSH had decreased echogenicity ($P<0.0001$). Likewise, more subjects with high levels of TSH had an irregular echo pattern ($P<0.0001$). Subjects with decreased echogenicity had a higher risk of having thyroid autoantibodies than subjects without decreased echogenicity ($P<0.0001$). This association was stronger when echogenicity was markedly decreased.

CONCLUSIONS: We demonstrated an association between hypoechogenicity at thyroid US and higher levels of serum TSH even in subjects without overt thyroid disease, suggesting decreased echogenicity as an early sign of thyroid dysfunction. Irregular echo pattern, whether accompanied by hypoechogenicity or not, was another possible marker of thyroid failure. This indicates a possible use of thyroid US in detecting early and subclinical thyroid dysfunction.

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