

ULTRASOUND EVALUATION OF DIFFUSE THYROID DISEASES

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The aim of this study is to investigate the value of ultrasound investigation of thyroid in diffuse diseases (DTD). The announcements on this topic so far, refer to hypoechogenicity of thyroid gland in autoimmune thyroid disease (ATD). The sensitivity of ultrasound investigation is from 47% up to 97%. The purpose of our examination is to study parallelly the value of thyroid sonography and that of other clinical, laboratory and cytomorphological kinds of investigations. The object of examination are 1247 patients from the Clinic of Endocrinology. Hypoechogenicity has been found in 289 cases (231 women and 58 men), the mean age 47,5 years. In 198 patients diagnosis Bazedow's disease has been set, in 62 cases - autoimmune thyroiditis (AT), in 28 cases - thyroiditis subacuta and in one case anaplastic carcinoma. The existence of hypoechogenicity was estimated by comparison with the echogenicity of the nearby muscles and by means of A scan, and three degrees have been determined: I degree - very low hypoechogenicity, II degree - moderate, III degree - minimal. Ultrasound investigation has been performed by real time technique using echoscope Bruel & Kier-1849 having sector scan transducer with frequency of 7 MHz. The volume of the thyroid gland is calculated by means of computer analysis (we have been comparing with normal values of 2 to 5ml). T₃, T₄, TTH, thyroid antithyroglobulin antibodies (TgAb) and antimitochondrial (MsAb) were investigated. Fine needle aspiration biopsy (FNAB) was carried out in 42 patients. On the basis of titres of TgAb, MsAb; subclinically or clinically manifested hypothyroidism and/or lymphocytic infiltration proved by FNAB patients with AT were divided in the following five groups: I - euthyroidism, FNAB+ = 12; II - euthyroidism, FNAB-, TgAb+/MsAb+ = 11; III - hypothyroidism = 33; IV - FNAB-, TgAb-/MsAb- = 3; V - operated patients = 3. An inverse relationship between the echoamplitude and the lymphocytic infiltration is established. No case with high amplitude echoes has lymphocytic infiltration, 32 cases are with first degree of hypoechogenicity and 21 - with second degree. With the diminishment of lymphocytic infiltration the amplitude of echoes rises. Functional disturbances - subclinical or clinically manifested have been diagnosed in 33 (65%) of patients.

No relationship between the degree of hypoechogenicity and the functional disturbances has been discovered. A relationship between the functional state and the volume of the thyroid gland showed that cases with volume less than 2 ml, subclinical or clinically manifested hypothyroidism is established. In cases with volume of the thyroid from 2 to 5 ml - hypothyroidism is established in 63 cases. Positive results of TgAb and MsAb are established in 14 out of 26 investigated patients. In 7 patients with AT the ultrasound investigation has been repeated after a period of 8 months up to 1,5 year.



Fig. 1

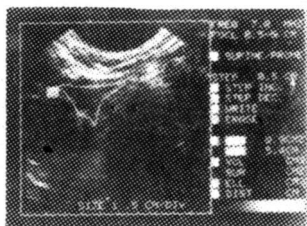


Fig. 2

However, in one of those 7 cases there has been improvement with diminishment of hypoechogenicity in spite of the fact that in the course of therapy with thyroid hormones the thyroid volume has become smaller. In all cases nonhomogeneous hypoechogenicity has been found with proved lymphocytic infiltration. The significance of the cytological examination when not applied parallelly with echography decreases down to 70-88%. The investigation of thyroid TgAb and MsAb gives positive results in 54%. One reason for absent positive results is perhaps the presence of circulating immune complexes, which leads to false negative results, or presence of focal thyroiditis not established by FNAB but registered by echography. There is a positive correlation between thyroid volume and function. This may be attributed to diminishment of thyroid volume by destruction of the gland with subsequent hypothyroidism: Once hypoechogenicity is registered in the investigated patients it does not reveal any changes on the face of treatment with thyroid hormones. This is connected with the establishment of a permanently developing autoimmune process without change in the course of therapy. In conclusion, our investigation shows the advantages of ultrasound investigation (90%) in the complex examination of patients with AT especially in cases with normal thyroid function and negative results for TgAb and MsAb. Examinations reveal the tendency of functional thyroid deficiency parallelly with the volume of the thyroid gland.