

Decreased ultrasound echogenicity as a thyroid hypofunction marker

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Objectives:

The value of ultrasound in functional disorders can be significant. That is why the question arises on the use of ultrasound examination of thyroid gland and its echogenicity as a screening method in early detection of disfunctions, primarily subclinical and clinical forms of hypothyreosis.

Methods:

Testing included 328 patients. All examinees underwent ultrasound examination of thyroid gland, the blood was taken for determination of FT4, TSH, TPOab and TGab. The patients were divided into two groups. Group A with normal echogenicity of thyroid gland tissue, and B with decreased echogenicity. Group B was divided into two subgroups, B1 with a mildly decreased and B2 with significantly decreased echogenicity.

TABLE 1
NUMBER OF PATIENTS IN RELATION TO ULTRASOUND ECHOGENITY AND TPO AND TG ANTIBODIES PRESENCE

	No of patients	TPO increased	TGab positive
Normal echogenicity Group A	212 64.6%	18 8.5%	22 10.4%
Decreased echogenicity Group B	116 35.4%	56 48.3%*	48 41.4%*
Mildly decreased echogenicity Group B1	91 27.7%	34 37.3%*	28 30.7%*
Significantly decreased echogenicity Group B2	25 7.7%	22 88.0%*¥	20 80.0%*¥

TABLE 2
MEAN VALUES OF TPOab, Ft4 AND TSH IN RELATION TO ULTRASOUND ECHOGENITY

	TPOab U	ft4 nmol/l	TSH mIU/l
Normal echogenicity Group A	58.5 ± 18.4	14.6 ± 5.5	1.05 ± 0.34
Decreased echogenicity Group B	339.3±57.8*	10.1 ± 2.9	5.04 ± 1.98
Mildly decreased echogenicity Group B1	248.0±45.9*	11.2 ± 3.4*	3.82 ± 2.12*
Significantly decreased echogenicity Group B2	670±116.7*¥	8.8 ± 3.8*¥	8.75±3.36*¥

TABLE 3
NUMBER OF PATIENTS ACCORDING TO THE VALUES OF TSH AND ULTRASOUND ECHOGENITY

	TSH < 4mIU/l	TSH 4-10mIU/l	TSH > 10mIU/l
Normal echogenicity Group A	210 99%	2 1%	0
Decreased echogenicity Group B	87 75%*	21 18.1%*	8 6.9%*
Mildly decreased echogenicity Group B1	81 89%*	8 8.8%*	2 2.2%*
Significantly decreased echogenicity Group B2	6 24.0%*¥	13 52.0%*¥	6 24%*¥

Results:

TPO antibodies, TSH and TG antibodies positivity and their mean values in group B are significantly higher, as well as in subgroups B1 and B2, in relation to group A, $p < 0.001$. In group A only two examinees (1%) were indicated with subclinical hypothyreosis. In group B the subclinical hypothyreosis was indicated in 21, while the clinical hypothyreosis was indicated in 8 examinees. 29 (25%) suffered of thyroid gland altered function. In subgroup B1 8 examinees were indicated with subclinical and 2 with clinical hypothyreosis. 10 examinees (11%) suffered of altered thyroid function. In group B2 the subclinical was found in 13 examinees, while the clinical hypothyreosis was found in 6. 19 examinees (76%) suffered of altered thyroid function.

Conclusions:

The ultrasound screening of thyroid gland plays important role in early detection of thyroid dysfunction, i.e. subclinical and clinical hypothyreosis. Decreased ultrasound echogenicity represents the significant marker of altered thyroid gland function. In these persons we have determined the high percentage of subclinical and clinical hypothyreosis frequency.

References:

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