

**STUDYING INDICATORS OF THE ANTIOXIDANT SYSTEM FOR HASHIMOTO'S
DISEASE IN ADOLESCENTS**

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Relevance . Hashimoto's thyroiditis is a disease in which the patient experiences inflammation of the thyroid gland due to the body's antibodies production against its own cells. The chronic nature of the disease has consequences associated with the failure of the functional characteristics of the thyroid gland and imbalance of hormones.

The disease can occur at any age. Most often, the process is detected in adolescents, since hormonal changes are one of the factors that provoke the onset of the production of pathological antibodies. Since thyroid hormones play an important role in regulating metabolism, it is important to promptly identify AIT and take appropriate measures.

In addition, the relevance of studying the problem of this autoimmune disease of the thyroid gland is due to the need to obtain new data on the mechanisms of formation and progression of damage to the thyroid gland in order to improve diagnostic methods, prognosis of the course of the disease, as well as therapeutic approaches.

With this **the purpose** was to study the state of enzymes of the antioxidant defense system in autoimmune thyroiditis with nodular forms.

Materials and methods of research. Examined 40 adolescents (boys and girls, age 16-18 years) with nodular forms of chronic autoimmune thyroiditis with a history of 2 years.

The examination of patients included a clinical examination, biochemical and hormonal diagnostics, ultrasound examination of the thyroid gland.

All subjects were divided into 2 groups. The first group included patients with uncompensated hypothyroidism (n =21), the second group included patients in a euthyroid state (n =18). The control group consisted of individuals with euthyroid goiter without an autoimmune component (n = 10).

The diagnosis was verified based on anamnestic, clinical, laboratory and instrumental examinations. Patients with malignant neoplasms of the thyroid gland and patients with hypothyroidism on thyroid replacement therapy were excluded from the study .

The diagnosis of autoimmune thyroiditis was established by studying the levels of thyroid-stimulating hormone, free thyroxine T4 , titer of antibodies to thyroid peroxidase , thyroglobulin in the blood serum.

The study of peroxidation processes (LPO) was carried out by determining the induced chemiluminescence of blood plasma, this included the determination of acylhydroperoxides (AHP) according to the method of V.B. Gavrilov and M.I. Mishkorudnaya (1983), malonic dialdehyde (MDA) - according to the method of L.I. Andreeva et al ., (1988). Determination of catalase activity (CT) was carried out according to the method of M.A. Korolyuk et al ., (1988), superoxide dismutase (SOD) in erythrocytes - according to the method of V.G. Mikhtaryan , G.E. Badalyan (1978).

The results of the studies were processed using statistical programs Microsoft Excel -2000, and arithmetic averages (M , m) were determined. The significance of the differences was studied using Student's t -criteria, and the difference in mean values was considered significant at $p < 0.05$.

The results of the study showed that in patients with thyroiditis Hashimoto's disease with a long course and complicated hypothyroidism, there is an increase in the blood levels of MDA and AGP in both the first and second groups of patients. In the first group of patients, there was a significant increase in the level of MDA by 2.9 times, and APG by 2.6 times. In patients with hypothyroidism in a euthyroid state, an increase in the level of MDA was detected by 1.7 times, AGP by 1.3 times, respectively, comparing with the results of the control group.

A study of the indicators of the antioxidant defense system shows that in patients of the first group there is a decrease in SOD by 45%, CT -54%. In patients of the second group, these indicators decreased by 25% and 18%, respectively.

The presented pathogenetic models indicate that the progression of autoimmune thyroiditis has a heterogeneous genesis. Typically, the body's oxidative and antioxidant processes are balanced, so free radicals constantly formed during oxidative stress are neutralized. In patients with AIT, this balance shifts towards increased production of free radicals. Consequently, the functions of antioxidant defense mechanisms are weakened. The importance of free radicals lies in their increased ability to undergo chemical reactions. Due to reactions with unsaturated compounds, they disrupt the structure of enzyme proteins, cell membrane lipids and DNA [6,7,10].

Thus, in patients with nodular forms of chronic autoimmune thyroiditis , with and without manifestations of hypothyroidism, there is an increase in the activity of free radicals and a decrease in the antioxidant local defense system, in the development and progression of which the activation of the cellular component of immunity plays a key role with the predominance of the production of cytokines, including interleukin-2, which mediate the cytotoxic effect of immunocompetent cells on thyrocytes and, subsequently, the development of hypofunction of the thyroid gland [2,3,5,8,9].

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