

## **HYPOTHYROIDISM: PRINCIPLES OF MODERN DIAGNOSTICS AND TREATMENT**

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**Abstract.** *Thyroid hormones support metabolic processes in our body. A change in their concentration in the blood leads to digestive disorders and disrupts the functioning of the cardiovascular and nervous systems.*

*Hypothyroidism is a common pathology that leads to serious complications. They can significantly reduce the quality of life of a child and an adult. At the same time, this disease is easy to control with replacement therapy.*

**Keywords:** *Thyroid hormones, menstrual irregularities, convulsions, thyroid gland.*

### **ГИПОТИРЕОЗ: ПРИНЦИПЫ СОВРЕМЕННОЙ ДИАГНОСТИКИ И ЛЕЧЕНИЯ**

**Аннотация.** *Гормоны щитовидной железы поддерживают обменные процессы в нашем организме. Изменение их концентрации в крови приводит к расстройствам пищеварения, нарушает работу сердечно-сосудистой и нервной систем.*

*Гипотиреоз — распространенная патология, которая приводит к серьезным осложнениям. Они могут значительно снизить качество жизни ребенка и взрослого человека.*

*При этом это заболевание легко контролируется заместительной терапией.*

**Ключевые слова:** *Гормоны щитовидной железы, нарушения менструального цикла, судороги, щитовидная железа.*

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Hypothyroidism is a constant decrease in the concentration of thyroid hormones (thyroxine - T4, triiodothyronine - T3) in the blood, or a decrease in tissue sensitivity to them. As a result, all processes for which hormones are responsible slow down: energy metabolism; protein synthesis; brain activity. As a result of metabolic disorders, all cells of the body lack energy, so the functioning of all organs and systems deteriorates. The disease may be caused by a lack of iodine and selenium, a decrease in the secretory activity of the thyroid gland or insufficient secretion of hormones from the hypothalamic-pituitary system.

#### **Symptoms of hypothyroidism**

Symptoms of hypothyroidism include:

- weakness,

- apathy,
- fatigue;
- constant drowsiness during the day and insomnia at night;
- unreasonable weight gain;
- dry and sagging skin,
- hair loss;
- frequent constipation;
- loss of appetite;
- menstrual irregularities;
- both men and women experience a decrease in libido;
- convulsions.

### **Causes of hypothyroidism:**

There are the following forms of hypothyroidism:

primary - caused by a decrease in the secretory activity of the thyroid gland;

secondary, caused by a decrease in the secretion of thyroid-stimulating hormone by the pituitary gland - a stimulator of the thyroid gland;

tertiary, caused by a decrease in the secretion of thyrotropin-releasing factor by the hypothalamus - a stimulator of TSH production;

peripheral - with normal concentrations of hormones in the blood, tissues remain insensitive to them.

Secondary and tertiary hypothyroidism are extremely rare; their cause is aplasia (developmental pathology) or destruction of secretory cells of the hypothalamic-pituitary system.

They may be caused by genetic changes - congenital hypothyroidism.

Most often, hypothyroidism is diagnosed in patients over 40 years of age. Women are more susceptible to this disease. The hereditary factor is important. If one of the close relatives has been diagnosed with a similar disease, then these patients are in the high-risk zone. Primary hypothyroidism can manifest itself weakly, moderately or severely.

Causes of primary hypothyroidism:

deficiency of iodine and selenium;

surgical removal of the thyroid gland or part thereof;

destruction of an organ by a tumor;

exposure to radioactive iodine;

past thyroiditis - inflammation of the thyroid gland.

Complications of hypothyroidism if left untreated or with improper self-medication. The extreme manifestation of hypothyroidism in children is cretinism, in adults - myxedema.

Cretinism is characterized by a delay in the mental and physical development of a child.

The musculoskeletal system suffers (short thick bones, cleft fontanelles, dwarfism), and underdeveloped sexual characteristics. Mental and psychological status deteriorates depending on the severity of the disease.

**Diagnostics** Comprehensive diagnostics helps confirm the diagnosis. It includes laboratory and instrumental testing methods. At the first appointment, the doctor: clarify the presence of complaints, the time and features of symptom manifestation, ask about concomitant diseases and factors preceding the onset of pathological symptoms;

examine the condition of the skin, visible mucous membranes, nails and scalp;

palpates the thyroid gland to identify tenderness, determine its size and detect neoplasms.

**Laboratory tests to detect hypothyroidism:**

level of TSH, T3, T4 in the blood;

general and biochemical blood test;

level of autoantibodies to the thyroid gland;

levels of estradiol, progesterone and testosterone.

**Instrumental diagnostic methods:**

Ultrasound of the thyroid gland;

electrocardiography;

CT, MRI of the head;

scintigraphy;

thyroid biopsy.

**Treatment of hypothyroidism** In each case, the endocrinologist prescribes a treatment regimen individually, taking into account the results of laboratory tests and ultrasound. As a rule, therapeutic treatment is carried out aimed at normalizing the level of thyroid-stimulating hormone and the function of the thyroid gland. That is, the deficiency of those hormones that the organ is unable to produce or produces in insufficient quantities for the body is compensated.

If after the first course of L-thyroxine the therapeutic effect is not achieved, the dose is increased to 100 mcg/day. Control tests are carried out - the patient again gives blood for testing according to TSH indicators

**Prevention**

Prevention of hypothyroidism includes proper and complete nutrition, taking into account sufficient iodine intake - an important element for the normal functioning of the thyroid gland.

Regular medical examinations are also important, especially in the presence of provoking factors and patients with a hereditary burden. They will help identify thyroid disorders at an early stage and take measures to prevent the progression of the disease.



## Rehabilitation

Rehabilitation measures after surgery include standard restrictions. It is necessary to refrain from overheating and hypothermia, protect the neck from direct sunlight, and avoid visiting solariums. Physical activity, lifting weights, and bending forward are prohibited until the scars are completely healed.

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