

CAUSES, TYPES, SYMPTOMS, TREATMENT OF DIABETES WITHOUT SUGAR

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Abstract. *Diabetes insipidus or hypoglycemia is a disease characterized by a lack of vasopressin (antidiuretic hormone) and severe thirst and the release of large amounts of low-concentration urine by the kidneys. This rare disease is observed equally among women, men and children. However, young people between the ages of 18 and 25 are more likely to be affected.*

Key words: *Diabetes insipidus, types of diabetes insipidus, treatment, prevention.*

ПРИЧИНЫ, ВИДЫ, СИМПТОМЫ, ЛЕЧЕНИЕ ДИАБЕТА БЕЗ САХАРА

Аннотация. *Несахарный диабет, или гипогликемия, — заболевание, характеризующееся недостатком вазопрессина (антидиуретического гормона), сильной жаждой и выделением почками большого количества мочи низкой концентрации. Это редкое заболевание наблюдается в равной степени среди женщин, мужчин и детей. Однако чаще страдают молодые люди в возрасте от 18 до 25 лет.*

Ключевые слова: *несахарный диабет, виды несахарного диабета, лечение, профилактика.*

VASOPRESSIN

Vasopressin is a hormone that is synthesized (produced) in the hypothalamus, then it goes to the pituitary gland and from there it goes into the blood.

The synthesis of vasopressin is mainly controlled by sodium: when the concentration of sodium in the blood increases, the production of the hormone increases, and when it decreases, it decreases.

In addition, hormone synthesis increases in stressful situations, when the body is dehydrated and when nicotine is introduced.

Also, the production of vasopressin decreases with an increase in arterial pressure, a weakening of the renin-angiotensin system, a decrease in body temperature, and the intake of alcohol and some drugs (for example, clopelin, haloperidol, glucocorticoids).

HOW DOES VASOPRESSIN AFFECT KIDNEY FUNCTION?

The main function of this hormone is to reduce the production of urine by helping the kidneys to reabsorb water.

Mechanism of action

With the blood flow, the hormone reaches the renal tubules, then binds to special receptors, increasing their permeability to water molecules. As a result, water is reabsorbed and the urine is concentrated.

In addition to urine resorption, vasopressin regulates several processes occurring in the body. Its functions are:

It helps to narrow the capillaries of the circulatory system, including the capillaries of the kidney.

Maintains blood pressure.

It affects the secretion of adrenocorticotrophic hormone (synthesized in the pituitary gland), which regulates the production of adrenal hormones.

It increases the release of thyrotropin hormone (synthesized in the pituitary gland), which stimulates the production of thyroxine by the thyroid gland.

Improves blood coagulation due to the fact that it causes aggregation (sticking) of platelets and releases some factors of blood coagulation.

It reduces the volume of intracellular and intravascular fluid.

Regulates osmolality (concentration of particles dissolved in 1 l of liquid): blood, urine.

Stimulates the renin-angiotensin system.

A rare disease — diabetes insipidus — develops with vasopressin deficiency.

TYPES OF DIABETES WITHOUT SUGAR

Taking into account the mechanisms of development of diabetes insipidus, it can be divided into two main types:

Central diabetes mellitus. It is formed as a result of a lack of production of vasopressin in the hypothalamus or a violation of its transfer from the pituitary gland to the blood.

Renal (nephrogenic) diabetes insipidus. In this form, the level of vasopressin is normal, but the kidney tissue does not react to it.

In addition, psychogenic polydipsia (strong thirst) sometimes develops in response to stress.

At the same time, diabetes insipidus can develop during pregnancy. The reason for this is the breakdown of vasopressin by placental enzymes. Usually, symptoms of the disease appear in the third trimester of pregnancy, but after delivery they disappear by themselves.

CAUSES OF DEVELOPMENT

Depending on what type of diabetes insipidus causes development, the reasons are divided into two.

CAUSES OF CENTRAL DIABETES

Brain injuries:

Pituitary or hypothalamic tumors;

Complications after operations on the brain;

Syphilis;

Sometimes it develops after previous infections: SARS, flu and others;

Encephalitis (inflammation of the brain);

Skull and brain injury;

Poor blood circulation in the hypothalamus or pituitary gland;

Brain metastasis of low-quality tumors affecting the pituitary or hypothalamus;

The disease can be congenital.

CAUSES OF NEPHROGENIC DIABETES INCLUSIVE

The disease can be congenital (the most common cause);

The disease is sometimes associated with certain conditions or diseases that involve damage to the medulla of the kidney or the ureters of the nephron;

Rare anemia (sickle cell);

Renal polycystosis (many cysts) or amyloidosis (deposition in amyloid tissue);

Chronic kidney failure;

An increase in potassium or a decrease in calcium in the blood;

Taking drugs that have a toxic effect on kidney tissue (for example, Lithium, Amphotericin B, Demeclocilin);

Sometimes it appears in debilitated patients or in old age.

However, in 30% of all cases, the cause of diabetes insipidus remains undiagnosed.

Because all the research conducted does not show that there is any disease or factor that leads to the development of this disease.

SYMPTOMS OF DIABETES WITHOUT SUGAR

Despite the fact that the reasons leading to the development of diabetes mellitus are different, the signs and symptoms of the disease are almost the same in all types.

However, the severity of the symptoms of the disease depends on two things:

How insensitive the receptors of nephron tubules are to vasopressin;

Deficiency of antidiuretic hormone or its absence;

Usually, the disease begins suddenly, but it can also develop gradually.

The first symptoms of the disease are very strong painful thirst (polydipsia) and frequent, copious urination (polyuria), which disturbs the patient even at night.

From 3 to 15 liters of urine can be excreted in a day, sometimes its amount reaches 20 liters per day. Therefore, the patient is disturbed by strong thirst.

Later, as the disease progresses, the following symptoms are added:

Symptoms of dehydration (lack of water in the body) appear: dryness of the skin and mucous membrane (dry mouth), weight loss.

Due to the intake of a large amount of liquid, the stomach expands, sometimes even moves down.

Due to the lack of water in the body, the production of digestive enzymes in the stomach and intestines is disrupted. Therefore, the patient's appetite decreases, gastritis or colitis develops, and there is a tendency to constipation.

Bladder stretches due to large amount of urine.

Sweating decreases due to lack of water in the body.

Often, blood pressure drops and heart rate increases.

Sometimes there is unexplained nausea and vomiting.

The patient gets tired quickly.

Body temperature may rise.

Sometimes nighttime urinary incontinence (enuresis) develops.

As thirst and frequent urination continue, the patient develops mental and emotional disturbances:

Insomnia and headache;

Emotional lability (sometimes even psychoses develop) and agitation;

Decreased mental activity.

These are typical symptoms of diabetes mellitus. However, the manifestation of the disease can be somewhat different in men and women, as well as in children.

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