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ETIOLOGY AND TREATMENT OF ADDISON'S CRISIS

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Annotation: Addison's crisis is a severe endocrine disorder that develops as a result of a sudden pronounced decrease or absolute cessation of hormone synthesis by the adrenal cortex. It is manifested by adynamia, decreased blood pressure, loss of appetite, nausea, abdominal pain, vomiting, diarrhea, acetone smell from the mouth, acetonuria, convulsions. In severe cases, dehydration, collapse, confusion, and coma develop. Diagnosis includes interviewing and examining the patient, blood and urine tests, and an ECG. Medical treatment is aimed at restoring normal hormone levels, eliminating dehydration and its consequences.

Key words: Addison's crisis, adrenal crisis, adrenocortical crisis.

Synonyms of Addison's crisis are Addison's crisis, acute adrenal insufficiency, hypoadrenal crisis, adrenal crisis, adrenocortical crisis, acute hypocorticism, acute adrenal cortical insufficiency. Crisis failure of the adrenal cortex is named after the British therapist Thomas Addison, who described the clinic of this condition in the United States. XIX century In the International Classification of Diseases Revision 10, the hypoadrenal crisis is classified as " Other adrenal disorders "(code – E27.2). The prevalence of this condition in clinical endocrinology is 50 cases per 1 million people, or 0.005%. It is more often diagnosed in women, with a gender ratio of 2: 1. The peak period of morbidity is between 55 and 63 years of age.

A critical state most often develops in patients with primary and tertiary adrenal insufficiency, Addison's disease, and Schmidt's syndrome. In these categories of patients, the causes of exacerbation of chronic diseases are various stresses, shock,intense exercise, and medication. The most common provoking factors are:

- Intoxication. The crisis occurs during alcohol and acute food poisoning. Vomiting and diarrhea contribute to the loss of electrolytes and dehydration, the functioning of target organs is disrupted, and chronic diseases worsen.
- Pregnancy. During the period of carrying a child, there is a restructuring in the endocrine system. The activity of the glands changes, so the probability of a deficiency of certain hormones increases.
- Infectious diseases. A high risk of Addison's crisis exists in severe acute infections, generalized inflammatory processes. It is often diagnosed with meningitis, diphtheria, and toxic forms of influenza.
- Incorrect use of medications. A decrease in hormone production can be associated with improper use of insulin, diuretics, sedatives, and narcotic analgesics. Another reason is the patient's self-replacement of one hormone drug with another, a decrease in the dosage of glucocorticoids, or a complete cessation of substitution therapy.
- Stress, shock states. A lack of hormones produced by the adrenal cortex can be caused by injuries to the lower back or abdomen, large blood losses during surgery, burns,

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and childbirth. Also, the crisis is provoked by prolonged psychoemotional and physical exertion.

In individuals who do not have chronic adrenal pathology, Addison's crisis is the result of autoimmune damage to the cortical substance, congenital disorders of enzyme activity, bilateral acute infarction of the adrenal cortical tissues or hemorrhages in them, surgical removal of one or two adrenal glands. Sometimes a sharp decrease in hormone secretion becomes the first diagnosed sign of a latent form of chronic hypocorticism, thyroadrenocortical insufficiency.

Pathogenesis

The adrenal glands are an endocrine gland that produces several types of hormones. The adrenal cortex produces corticosteroids such as cortisone, cortisol, aldosterone, corticosterone, and deoxycorticosterone. The activity of these compounds ensures the normal functioning of the nervous and cardiovascular systems, the flow of metabolic processes and digestion, the production of connective tissue, and supports sugar levels.

In an Addisonian crisis, corticosteroid production declines very rapidly. The body's systems do not have time to adapt to a sudden hormone deficiency. As a result, many types of metabolic processes are disrupted, dehydration occurs, and the amount of circulating blood decreases. A change in potassium metabolism affects the work of the heart muscle: it begins to contract worse, and blood pressure decreases. Kidney failure develops, blood sugar concentration drops. The state of crisis becomes life-threatening.

Classification

An Adissonian crisis unfolds over a period of several hours to several days. There is a precrisis stage, in which patients experience general weakness, muscle pain, decreased appetite, and a stage of a detailed clinical picture, characterized by progressive deterioration of well-being. Another classification is based on differences in the clinical picture. According to it, there are five forms of Addison's crisis::

1. Gastrointestinal system. Acute dyspeptic disorders come to the fore. Vomiting, nausea, diarrhea, spastic abdominal pain, and lack of appetite predominate.
2. Pseudoperitoneal. This form of crisis is clinically similar to an acute abdomen. It is characterized by sharp pains, tension of the abdominal muscles.
3. Myocardial. The leading symptoms are associated with impaired heart and vascular function. Circulatory insufficiency is manifested by cyanosis of the mucous membranes and skin, hypotension, slowing of the pulse.
4. Meningoencephalic. Neuropsychiatric disorders dominate. Focal and hallucinatory-delusional symptoms, convulsions, depression of consciousness, delirium develop.
5. Respiratory system. It is manifested by respiratory failure. Shortness of breath, general weakness, dizziness increases, and there is a feeling of lack of air.

Symptoms of an addisonian crisis

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In patients with chronic forms of adrenal insufficiency, the symptoms of a crisis increase over several days, and the rapid development of a serious condition in 3-6 hours is possible with infectious and shock conditions. Initially, patients note a decrease in working capacity, lethargy, and adynamia. Muscle weakness is so pronounced that they prefer to stay in bed most of the time, often needing care (feeding, changing clothes, toilet). When trying to get up and walk around the room, dizziness occurs, sometimes-fainting. A sharp drop in blood pressure provokes a collapse.

The characteristic "bronze", golden-brown pigmentation of the skin and mucous membranes is enhanced. Appetite is noticeably reduced to complete intolerance to the sight and smell of food. Patients complain of nausea, which with the progression of symptoms develops into indomitable vomiting. After another attack, the state of health does not improve. Abdominal pain increases: first it is concentrated in the epigastrium, then it spreads throughout the abdominal region. Acute pain is accompanied by the release of vomit with blood, black, tarry stools or diarrhea. Less often, the pain is localized in the lower back. Diarrhea and vomiting provoke dehydration of the body, loss of electrolytes.

A decrease in sodium levels and a reduction in blood volume leads to a sharp decrease in systolic and diastolic blood pressure. The organs don't get enough oxygen. Hypoxia of the brain is manifested by increased drowsiness and dizziness, confusion of consciousness. Due to a violation of blood flow in the kidneys, glomerular filtration worsens, urine volumes decrease, oliguria develops, and then anuria – Urea and nitrogen accumulate in the blood, acidosis is formed, the main sign of which is an acetone smell from the oral cavity and from the patient's skin. From the nervous system, symptoms such as seizures, pseudomeningeal syndrome, psychotic states with paranoid delusions and/or hallucinations, delirium are possible.

Complications

Without providing the patient with emergency medical care, the clinical manifestations of the addisonian crisis progress. The risk of acute heart failure with loss of consciousness, dehydration of brain tissue, and acute renal failure increases. Consciousness becomes clouded, and the skin feels cold to the touch. The pulse is barely palpable, threadlike, blood pressure is impossible to determine, heart tones are sharply weakened. A coma develops, and then death. The prevalence of deaths among women is 0.52%, among men-0.89%.

Diagnostics

Addison's crisis is an acute condition that requires urgent medical attention, so rapid diagnostic methods are more common- clinical data collection and several laboratory tests that allow you to identify metabolic disorders, differentiate the crisis with peritonitis, heart failure, celiac disease, myopathy, hyperparathyroidism and some other diseases. As a rule, the complex of examinations of the patient includes:

- Endocrinologist Survey, examination. collects anamnesis: in most cases, chronic hypocorticism is determined, as well as factors that can provoke the development of a crisis (infections, injuries, childbirth, stress, physical exertion). Complaints describe the clinical

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picture of acute adrenal insufficiency. When examining the patient, slowness of speech and movements, apathy, characteristic pigmentation of the skin, a weak slow pulse are noted.

- Urine and blood tests. A complete laboratory examination includes a general and biochemical blood test, a clinical urinalysis, a study of glucose in the blood, adrenal hormones in the urine and blood. Elevated white blood cell, red blood cell, and hemoglobin counts, increased ESR, hypoglycemia, hyperkalemia, and hyponatremia are characteristic. According to the study of urine, the appearance of protein, red blood cells, an increase in sodium is determined, and acetone may be detected.
- ECG electrocardiography . it is performed to detect hyperkalemia. Changes in the parameters are observed at a plasma potassium concentration of 7 mmol/l. There is a high pointed T wave with a normal QT interval, a reduced amplitude of the P wave with an extended PQ interval. Increased hyperkalemia is accompanied by expansion of QRS complexes, atrial asystole.

Treatment of Addison's crisis

Patients are treated in the endocrinology or intensive care unit. The main set of measures is carried out on the first day of the patient's stay in the hospital.At the end of this period, it is possible to assess the effectiveness of therapy and make a prognosis. A stable recovery period lasts 4-6 days. Treatment is carried out in four directions:

- Corticosteroid replacement therapy. Water-soluble hydrocortisone preparations are widely used. Patients are prescribed intravenous injections, less often – intramuscular.
- Elimination of dehydration, hypoglycemia. Patients are prescribed intravenous drip administration of glucose solution, saline solution, Ringer's solution. The volume of medications is calculated individually and gradually decreases by the end of treatment.
- Restoring the electrolyte balance. To compensate for hypochloremia and hyponatremia, infusions of sodium chloride solution and drinking brackish water are indicated. To eliminate hyperkalemia, a solution of glucose and calcium gluconate is administered.
- Symptomatic therapy. If necessary, measures are taken to detoxify, restore the functioning of the heart, blood vessels, and respiratory system, and combat collapse, infections, shock states, and protein metabolism disorders. Specialists in other areas are involved in the treatment.

Forecast and forecast

The outcome of an addisonian crisis directly depends on the timeliness of treatment: the earlier therapeutic measures are started, the better the prognosis. Patients with concomitant autoimmune and infectious diseases are at an increased risk of mortality. To prevent a crisis, people with chronic hypocorticism need a systematic diagnosis of adrenal function, medical monitoring of the effectiveness of maintenance treatment. Self-cancellation of medications or replacement of prescribed medications with analogues is unacceptable. In case of increased emotional or physical stress, acute diseases, pregnancy, you need to consult an endocrinologist about increasing the dosage of drugs.

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