

Primární hyperaldosteronismus

- Excessive secretion of aldosterone by the adrenal cortex.

Etiology

- 50-60% - bilateral hyperplasia of the zona glomerulosa (idiopathic hyperaldosteronism)
- 35-40% - **Conn's syndrome** - a label for a unilateral aldosterone-producing adenoma
- 5-8% - unilateral hyperplasia
- rare - familial hyperaldosteronism type I - dexamethasone suppressible (DSH) - there is a fusion of the regulatory part of the 11 β -hydroxylase gene with the coding part of the aldosterone synthase gene; the resulting chimeric gene produces large amounts of aldosterone, but it is under the control of ACTH.
- rare - carcinoma of the adrenal cortex

A condition similar to primary hyperaldosteronism can also be caused by the kidney, where a benign tumor called reninoma can develop. Its cells produce more renin and this leads to an increase in the production of aldosterone in the kidneys.

First definition of ecotoxicology (1969): René Truhaut: the study of the adverse effects of chemicals with the aim of protecting natural species and communities. Rachel Carson (1962): the memoir The Silent Spring highlights the use of pesticides, especially DDT and other agrochemicals. The book led to the establishment of the US Environmental Protection Agency (EPA) in the USA. Introduction of methods describing the toxic effects of human-produced substances on the environment and the organisms contained therein. Systematic implementation of fish toxicity testing methods. In addition to direct toxic effects, the effects of bioconcentration and bioaccumulation are studied - increases in the concentration of foreign substances in the tissues of organisms as a result of exposure from the environment.

2004 EC ratification: Persistent Organic Pollutants Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution. The aim of the protocol is to limit, reduce or eliminate the discharge, emissions and losses of persistent organic pollutants that have significant adverse effects on human health or the environment due to long-range transboundary air transport.

In 2006, Regulation No. 166/2006 of the European Parliament and the EC Council was issued, establishing the **European Register of Releases and Transfers of Pollutants**. It represents a publicly accessible database of pollutant releases into the air, water and soil, information on wastewater, information on pollutant releases from dispersed sources.

In 2003, the proposal for a new framework for legislation covering the safety of chemicals **REACH (Registration, Evaluation and Authorization of Chemicals)** was accepted by the European Commission and approved by the European Parliament. Enterprises and firms that import more than 1 ton of a chemical compound per year will be forced to register this chemical in a central data bank. The aim is to improve the protection of the health of nature, including people, to increase the innovation capacity and the ability of the chemical industry to compete in the European Union. The new measures concern not only new chemical substances introduced to the market, but also substances that have been used for a long time. The program aims to ensure that by 2020 at the latest, only chemical substances with known properties and in a way that does not harm human health and the environment are used.

Clinical

Regardless of the cause, the symptoms of the disease are the same - a high level of aldosterone has an effect on **reduced excretion of sodium** and, conversely, **increased excretion of potassium** by the kidneys. Sodium accumulates in the body, which leads to an increase in the volume of extracellular fluid (including plasma). The increase in fluid in the blood vessels leads to an increase in blood pressure with all the manifestations and complications (headaches, fatigue, nosebleeds). Long-term elevated blood pressure can be the cause of heart failure. A reduced potassium level can manifest itself in any way - from constipation, through muscle weakness, hypokalemic nephropathy (with reduced concentration ability of the kidneys manifested by nocturia) to life-threatening heart rhythm disorders.

The patient therefore has: hypertension, hypokalemia, hypernatremia.

Diagnostics

Conn's syndrome must be considered in arterial hypertension that does not respond well to treatment.

Medical images

- ultrasound of the kidneys (reninoma) and adrenal glands (tumor, bilateral hyperplasia)
- CT, MRI of the adrenal glands

Laboratory examination

- increased Na⁺ and decreased K⁺ in the blood
- hormone levels:
 - if both aldosterone and renin are high, it means that the cause of the high aldosterone is in the kidneys
 - if aldosterone is high but renin is low, it means the problem is in the adrenal glands
- examination of plasma renin activity
- stimulation tests (physical stress, furosemide)

Therapy

We choose the treatment procedure according to the cause.

- adrenal tumors – surgical removal (adrenalectomy)
- bilateral hyperplasia of the adrenal glands – conservative therapy: pharmacotherapy (spironolactone and eplerenone, which dampen the effect of aldosterone) – bilateral surgical removal of the adrenal glands is not suitable due to the great importance of their hormones.
- familial hyperaldosteronism type I - small doses of ACTH-suppressing glucocorticoids

Odkazy

Související články

- Sodium imbalance
- Diabetes insipidus
- Cushing's syndrome
- Addison's disease
- Endocrine hypertension

Zdroj

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Použitá literatura

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Kategorie:Patofyziologie Kategorie:Endokrinologie Kategorie:Vnitřní lékařství