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PREVALENCE OF HYPERALDOSTERONISM AMONG PATIENTS WITH SECONDARY ARTERIAL HYPERTENSION

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Abstract: *Hyperaldosteronism is a complicated symptom complex, one of the manifestations of which is persistent arterial hypertension. In 15% of patients with arterial hypertension, the cause is hyperaldosteronism. The only effective method of treating arterial hypertension under conditions of hyperaldosteronism is surgical removal of aldosterome.*

Key words*: hyperaldosteronism, arterial hypertension, epidemiological data.*

As is known, hyperaldosteronism is a complex pathological clinical-metabolic hormonal symptom complex, which includes syndromes of disorders of vascular tone (arterial hypertension), mineral metabolism, renal and neuromuscular disorders caused by excessive unregulated secretion of aldosterone and related mineralocorticoids. According to various statistics, the frequency of primary hyperaldosteronism among patients with persistent arterial hypertension ranges from 8 to 15%. Such clinical criteria as: persistent and poorly controlled arterial hypertension combined with arrhythmia, paresthesias, convulsions, heart pain, headache, hypertension resistant to antihypertensive therapy with at least three drugs, combination of arterial hypertension with hypokalemia, hypertension in young people , especially before the age of 20, hypertension and burdened family history of early hypertension, cases of hyperaldosteronism in the family in direct relatives are manifestations of hyperaldosteronism. For the first time, hyperaldosteronism as one of the forms of adrenal gland pathology in the form of a benign aldosterone-secreting adenoma was described in 1955 by the American researcher J. Conn (J. Conn) (1907–1981). According to modern ideas, there are 2 main types of hyperaldosteronism: primary and secondary. Primary hyperaldosteronism is a collective diagnosis characterized by an increased level of aldosterone, which is relatively autonomous from the renin-angiotensin system and does not decrease with sodium loading. An increase in the level of aldosterone is the cause of cardiovascular disorders, a decrease in the level of plasma renin, arterial hypertension, sodium retention and

accelerated excretion of potassium, which leads to hypokalemia. Primary hyperaldosteronism exists in several forms. In the presence of excessive secretion of aldosterone, the morphological substrates of each form of hyperaldosteronism can be a solitary adenoma or carcinoma (Conn's syndrome), bilateral or unilateral diffuse, micro- and macronodular hyperplasia of the glomerular zone of the adrenal cortex, an ectopic source of aldosterone production (tumor of the lung, pancreas). In addition, certain syndromes or symptoms of hyperaldosteronism of various degrees can accompany a number of cardiovascular, renal, endocrine diseases, in which there is an increase in aldosterone secretion as a result of stimulation of the adrenal cortex under the influence of the main pathological process. These forms of pathology are united in the group of secondary (reactive) hyperaldosteronism. The main clinical syndrome of hyperaldosteronism - arterial hypertension, unlike essential hypertension, belongs to the group of so-called secondary or symptomatic hypertensions. Arterial hypertension is one of the most common and severe forms of this disease. According to statistics, there are about 1 billion people with persistently high blood pressure in the world. Arterial hypertension is detected in 10–20% or more of the adult population of different regions. It is known that in Ukraine, according to the Strazhesk Institute of Cardiology, there are 11 million people with high blood pressure, which is 29.9% of the adult population of 36.7 million. As a result of examination in the clinic of the Institute of 3,495 patients with arterial hypertension, primary hyperaldosteronism, confirmed morphologically (adenoma), was found in 11 (0.3%) people. In general, by 2025, it is expected that the number of patients with arterial hypertension will increase by 15.3%, from 50.6 million to 58.4 million. Persistently elevated blood pressure is the most common cause of the development of severe cardiovascular, cerebrovascular, and renal complications (heart failure, myocardial infarction, atrial fibrillation, stroke), causing disability and mortality. Approximately 80–85% of cases of persistent arterial hypertension are due to essential hypertension. In 15–20% of patients, hypertension has a secondary origin. An increase in blood pressure can accompany a number of endocrine diseases. These include: thyrotoxicosis, hyperparathyroidism, diabetes, diseases of the adrenal glands (pheochromocytoma, hyperaldosteronism), Itsenko-Cushing's disease and syndrome, adrenogenital syndrome, some congenital genetically determined diseases, that is, in them, arterial hypertension is considered secondary. The following main forms and subtypes of hyperaldosteronism are distinguished with an indication of the frequency of birth in its structure: 1) aldosterone-secreting adenoma – 30–65% of cases, 2) idiopathic hyperaldosteronism – 35–70%: a) bilateral diffuse, diffuse-nodular hyperplasia of the glomerular zone of the adrenal cortex – 30–70%; b) unilateral diffuse, diffuse nodular hyperplasia of the glomerular zone of the adrenal cortex - 2–3%; c) a variant of hyperaldosteronism without defined changes in the size and histological structure of the adrenal glands – 2–3%, 3) aldosterone-secreting carcinoma – 1.0–1.5%, 4) familial hyperaldosteronism: a) glucocorticoid-suppressed (CA I type) – 0 .5–1.2%; b) family cases of adenoma or idiopathic hyperaldosteronism (CA type II) – 0.6–0.8% (6.0%); c) familial hyperaldosteronism type III, 5) ectopic adenoma or carcinoma secreting aldosterone (ovaries, kidneys, lungs), separate observations are described. In this classification, the group of

idiopathic hyperaldosteronism includes 3 subtypes: based on bilateral hyperplasia of the glomerular zone of the adrenal cortex, unilateral hyperplasia of the glomerular zone of the adrenal cortex, and a variant without signs of morphological changes in the adrenal glands. The reasons for the development of these subspecies are still unclear, so they will be idiopathic. Therefore, in almost all subtypes of hyperaldosteronism, the same type of diagnostic methods are used, according to the results of which therapeutic approaches are carried out. The epidemiology of primary hyperaldosteronism has undergone significant changes since the description of this syndrome by J. Konn in 1955. In the early years, hyperaldosteronism was thought to be a rare disease. His diagnostic screening was based on the detection of hyperaldosteronism in individuals with arterial hypertension and hypokalemia. Accordingly, it was diagnosed in 0.5–1.5% (maximum 3.5%) of patients, although, according to J. Konn, this value reached 20%. Such an indicator was considered excessive. Later, J. Conn revised his data and settled on the value of 7.1%. As understanding of this pathology expanded, as well as thanks to the introduction of effective diagnostic methods (determination of the aldosterone/renin ratio, computer tomography, angiography of the adrenal glands with separate blood sampling, etc.), a significant number of patients with normokalemia, hyperplastic forms of hyperaldosteronism were identified. A more objective frequency of primary hyperaldosteronism among patients with persistent arterial hypertension was determined. According to the research of P. Mulatero et al. (2004), who were engaged in the diagnosis and treatment of hyperaldosteronism, found that the frequency of detection of hyperaldosteronism in patients with arterial hypertension increased 5–15 times when new approaches were used. Annually, the number of diagnosed aldosterone-secreting adenomas increased by 1.3–6.3 times. It was found that the number of normokalemic forms of the disease was 9–37%. It is known that type 2 diabetes in 50-70% of cases is combined with arterial hypertension, which is difficult to treat, which is the reason for the increase in the number of cardiovascular complications in such patients. Hyperinsulinemia stimulates the production of aldosterone, which causes the development of persistent hypertension. During the examination of 100 patients with type 2 diabetes and persistent hypertension, primary hyperaldosteronism was diagnosed in almost 13% of cases, of which 6 (46%) patients had a blood potassium level of less than 3.5 mmol/l and 8 (61.5%) discovered a surgically correctable form of the disease. Therefore, it is advisable to screen for hyperaldosteronism among patients with diabetes in combination with arterial hypertension. In general, data on the incidence of primary aldosteronism are not numerous. Children get sick very rarely. The frequency of the disease does not always depend on age. Women predominate among patients. The authors of individual works stated that there were no age and gender differences. The frequency of development of hyperaldosteronism clearly depends on the degree and duration of increased blood pressure. According to C. NewtonChen, C. Guo, P. Gona et al. (2017) during the screening of patients with hypertension of the I degree, hyperaldosteronism was detected in 1.99% of patients, II - in 8.02%, III - in 13.2%. Thus, according to epidemiological and clinical data, it is almost impossible to distinguish essential hypertension from hyperaldosteronism. Preliminarily, this can be

done by evaluating some laboratory parameters, but the correct diagnosis can be established after final verification. Diagnosis of hyperaldosteronism syndrome, like any other disease, consists of an assessment of the clinical picture and a complex of laboratory and instrumental studies. The main diagnostic methods are the study of aldosterone content and renin activity in the blood in combination with functional tests and the use of topical diagnostic methods. In connection with the widespread spread of arterial hypertension among the population in various regions, the question arises whether it is necessary to examine for the presence of hyperaldosteronism all patients with arterial hypertension? From a practical point of view, this is hardly possible and also requires significant funds. Therefore, there is a need to define categories of patients who are subject to special examination in order to find this pathology. These include those who have: persistent poorly controlled hypertension in combination with headache, heart pain, paresthesias, convulsions, arrhythmia, polyuria, diabetes; hypertension resistant to antihypertensive therapy with at least three drugs, one of which is a diuretic; combination of arterial hypertension with hypokalemia, isolated or with hypernatremia, disturbances of acid-alkaline balance; hypertension in young people, especially under 20 years; incidentaloma of the adrenal gland, subject to examination for not only hyperaldosteronism, but also other pathology (Cushing's syndrome, pheochromocytoma, etc.); suspicion of symptomatic hypertension of another origin (phaeochromocytoma, secondary hyperaldosteronism); hypertension and burdened family history in the aspect of early development of hypertension, especially in combination with acute cerebrovascular complications, up to 40 years; cases of hyperaldosteronism in the family in direct relatives. Additional signs that allow us to suspect the presence of hyperaldosteronism syndrome can be the combination of arterial hypertension with hypokalemia, the presence of characteristic neuromuscular symptoms, and kidney function disorders. True, the assessment of the latter should be approached with caution. Additional landmarks can be characteristic changes in urine analysis, acid-base balance, but these are not clinical, but laboratory indicators.

Conclusions. Arterial hypertension is a very common pathology and the main clinical syndrome of hyperaldosteronism, which in its manifestations does not differ significantly from essential hypertension. This information is important and will draw the attention of practicing doctors to the existence and course of various forms of hyperaldosteronism as a nosology, about which many have rather vague ideas. A more detailed coverage of these issues can become a subject for further research.

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