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A CLINICAL PHARMACOLOGICAL APPROACH TO THE USE OF DRUGS IN ARTERIAL HYPERTENSION SYNDROME

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ABSTRACT

Currently, cardiovascular diseases (CVD) firmly hold 1st place among all causes of mortality in economically developed countries, being one of the most common pathologies among chronic non-communicable diseases. However, since the 2nd half of the 20th century, a steady decline in mortality from CVD has been observed in Western Europe and North America. This trend has been observed in recent years in Eastern European countries.

Keywords: cardiovascular diseases, pathology, method, treatment.

INTRODUCTION

According to a survey [4] of more than 14 thousand people of both sexes over 15 years of age, the prevalence of arterial hypertension (AH) among women was 41.1%, among men – 39.3%. Hypertension often develops in able-bodied, creatively active individuals, significantly limiting their social, labor and creative activity, exacerbating socio-economic problems in society [1–4]. Currently, the term “arterial hypertension” refers to the syndrome of increased blood pressure (BP) associated with hypertension and symptomatic hypertension. It must be emphasized that there is practically no semantic difference in the terms “hypertension” and “hypertension”. As follows from the etymology of these words, hyper (from the Greek “above”, “above”) is a prefix indicating an excess of the norm; the words tensio (Latin) and tonos (Greek) are translated as “tension.”

MATERIALS AND METHODS

The diagnosis of hypertension is established if the increase in blood pressure is above 140/90 mmHg. Art. recorded on at least two follow-up visits to the doctor after the initial examination. The following stages of hypertension are distinguished (WHO):

• Stage I – there are no objective manifestations of target organ damage;

• Stage II – target organ damage is detected: left ventricular hypertrophy, ultrasound signs of arterial wall thickening or atherosclerotic plaques, a slight increase in blood creatinine concentration (115–133 μmol/L in men and 107–124 μmol/L in women);

• Stage III – associated clinical conditions, indicating the possibility of their complicated course with increased blood pressure.

These include cerebrovascular diseases (ischemic and hemorrhagic stroke, transient ischemic attacks), heart diseases (myocardial infarction, angina pectoris, coronary revascularization, heart failure), kidney diseases (diabetic nephropathy, renal failure), peripheral arteries (dissecting aortic aneurysm), hypertensive retinopathy (hemorrhages or exudate, swelling of the optic nerve nipple), etc.

According to ICD-10, the following are distinguished:

- I10 Essential (primary) hypertension.
- I11 Hypertensive heart disease (hypertension with primary damage to the heart).
- I12 Hypertensive (hypertensive) disease with predominant kidney damage.
- I13 Hypertensive (hypertensive) disease with primary damage to the heart and kidneys.
- I15 Secondary hypertension.

RESULTS AND DISCUSSION

Clinical picture. Initially, the disease is asymptomatic. With an increase in blood pressure, aching pain in the heart area, headache, dizziness, tinnitus, flashing "spots" before the eyes may appear, and some patients experience nosebleeds. The heart expands to the left and down due to hypertrophy and dilatation of the left ventricle. There is an accent of the second tone over the aorta. Hypertension gradually leads to the development of diastolic cardiac dysfunction, heart failure, and dyscirculatory encephalopathy. Late stages of the disease are characterized by the development of complications in the form of strokes, angina attacks, decreased vision, blindness, etc.

To stratify risk, it is necessary to evaluate risk factors, target organ damage or associated clinical conditions. Risk assessment is carried out taking into account gender, age, smoking, systolic blood pressure (SBP) and cholesterol concentration.

Diagnostics. It is based on identifying an increase in blood pressure (>140/90 mm Hg) and excluding the secondary nature of hypertension in other diseases. Hypertension is characterized by target organ damage. Heart damage can be diagnosed using objective methods (displacement of the left border of the heart to the left, emphasis of the second tone on the aorta), ECG and EchoCG. An examination of the fundus is carried out to diagnose hypertensive angiopathy or retinal angiosclerosis. An increase in creatinine concentration indicates kidney damage.

In recent years, 24-hour blood pressure monitoring has become increasingly common. The presence of hypertension is indicated by an average daily blood pressure ≥130/80 mm Hg. Art. according to ABPM data. Normally, the degree of reduction in blood pressure at night is 10–20% ("dipper" type). In patients with hypertension, the "non-dipper" (slight night-time decrease in blood pressure) and "night-peaker" (night-time increase in blood pressure) types are more often detected.

Ultrasound of the kidneys and adrenal glands may also be additionally performed; brachiocephalic and renal arteries, chest radiography; determination of the ankle-brachial index; pulse wave velocity (an indicator of the rigidity of the main arteries); quantitative assessment of proteinuria.

In case of complicated hypertension and suspicion of its secondary nature, an assessment of the condition of the brain, myocardium, kidneys, and main arteries is necessary; identification of secondary forms of hypertension - study of blood concentrations of aldosterone, corticosteroids, renin activity; determination of the level of catecholamines and their metabolites in daily urine and/or blood plasma; abdominal aortography; computed tomography or magnetic resonance imaging of the adrenal glands, kidneys and brain.

Treatment. The goal of hypertension treatment is to maximally reduce the overall risk of cardiovascular complications (CVC) and mortality, which involves not only correction of blood

pressure levels, but also the elimination of reversible risk factors, as well as reducing the degree of target organ damage. You should strive to stabilize blood pressure in the range of optimal or normal values (<140/90 mmHg). In young and middle-aged patients, as well as patients with diabetes mellitus (DM), the blood pressure level should not exceed 130/85 mm Hg.

In grade 1 hypertension with low risk, non-drug therapy is started. Reducing salt intake from 10 to 4.5 g/day. allows you to reduce the SBP level by 4–6 mm Hg. A decrease in excess body weight by 10 kg leads to a decrease in blood pressure by 5–20 mmHg. It is recommended to limit the intake of alcoholic beverages, increase physical activity, quit smoking, treat chronic diseases that cause secondary hypertension, and eliminate exposure to occupational hazards (vibration, noise, ultrasound, mercury, lead) [2,3].

It is generally accepted that the choice of medication for initial treatment of hypertension should be individualized, taking into account the presence of risk factors, target organ damage and the presence of concomitant diseases. Currently, the main pharmacological groups of drugs with a proven antihypertensive effect are ACE inhibitors, angiotensin II receptor blockers, calcium antagonists, diuretics, and β-blockers. In this case, the choice of the used group of drugs and the drug is determined by the specific clinical situation, the clinical and pharmacological characteristics of the drug, the presence of concomitant diseases and complications of hypertension.

CONCLUSION

When taken orally, Normodipine is slowly and almost completely absorbed from the gastrointestinal tract, regardless of food intake. The bioavailability of Normodipine is high and ranges from 60 to 80%. The volume of distribution of the drug is on average 20–21 l/kg body weight, which is significantly more than that of other representatives of the dihydropyridine series. In serum, 95–98% of the drug dose is bound to plasma proteins. The maximum concentration of Normodipine in the blood is achieved 6–12 hours after administration. The duration of action of the drug is due to its slow release from the binding sites of the receptors.

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