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Efficacy of calcium antagonists in the treatment of older patients with arterial hypertension and diabetes mellitus

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Abstract There is no doubt that amlodipine is the best choice among dihydropyridine AAs. In numerous open and double-blind randomized trials in patients with hypertension, amlodipine at a dose of 5-10 mg 1 time per day caused a gradual decrease in blood pressure and did not have a significant effect on the heart rate.

Keywords

Relevance. Patients with arterial hypertension (AH) and diabetes mellitus (DM) deserve special attention, since both diseases significantly increase the risk of developing micro- and macrovascular lesions, including diabetic nephropathy, cerebral stroke, coronary heart disease, myocardial infarction, chronic heart failure, peripheral vascular diseases, and contribute to an increase in cardiovascular mortality [1, 2, 6]. Patients should pay particular attention to non-pharmacological interventions related to lifestyle changes, such as adherence to a low-calorie diet, increased physical activity and restriction of salt intake, since obesity plays an important role in the progression of type 2 diabetes. Weight loss in patients with hypertension and diabetes helps to further lower blood pressure (BP) and increase tissue sensitivity to insulin. The drugs of first choice are angiotensin-converting enzyme (ACE) inhibitors and AT1

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receptor blockers, since the best renoprotective effect has been proven for them [3, 4, 5].

There is no doubt that amlodipine is the best choice among dihydropyridine AAs. In numerous open and double-blind randomized trials in patients with hypertension, amlodipine at a dose of 5-10 mg 1 time per day caused a gradual decrease in blood pressure and did not have a significant effect on the heart rate. The minimum effective dose of amlodipine is 2.5 mg / day, however, a large clinical effect is observed when a dose of 5-10 mg / day is used. In addition to its high antihypertensive efficacy, AK has been proven to have an organoprotective effect and a positive effect on the risk of cardiovascular complications and death. In the large SHEP study (Systolic Hypertension in the Elderly Program, 1991), long-acting dihydropyridine calcium antagonists reduced cardiovascular morbidity and mortality in the same way as diuretics and β-blockers [7, 8].

The aim of the study was to study the efficacy of calcium antagonists in older patients with hypertension and diabetes mellitus.

Material and research methods. The study included 84 patients (48 men and 36 women) aged 60 to 78 years (the average age of patients was 62 ± 9.3 years), all patients had AH of I-II degrees (recommendations of VNOK, 2004) against the background of type 2 diabetes compensated. The duration of Diabetes mellitus was 18 years, and AH 9.5 ± 1.0 years.

The patients were prescribed amlodipine (Amaday, Ajanta Pharma Limited, India) at an initial daily dose of 5 mg. The effectiveness of the drug was evaluated 3 months after the start of therapy. In the absence of an adequate response to therapy (maintaining blood pressure 150/90 mm Hg or lowering less than 20 mm Hg for systolic blood pressure and / or less

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than 10 mm Hg for diastolic blood pressure), the dose of the drug was increased to 7.5 -10 mg / day. If necessary, indamapid was added to the therapy at a dose of 1.5 mg / day. Throughout the study, the use of other antihypertensive drugs was prohibited.

All patients initially and after 3 months underwent a general clinical examination, an assessment of the quality of life (QOL), an ECG study, 24-hour blood pressure monitoring (ABPM), echocardiography, measurement of the reaction of the brachial artery to reactive hyperemia, determination of the blood lipid spectrum, and fasting glycemia level.

Statistical processing of the materials was carried out. Using the Microsoft Application Program - STATISTICA.

Results and its discussion. Adverse reactions were noted in 3 patients: peripheral edema - in 1, a feeling of heat ("hot flashes") - in 1, a feeling of rapid heartbeat - in 1. Their severity in most cases was insignificant and did not require discontinuation of the drug.

Note: * - p <0.05 reliability of values in relation to the original data

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Fig. 1. Blood pressure indicators after therapy (mm Hg)

As can be seen from the data obtained, at 3 months, there is a significant decrease in SBP by 22% ($p < 0.05$), DBP by 22% ($p < 0.05$), while the heart rate remains unchanged. The normalization of blood pressure was confirmed by the results of ABPM, which revealed a statistically significant decrease in daytime and nighttime systolic and diastolic blood pressure. The proportion of patients with normal circadian BP rhythm (dippers) increased from 29 to 56%, and patients with insufficient decrease in blood pressure at night (non-dippers) decreased from 57 to 38%.

Under the influence of therapy with amlodipine for 3 months in response to reactive hyperemia, an increase in the increase in the diameter of the vessel by 12% ($p < 0.002$) is noted, which indicates an improvement in the functional state of the endothelium against the background of drug therapy. In the group with a positive test, patients already after 15 days had a statistically significant decrease in SBP and DBP, and after 2 months they reached the target BP values ($p < 0.002$), while the heart rate did not significantly increase.

3 months after therapy with amlodipine, a significant decrease in the left ventricular myocardial mass index (LVMI) by 13% ($p < 0.01$), a decrease in the thickness of the posterior wall of the left ventricle (LVDV) by 8%, and the thickness of the interventricular septum (IVS) by 8 , 3% ($p < 0.05$) and an increase in the left ventricular ejection fraction (EF) by 9% was found.

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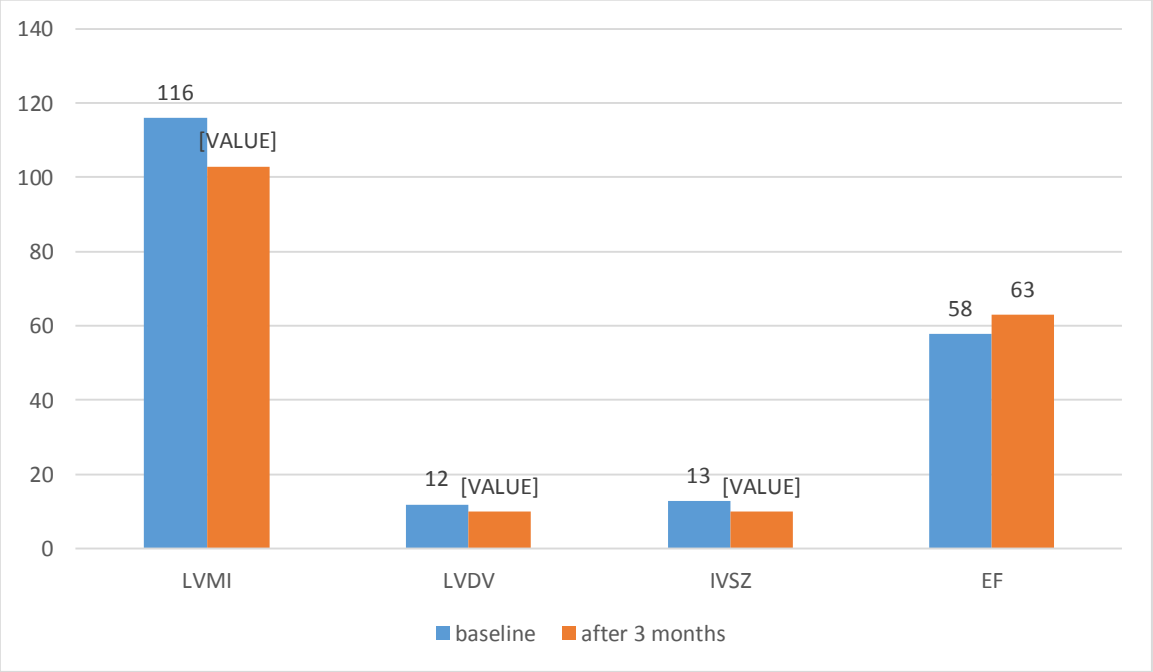

Fig. 2. ECHOKG indicators after therapy (mm,%)

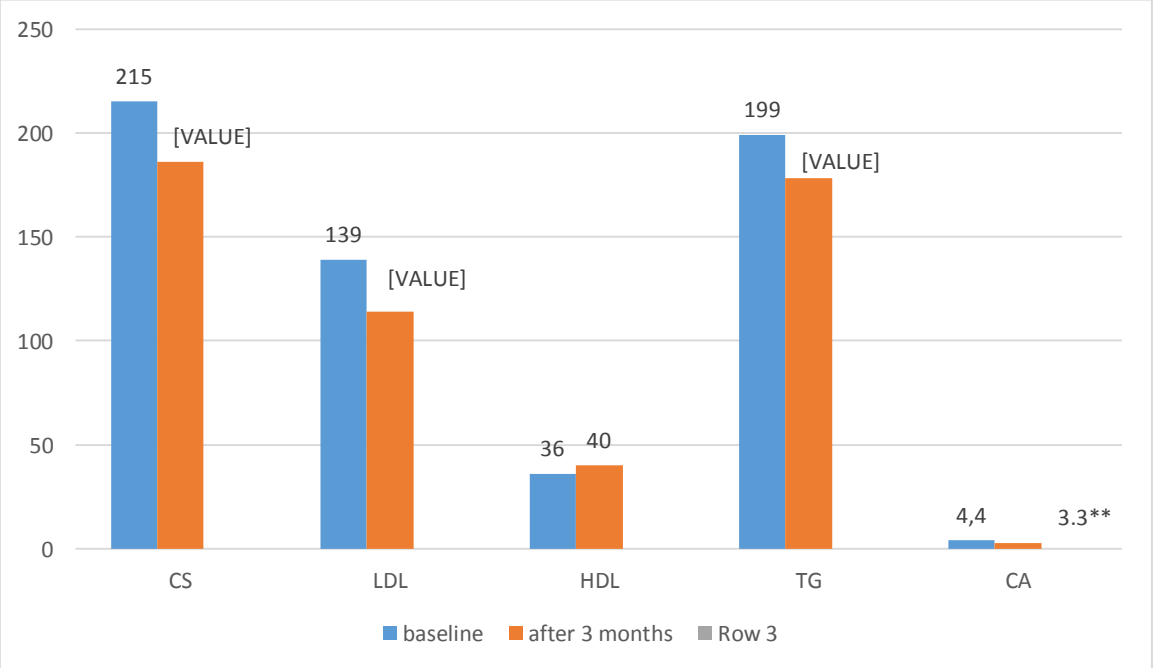

Fig. 3. Indicators of lipid metabolism in the blood after therapy (mg / dl)

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After a three-month course of treatment, patients showed a significant decrease in total cholesterol (CS) by 16% ($p < 0.05$), atrogenicity coefficient (CA) by 33% ($p < 0.01$), triglyceride (TG) levels by 12% ($p < 0.05$) and low density lipoproteins (LDL) by 22% ($p < 0.01$).

The blood sugar content averaged 6.8 ± 1.1 mmol / L at the first visit, and after the therapy, 6.2 ± 1.0 mmol / L. Amlodipine was neutral in relation to carbohydrate metabolism in patients with arterial hypertension and diabetes mellitus.

Within the framework of this study, a questionnaire was conducted using the universal questionnaire SF-36 to determine various aspects of the quality of life. The questionnaire includes 36 questions, which are grouped into 8 headings. It was found that for all studied aspects in patients with hypertension and diabetes, the average score was significantly lower. After 3 months, the indicator of physical functioning statistically significantly increased when compared with the initial values by 12% ($p < 0.01$). Role functioning due to physical condition in subsequent visits increased statistically significantly compared to the primary values and amounted to 58 ± 22 ($p < 0.01$). Along with this, the indicator of pain intensity and the indicator of general health increased by 18% ($p < 0.01$), the indicator of role functioning by 16% and mental health by 17% ($p < 0.01$), respectively.

Conclusion

1. 1. Amlodipine - Amaday is an effective antihypertensive drug.
2. (2) The obtained data indicate a high vasoprotective activity of amlodipine in elderly hypertensive patients with diabetes mellitus.
3. The metabolic neutrality of Amaday in relation to carbohydrate metabolism in patients with diabetes mellitus was established, at the

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same time, against the background of the studied drug, a significant decrease in atherogenic lipid fraction was revealed.

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