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CURRENT APPROACHES TO TREATMENT OF CHRONIC KIDNEY DISEASE COMPLICATED NEPHROGENIC HYPERTENSION

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SUMMARY

Objective: to estimate the comparative aspect of the influence of amlodipine and Nebilet for remodeling heart patients with CKD stage III with moderate nephrogenic hypertension. MATERIALS AND METHODS: The study included 40 patients with renal arterial hypertension, which developed due to chronic kidney disease. RESULTS: The study found patients with CKD stage III with moderate nephrogenic hypertension has a violation of intracardiac hemodynamics. CONCLUSIONS: These data show an improvement of intracardiac hemodynamics in all patients after 3-month therapy with amlodipine and nebilet.

Keywords

Renal hypertension, myocardial remodeling, glomerular filtration rate, myocardial hypertrophy, β-blockers, amlodipine, nebilet.

Nephroprotective treatment is common for all kidney pathologies and is aimed at slowing the progression of chronic kidney disease. Basically, slowing down the process is achieved by blocking the renin-angiotensin-aldosterone system. A number of drugs are used for this: angiotensin receptor blockers, direct renin inhibitors, angiotensin-converting enzyme blockers, aldosterone antagonists, and so on. Also, in nephroprotective treatment, it is important to reduce the level of proteinuria by normalizing intraglomerular hypertension and protecting the proximal epithelium from endocytosis of proteins. When cholesterol levels increase, drugs from the group of statins (simvastatin, atorvastatin and others) are also prescribed, which not only normalize fat metabolism, but also have an additional beneficial effect on the vascular wall and kidneys. For the purpose of cardioprotection, low doses of aspirin are prescribed.

Purpose of the study: to evaluate in a comparative aspect the effect of Amlodipine and Nebilet on cardiac remodeling in patients with stage III CKD with moderate NAH.

Materials and methods of research. The study included 40 patients with nephrogenic arterial hypertension that developed as a result of chronic kidney

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disease. The age of the patients ranged from 30 to 48 years and averaged 36.6 ± 7.3 years. All patients were treated as inpatients at the Republican Scientific and Practical Center of Nephrology at the III TMA Clinic from October 2012 to November 2013. Most of the patients were between 30 and 40 years old, i.e. during the working period. The duration of the disease ranged from 8 to 18 years, in the vast majority of cases (30 patients) were within the range of 7-14 years, averaging 10.5+3.1 years. There were 22 patients living in the city, 18 rural residents.

The diagnosis was established on the basis of subjective, objective symptoms, clinical, laboratory and instrumental examinations (including echocardiography - EchoCG), and in some patients kidney biopsy. The examination showed that the blood pressure level in all patients was significantly higher than normal values, which was one of the selection criteria for the study. After the initial examination and verification of the diagnosis, all patients were prescribed the following drugs: according to indications, antibacterial drugs (III generation cephalosporins), antiplatelet agents, antioxidants, detoxification agents. As an antihypertensive drug, 20 patients who made up the first group (I) took the antihypertensive drug Amlodipine (Norvasc, Pfizer, Belgium) at a daily dose of 10 mg. The second group (II) also consisted of 20 patients who, as part of complex therapy, received Nebilet (nebivalol, Berlin-Chemie, Germany) at a daily dose of 5 mg. The duration of inpatient treatment is on average ± 10 days, the outpatient stage of treatment and observation is 3 months. No complications from the therapy were observed. All patients upon admission were examined for general blood count, general urinalysis, Nechiporenko urine analysis, biochemical blood parameters (urea, creatinine, coagulogram, GFR), bacteriological urine culture, as well as kidney ultrasound, ECG, EchoCG. Part of the study was carried out over time (UBC, UAM, urine analysis according to Nechiporenko, urea, creatinine, GFR). After 3 months, these patients were monitored for urea, creatinine, GFR.

Results and their discussions. Our study revealed that an analysis of the antihypertensive effectiveness of amlodipine showed that after 90 days of treatment with the drug, in the whole group there was a significant decrease in blood pressure by 25% (5 patients); the target blood pressure level was achieved in 75% (15 patients) of patients. According to other authors (11), a good antihypertensive effect of amlodipine was recorded in 61-91% of patients with hypertension. The most pronounced antihypertensive effect of amlodipine was observed in patients with eccentric LVH by 28% ($p < 0.005$) and concentric LVH by 18%, while in patients with concentric restructuring and normal LV geometry the antihypertensive effect was minimal.

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In all patients, except for patients with concentric reorganization of the LV, amlodipine reduced IOPSS and increased CI. In patients with concentric changes in the LV, treatment with amlodipine was accompanied by only a moderate decrease in IOPS by 6.9%, while the CI value remained virtually unchanged. A significant decrease in IOPS by 40.8% ($p < 0.02$) was observed in patients with eccentric LVH, which led to the most pronounced antihypertensive effect. In patients with normal LV geometry, a decrease in IOPS by 27.6% ($p<0.01$) was accompanied by a significant increase in CI value by 34.6% ($p<0.01$), which did not allow the antihypertensive effect of the drug to develop in these patients. In all patients, except for patients with normal LV geometry, amlodipine reduced LVMI. In patients with eccentric LVH, there was a significant decrease in LVMI by 21.6%, from 144.4±1.2 to 113.1±1.8 g/m2 ($p<0.01$).vAfter a course of treatment with amlodipine, all patients showed an improvement in LV DF. It was most noticeably expressed in patients with normal LV geometry, where E/A increased by 40.7%, from 0.86±0.20 to 1.21±0.18 ($p<0.03$). In patients with concentric LVH, the E/A indicator increased by 13.5%, and with concentric LV remodeling by 18.2%. In patients with eccentric LVH, E/A increased slightly, which is apparently due to its relatively high initial values.

Thus, during treatment with amlodipine, the type of LV geometry affects not the direction, but the severity of the hemodynamic and antihypertensive effects of the drug, the degree of LV DF.vDuring treatment with Nebilet, a significant decrease in blood pressure was observed in the whole group; target blood pressure was achieved in 90% (18 patients) of group II patients. A similar antihypertensive effect of Nebilet was obtained in other clinical studies. Nebilet had a significant antihypertensive effect. In patients with normal geometry and concentric LVH, the leading cause of decrease in blood pressure was a decrease in IOPSS ($p < 0.05$). It was noted that when treated with Nebilet in some patients, the drug caused a slight decrease in blood pressure and a significant decrease in LVMI. This fact possibly indicates that when treated with Nebilet, the reverse development of LVH occurs not so much due to a decrease in blood pressure, but as a result of the direct effect of the drug on the structure of the myocardium. Treatment with nebilet was accompanied by an improvement in LV DF. The E/A indicator increased in patients with concentric LVH by 14.6%, in patients with concentric LVH by 47.4%, from 0.97±0.11 to 1.43±0.13 ($p<0.05$) and in patients with normal geometry by 12.5%. In patients with eccentric LVH, there were no significant changes in the E/A indicator. The antihypertensive effectiveness of Nebilet, the direction and severity of hemodynamic disturbances, and structural changes in the myocardium are closely related to the types of LV remodeling.

Conclusions: In patients with stage III CKD with moderate NAH, there are disturbances in intracardiac hemodynamics (decrease in CI, CI and increase in IOPSS). The use of Amlodipine and Nebilet in patients with stage III CKD with moderate NAG is well tolerated by patients without the development of negative side effects and leads to the achievement of the target blood pressure level with a more pronounced antihypertensive effect. As a result of 3 months of therapy with Amlodipine and Nebilet, intracardiac hemodynamics improved in all patients, except for patients with initial eccentric LVH who received Nebilet.

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