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EARLY DIAGNOSIS OF KIDNEY DYSFUNCTION AND TREATMENT OPTIMIZATION IN CORONARY HEART DISEASE

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Abstract:

Coronary heart disease (CHD), caused by atherosclerosis, is one of the main causes of disability and mortality throughout the world, including in Uzbekistan. This article represents the results of optomozes therapy of patients with stable angina based on the early diagnostics of renal dysfunction. As a result of treatment, positive clinical dynamics were observed in both groups, but in the second group this result was more pronounced. It has been shown that early detection of renal dysfunction markers and combined lipid-lowering agents in combination with traditional therapy in patients with stable angina is more reliably effective than monotherapy.

Keywords: Atherosclerosis, coronary heart disease, risk factor, dyslipidemia, statins, impaired renal function, glomerular filtration rate, cystatin S, creatinine.

Currently, cardiovascular disease (CVD) is an urgent problem of medicine, and it is considered one of the most widespread diseases among the population . In recent years , the increase in the average life expectancy of patients due to the improvement of the lifestyle of the elderly , the early diagnosis of acute CKD and the widespread implementation of effective treatment methods have led to an increase in the number of patients with a number of comorbid conditions suffering from these diseases. Chronic kidney disease (CKD) is particularly important among the comorbid diseases observed in patients with CKD, and it is included in the group of leading risk factors (RISK FACTORS) leading to and aggravating cardiovascular system diseases (CVD) [2, 4, 12, 20] . In stable types of this disease, kidney kidney dysfunction (BD) begins in the early stages of the disease, but its first clinical symptoms are detected in the late stages of the main disease or when they are complicated [1, 4, 6, 16, 18]. According to studies conducted in different populations, the prevalence of chronic kidney disease (CKD) is 10-13%, reaching 20% in groups with high total cholesterol. According to the USRDS (The United States Renal Data System) American registry, among the population over 65 years of age with BD, coronary atherosclerosis (16.5% vs. 42.5%) and MI (2% vs. 10%) are more common than those with intact kidney function. noted [3, 5, 7, 14].

Heart and kidney diseases have "traditional" risk factors, such as general arterial hypertension, diabetes, obesity, dyslipidemia, and "non-traditional" ones, such as hyperhydration, anemia, phosphorus-calcium metabolism disorders, systemic inflammation, and hypercoagulation, which together have a pathogenetic effect on the development of CKD. renal factors are added. Epidemiological and population studies show that even the earliest subclinical impairment of renal function has an independent effect on the development of CKD and their complications, as well as mortality. Renal dysfunction (BD) increases the number of cardiorenal complications, thus causing premature death [8, 10, 15, 17, 21] .

When BD is detected in patients with CKD, regardless of the type of existing comorbid conditions, it is necessary to stabilize the main disease and eliminate the factors that have a negative effect on kidney function. In drug treatment, drugs with nephroprotective and cardioprotective effects are usually selected. Treatment should be aimed at reducing proteinuria, normalizing blood pressure (BP), eliminating existing anemia and hyperuricemia, balancing dyslipidemia, phosphorus-calcium metabolism, insulin resistance, and hypersympatheticotonia [1, 6, 7, 9, 11, 17, 19] .

It is known that kidney damage in CKD is accompanied by hyper- and dyslipidemia, increased amount of pro-inflammatory cytokines in blood serum, endothelial dysfunction, and in turn has a negative effect on the outcome of the main disease. [6, 7, 13, 18]. The effectiveness of the use of statins is shown by their pleiotropic, i.e. improvement of endothelial activity, vasodilation, antiproliferative, immunosuppressive

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properties, antiischemic and antithrombotic and anti-inflammatory effects.

At the same time, in order to reduce the side effects of drugs (especially severe myopathies), it is considered appropriate to reduce the daily amount of statins and to use them together with ezetimibe. Ezetimibe, in turn, reduces low-density lipoprotein (LDL) by 15-22% by preventing the absorption of erisk factorsgenous and endogenous cholesterol in the small intestine and increases the effectiveness of treatment [1, 11, 14].

Scientific research aimed at early detection of BD in patients with IUD and prevention of its exacerbation and complications is one of the urgent problems of medicine today, and we set ourselves the goal of studying it.

Material and methods: In 2020-2022, 167 patients with stable aspiration angina II-III-IV FS with an average age of 61.47±8.42, who were treated in the cardiology and cardiorehabilitation departments of the multidisciplinary clinic of the Tashkent Medical Academy, took part in this research. 112 (67.1%) of them were men (average 61.29±8.3 age) and 55 (32.9%) women (average 61.85±8.7 age) formed. The diagnosis was based on the classification criteria adopted by the European Society of Cardiology (ESC Guidelines for the diagnosis and management of chronic coronary syndromes). All patients were followed up in an outpatient setting for 6 months after inpatient treatment. They underwent electrocardiography (ECG), Holter monitoring, echocardiography (Erisk factorsKG), kidney and neck vein dopplerography, as well as biochemical blood analysis before and after treatment. In order to evaluate kidney function, blood creatinine, cystatin S, and urine protein were determined. Alternatively, GFT was calculated based on serum creatinine and cystatin S.

According to the patient's complaints, anamnesis, clinical and laboratory tests, no specific symptoms of BD were observed, but when GFT was calculated based on serum creatinine and cystatin, BD was detected in 33.5% of them. Based on the recommendations of the European Society of Cardiology, the patient was prescribed an angiotensin-converting enzyme inhibitor (AAFI), β -adrenoblocker, anetiagrigant, statin, if necessary, nitrate, diuretic, antiarrhythmic drugs, taking into account the existing clinical symptoms, risk factors and comorbid conditions. Ezetimibe 10 mg (rozulip plus 20/10 mg) was given along with rosuvastatin 20 mg to balance hypercholesterolemia and dyslipidemia .

Discussion of research results: GFT in the control patients was calculated using the CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration, 2021) formula based on blood creatinine and cystatin S, and based on the obtained results, they were divided into 2 groups. The first group consisted of 111 (66.5%) patients with GFT ≥ 90 ml/min/1.73 m 2 , and the second group consisted of 56 (33.5%) patients with GFT≤ 89 ml/min/1.73 m 2 . Correlation of GFT with other indicators is presented in Table 1.

Table 1
Correlation of risk factors with renal dysfunction in ischemic heart disease

Indicators	All patients n = 167		p
	GFT ≥ 9 0 ml/min/1.73 m ^{2} (n= 111)	CFT ≤ 89 ml/min/1.73 ^{m2} (n= 56)	
Men , n(%)	91 (81.9%)	21 (37.5%)	X ^{2} =33.34 P< 0.001
Women , n(%)	20 (18.1 %)	35 (62.5%)	X ^{2} =33.34 P< 0.001
Average age	58.6±0.71	67.16±0.97	P<0.05
Diabetes, n (%)	17 (15. 3%)	20 (35.7%)	X ^{2} = 8.98 P<0.0 0 1
Smokers , n (%)	22 (19.8 %)	8 (14.3%)	X ^{2} =0.774 P>0.05
Had a history of myocardial infarction , n (%)	13 (11.7 %)	6 (10 %)	X ^{2} =0.037 P>0.05
Arterial hypertension in the anamnesis, n (%)	91 (82 %)	5 0 (89.3%)	X ^{2} =33.34 P< 0.001
Proteinuria, n (%)	54 (48.6%)	47 (83.9%)	P<0.05

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According to the data presented in Table 1 above, men made up 81.9% of the first group and 37.5% of the second group (X 2 =33.34 P<0.001). There were more women in the second group compared to the first, 18.1% and 62.5%, respectively (X 2 =33.34 P<0.001). At the same time, the second group consisted of reliably older patients (r <0.005). When analyzing the comorbid conditions identified in the patients, in the first and second groups, respectively, those suffering from diabetes were 15.3% /35.7% (X 2 =8.98 P<0.001), those with AG were 73.4% /79.5% (r < 0.01), anemia – 23.4% /41.0% (r <0.001) , those with a history of stroke 10.2 /12.8%, those with MI 24.2% /35.9% (r <0.001), and the comorbidity index (CI) was 7.3/8.7 points (r <0.001). Proteinuria was detected in 48.6% of patients in the first group, and in 83.9% of patients in the second group (X 2 =33.34 P<0.001). The level of proteinuria was higher in patients with history of AG, DIABETES.

When GFT was calculated based on creatinine and cystatin C, the results obtained in both groups of patients were significantly different, and the percentage of patients with BD was found to be higher (p < 0.001).

2- table

Comparative analysis of kidney function indicators and biochemical analysis results in groups (n = 167) .

Indicators	GFT ≥ 9 0 ml/min/1.73 m ^{2} (n= 111)	CFT ≤ 89 ml/min/1.73 ^{m2} (n= 56)	P
Creatinine, (mmol/l)	65.8 ± 6.9	91.4 ± 7.7	P < 0.05
Cystatin S (mg/l)	1.2 ± 0.01	1.3 ± 0.02	P < 0.05
GFT is based on creatinine, based on ml/min/1.73m ^{2} .	99.9±1.6	79.9 ± 1.4	P<0.001
GFT based on cystatin S, ml/min/1.73m ^{2} based	91.8±1.6	72,4 ±1,3	P<0.001
Proteinuria (g/l)	0.005 ± 0.018	0.017 ± 0.048	P > 0.05

In the first group of patients, serum creatinine was 65.8 ± 6.9 mmol/l, cystatin S was 1.2 ± 0.01 mg/l, and in the second group these indicators were 91.4 ± 7.7 mmol/l and 1, respectively . 3 was ±0.02 mg/l (p< 0.05). GFT calculated based on serum creatinine was 99.9±1.6 in the first group and 79.9±1.4 ml/min/1.73m 2 in the second group (P <0.001) . 91.8±1.6 and 72.4±1.3 ml/min/1.73m 2 , respectively , and it was observed that it was lower than that calculated on the basis of creatinine (r <0.05) .

59.3% (99) had GFR ≥ 90 ml/min/1.73 m 2 , and 40.7% (68) had GFR ≤ 89 ml/min/1.73 m 2 (r <0.05) . According to this result , when GFT was calculated on the basis of cystatin S, compared to those determined on the basis of creatinine, people with BD were 7.2% more frequent (r < 0.05) . It was observed that the number of patients in the second group, i.e., with BD, was mainly increased by the number of older women who had diabetes, GK in their anamnesis, who underwent MI. Proteinuria in groups when checked, the second group was 29.4% higher than the first, but the result was not convincing.

with CKD with GFR≤89 mL/min/1.73 m 2 , monand is selected as the primary standard of care To determine the effectiveness of monotherapy (rosuvastatin 20 mg) and combined (rosuvastatin + ezitimibe 20/10 mg) treatment and its effect on BD factors, they were divided into two groups using a voluntary selection method. Rosuvastatin 20 mg was recommended to the first group, and rosuvastatin + ezitimibe 20/10 mg to the second group. As a result of treatment, positive clinical progress was observed in both groups. Angina attacks were not observed in 42.9% of patients of the 1st group and 60.7% of the 2nd group (P<0.001). During this period, the BP level in both groups was within the normal range.

After six months of treatment, Total cholesterol-16.6%, TG - 27.7%, low density lipoproteins decreased by 18.6% (P<0.001) in patients of group 1 , in group 2 these indicators decreased by 23.8%, 50%, decreased by 18.4% (P<0.05) (Table 3).

Table 3

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Effect of rosuvastatin and rosuvastatin + ezitimibe (rosulip plus) on lipid spectrum and renal function in patients with ischemic heart disease and renal dysfunction

Indicators	CFT ≤ 89 ml/min/1.73 ^{m2} (n= 56)			
	Rosuvastatin		Rosuvastatin + ezitimibe	
	1 – group (n= 28) before treatment	1 – group (n= 28) after treatment	2- group (n= 28) before treatment	2 - group (n= 28) after treatment
Proteinuria (g/l)	0.005 ±0.001	0.002±0.002 (60%)	0.004 ±0.001	0.001±0.004 (75%)
Creatinine, (mmol/l)	74.5 ± 7.5 *	80.2±5.7 (7.1 %)	71.8 ± 7.7	82.8 ±5.9 (13.2 %) *
Cystatin S (mg/l)	1.2± 0.02	1.1±0.03 * (8.3%)	1,25 ±0.0 2	1.1±0.03* ** (12%)
KFT, ml/min/1.73m ^{2}	73.4±1.4	8 0.2 ± 1.6 **	74.6 ± 1.6 *	79,4 ±1,4*

*Note: KFT - ball filtration rate. Heart rate is the number of heartbeats. SAD - systolic arterial ventricular tachycardia. DAD - diastolic arterial valve disease. TG - triglycerides. YuZLP - high-density lipoproteins. JPZLP - very low density lipoproteins. PZLP - low-density lipoproteins. * - reliability of the difference of indicators before and after treatment: * - r<0.05., ** - r<0.01., *** - r<0.001.*

At the same time high-density lipoprotein (HDL) increased by 27% (P<0.05) in group 1 and 33.1% (P<0.001) in group 2 patients, and the atherogenic index (AK) was 12.2% and 23.8, respectively. decreased by % (P<0.05). Treatment of patients with BD with a hypolipidemic agent was convincingly more effective than those receiving a statin in combination with monotherapy. There is a BD with YuIK Along with the main standard treatment, monand is selected for patients with As a result of monotherapy (rosuvastatin 20 mg) and combined (rosuvastatin + ezitimibe 20/10 mg) hypolipidemic treatment, 46.4% (13) and 67.9% (19) patients in the first group and 67.9% (19) patients in the second group were observed to decrease low-density lipoprotein to the target level. The results of the analysis showed that combined treatment (rosuvastatin and ezitimibe together) had a significantly higher efficacy compared to monotherapy (p < 0.001).

As a result of the treatment, there was a positive shift in the factors reflecting the kidney function of both groups of patients. Side effects of the recommended drugs were not observed. Proteinuria decreased by 60% in group 1 and 75% in group 2, but this shift was not significantly different. Serum creatinine decreased by 12.6% and 7.1%, and cystatin-S by 8.3% (P<0.01) and 12% (P<0.001) in both groups, respectively . At the same time, GFT increased to 80.2±1.6 (P<0.05) and 79.4±1.4 (P<0.01) ml/min/1.73m 2 , respectively.

When analyzing the effects of monotherapy and combined hypolipidemic treatment on intracardiac hemodynamic parameters, in group 1, interventricular septal thickness (LVS) increased by -9.5%, left ventricular aortic wall thickness (LVS) increased by 7.5%, and then diastolic size (TDS) increased by 9.5%. .9%, then systolic size (TSS) - 10.8%, then diastolic volume (TDV) - 11.8%, then systolic volume (TSV) - 11.6%, and 12.8% in 2 groups, respectively , decreased by 7.6%, 10.3%, 12.1%, 11.5%, 14.1%, this shift was unbelievable. The obtained result did not differ between groups (Table 4).

Table 4

Comparative evaluation of the effects of rosuvastatin and rosuvastatin + ezitimibe (Rozulip Plus) on intracardiac hemodynamic parameters in patients with ischemic heart disease and renal dysfunction.

Indicators	GFT ≤ 89 ml/min/1.73 ^{m2} (n= 56)			
	Rosuvastatin		Rosuvastatin + ezitimibe	
	Group 1 (n= 2 8) before treatment	1 – group (n= 2 8) after treatment	2 - group (n= 28) before treatment	2 - group (n= 28) after treatment

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STRENGTH (TMJP) , mm	11.5 ± 1.2	10.4 ± 1.1 *	11.7± 1.3	10.2 ± 1.1
Left ventricle strength, mm	10.6 ± 1.2 *	9.8 ± 1.0	10.4 ± 1.2 *	9.6± 1.1
TDS, mm	52.4 ± 3.3	47,2 ±3, 1	51.6 ± 2.9 *	46.3 ±2.6
TSS , mm	36.8 ±2.8	32,8 ± 2,4 *	36.4 ± 2.9 **	3 2,0 ±2, 3
TSV, Jr	140,8 ±10.4	124,2 ±9, 4	139,5 ±10,2	123.5±8.4
TSV, ml	52 ,5±3,4	46.4 ± 3.0	53.8± 3.9	46,2 ±2, 6
LV EF ,%	56, 6 ±3.2	58.4± 2.8	57,2 ±3,4	58.6 ± 3.0 *
LV MI, g/m ^{2}	88,4 ±13,4	85,4 ±1 2,2	87,4 ±14.8	8 4,1 ±11,4

Izox : GFT - ball filtration rate. Heart rate is the number of heartbeats. SAD - systolic arterial ventricular tachycardia. DAD - diastolic arterial valve disease. THICKNESS - the thickness of the interventricular septum. ChQOTQ is the thickness of the left ventricular auricle. TDS – end diastolic size. TSS – end systolic dimension. TDV – end diastolic volume. TSV – end systolic volume. LV MI - left ventricular myocardial weight index. LL – left lobe.

Treatment results The combined hypolipidemic drug (rosuvastatin and ezitimibe combined) used in the treatment of patients with CKD and BD has been confirmed to be easy to take, high efficiency in balancing lipid metabolism and stabilizing kidney function.

In conclusion, the regular use of statins together with cholesterol absorption inhibitors in the treatment of patients with CKD showed a reliable decrease in LDLP, VLDLP, TG, AK, and an increase in the amount of HDLP. At the same time, reduction of creatinine and cystatin S in blood serum, decrease of proteinuria in urine, increase of GFT indicate that treatment has a positive effect on kidney function.

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