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ALTERNATIVE TREATMENT OF PATIENTS WITH DIABETIC NEPHROPATHY USING TYPE 2 SODIUM-GLUCOSE COTRANSPORTER INHIBITORS

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Abstract. *The article presents the results of the research on the alternative treatment of 103 patients with chronic kidney disease developed on the basis of diabetic nephropathy with the use of sodium-glucose cotransporter type 2 inhibitors by improving kidney damage markers and kidney function. Also, comparing the obtained results with the results of other authors' researches, the nephroprotective effect of the drug is once again based in detail.*

Key words: diabetic nephropathy, glomerular filtration, urea, creatinine, albuminuria, proteinuria, erythrocyturia, cylindruria

Kidney damage caused by diabetes mellitus, i.e., diabetic nephropathy, is considered a complication, in which a violation of the filtration of blood in the nephron's glomeruli and ducts, glomerulosclerosis caused by the exchange of renal parenchyma with connective tissue, is an independent nosology with severe symptomocomplexic character, which is accompanied by the development of kidney failure in the end [Bagria.E.-2021]. Diabetes mellitus, which is the basis of this pathology, has become widespread all over the world in recent years as a global medico-social disease. According to the data of the entire jaxon Health Organization together with the International Federation of diabetes (IDF, International Federation of Diabetes), Diabetes Mellitus is among the most common countries in China (98.4 million), China (65.4 million) and the United States (24.4 million). [Murkamilov I.T-2021,2020]. In the Russian Federation, according to 2017 records, there were 260,771 new cases of diabetes mellitus, of which type 1 consists of 8,757 patients (3.4%), type 2 consists of 235,655 patients (90.3%), and other types of patients-16,359 (6.3%). In accordance with it, the incidence is 7 in Type 1 diabetes for every 100 thousand inhabitants, and in Type 2-186 [Dedov I.I.-2018]. It is clear that diabetic nephropathy or chronic kidney disease with diabetes etiology, which is evident in the statistics of developed and high-population countries of the world, is a severe nosological pathology that ultimately entails valuable renal replacement therapy (extracorporeal therapy, kidney transplantation) to terminal kidney failure. Moreover, in the literature, the authoritative organization and associations of the entire

jaxon health organization dedicated to diabetes cite specific statistical assumptions about the extent of the problem in such states as China, Xinjiang, the Russian Federation and the United States.

Therefore, despite our excellent studies of the existing problem, The Soha remains open to questions and issues that need to be solved, waiting for its answer on the correction of nephropathies. Therefore, the study of other aspects, such as the effect of 2-TNGK inhibitors on kidney damage markers and indicators that determine kidney function, on the basis of an in-depth clinical-laboratory perspective on the effectiveness, in particular on the nephroprotective effect of the drug, assumes the study of Soha.

Research objective. Alternative treatment of chronic kidney disease by improving kidney injury markers and kidney function with the use of Type 2 sodium-glucose cotransporter inhibitors in patients with diabetes-related development.

Research material and methods. For the Study, 103 patients of Stage II and III A of chronic kidney disease, formed on the basis of nephropathies with etiology of diabetes mellitus, were treated stationary at the Republican specialized scientific and practical medical center of Nephrology and kidney transplantation, and then were under the control of a dispensary at this institution. They were randomly divided into two groups. Group 1 (n-54) was content only with traditional treatment, that is, therapy in accordance with the standards for the treatment of chronic kidney disease. Group 2 (n-47), on the other hand, includes the drug empagliflozin (Empagliflozin 10 mg 1 Tab/milk), which belongs to the serum of Type 2 sodium-glucose cotransporter inhibitors, in addition to the traditional treatment.) was recommended for three months. Of all patients, at the beginning of treatment and at the end of the study, the total peshobal Thrush, albuminuria, albumin/creatinine ratio, mochevina and creatinine were examined, as well as the calculation of kft based on creatinine. Results were calculated statistically.

Results and discussion.

On the basis of our promising research over three months, the following results were shown. In accordance with it, the dynamics of changes in the background of various treatment schemes of markers of kidney damage in patients with chronic kidney disease with diabetic nephropathy Genesis showed the following picture.

Table 1

Dynamics of changes in the treatment background of kidney damage markers in patients

Parameters	**1-group (n-54)**		**2-group (n-47)**	
	At the beginning of the study	**After the study**	**At the beginning of the study**	**After the study**
Proteinuria	2,31±0,21	1,96±0,19	2,27±0,25	1,36±0,23**^
Erythrocyturia	8,3±0,67	6,2±0,74*	8,5±0,61	4,1±0,61**^

Tsilindruria	7,4±0,54	5,9±0,43	7,2±0,35	3,9±0,41**^^
Albuminuria, mg/day	56,7±2,43	49,8±2,17*	55,9±2,58	39,3±2,29***^^

Note: * - differences are significant relative to Indicators at the beginning of the study (*- R<0.05, **- R<0.01, ***- R<0.001); ^ - differences are significant relative to Group 1 and 2 indicators (^- R<0.05, ^ ^ - R<0.01, ^ ^ - R<0.001).

In Group 1, which is satisfied only with the traditional treatment, proteinuria is 2.31±0.21 g/L at the beginning of the study. was, and at the end of the study, fell uncertainly to 1.96±0.19 g/l. In the 2nd Group, which took the drug empagliflozin in addition to the traditional treatment, proteinuria was 2.27±0.25 g/L at the beginning of the study, and 1.36±0.23 g/l after three months.the decline in confidence (r<0.01) up to has been confirmed not only in the exact figures, but also in the results of statistical estimation. It has also been demonstrated in statistical estimations that the difference in range is less reliable (r<0.05) when the results of Group 1 and 2 patients in the study were compared against each other (Table 1). Erythrocyturia was observed in Group 1 to be 8.3±0.67 units at the beginning of the study, with a decrease in low reliability (R<0.05) to 6.2±0.74 units at the end of the study. In Group 2, however, erythrocyturia was found to be 8.5±0.61 units at the beginning of the study, with a reliable (R<0.01) decline to 4.1±0.61 units three months later. Based on statistical taxiles, it was observed that the difference between groups 1 and 2 changed less reliably (R<0.05) when the results of the study were compared. Tsilindruria in Group 1 was estimated at 7.4±0.54 units at the beginning of the study, an unreliable decrease of 5.9±0.43 units at the end of the study. Group 2, on the other hand, showed a reliable (R<0.01) decrease of 7.2±0.35 units at the beginning of the study, and tsilindruria up to 3.9±0.41 units three months later. When the results of Groups 1 and 2 at the end of the study were compared with each other, the difference in the range changed to less reliable (r<0.05) was expressed in statistical taxa (Table 1).

Albuminuria, which is calculated from the most reliable markers of glomerular lesions, is sufficient for conventional treatment in Group 1 at the beginning of the study at 56.7±2.43 mg/milk. the value decreased to 49.8±2.17 mg/s.less reliable (r<0.05) at the end of the study. In the 2nd Group, which took the drug empagliflozin in addition to the traditional treatment, albuminuria was 54.9±2.58 mg/milk at the beginning of the treatment, and three months later it was 39.3±2.29 mg/milk.the decrease in confidence (r<0,001) up to has found confirmation not only in the exact numbers, but also in the results of statistical estimation. Also, the fact that the difference between patients of Group 1 and 2 changed reliably (r<0.01) when the results of the study were compared with each other was confirmed on the basis of statistical taxiles (Table 1).

In contrast, the diagram, formed on the basis of albuminuria results, showed that group 2 patients taking the traditional treatment additive empagliflozin had a decrease in reliability (R<0.001) compared to the head of treatment, while Group 1 showed a change in reliability (R<0.05) compared to the head of albuminuria treatment. When the results of the research groups after treatment were compared, however, the difference between is reliable (r<0.01), reflected not only in statistical approximations, but also in the diagram images on display (Figure 2). These

positive results in our studies are explained by the nephroprotective effect of the drug empagliflozin, which is an addition to the traditional treatment.

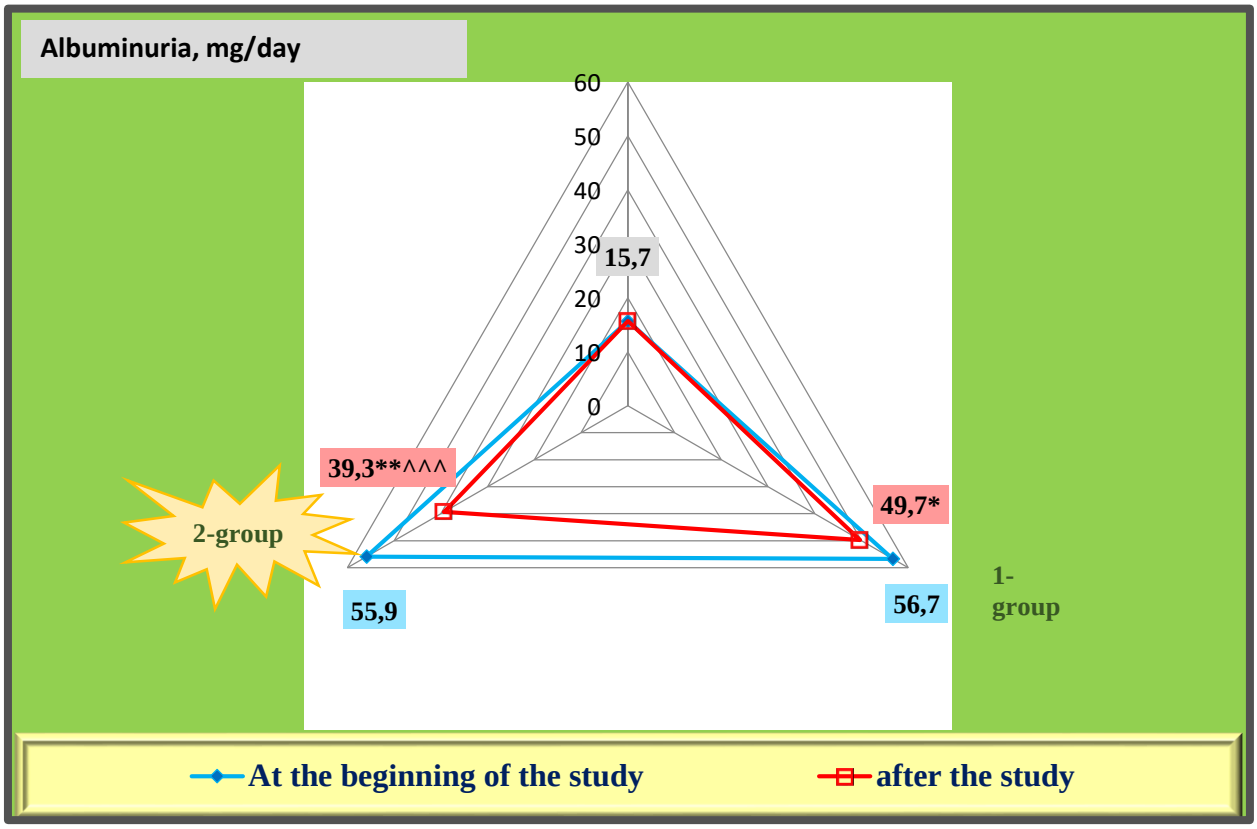


Figure 2. The picture of changes in albuminuria in patients against the background of various treatment schemes

The indicators of kidney function in chronic kidney diseases with diabetic nephropathy Genesis have shown the following picture against the background of various treatment schemes. In Group 1, which is limited to conventional treatment only, mochevina is 12.1±0.85 mmol/l at the beginning of the study. was, and at the end of the study it fell uncertainly to 10.44±0.47 mmol/l. In the 2nd Group, which took the drug empagliflozin in addition to the traditional treatment, mochevina was 12.5±0.89 mmol/l at the beginning of the study, and three months later this value was 9.2±0.38 mmol/l.there was a decrease in confidence ($r<0.01$) up to. Also, the fact that the difference between the results of the main groups at the end of the study changed less reliably ($r<0.05$) found confirmation on the basis of statistical taxiles (Table 2). Creatinine was found in Group 1 to be 156.1±6.13 mkmol/L at the beginning of the study, with a low reliability ($R<0.05$) drop to 138.2±6.2 mkmol/L after treatment, while creatinine in Group 2 was found to be 157.6±5.73 mkmol/L at the beginning of the study. being, at the conclusion of the study, this value was 129.6±5.98 mkmol/l.there was a decrease in confidence ($r<0.01$) up to. However, when the results of the main groups at the end of the study were compared and statistically estimated, it was found that the difference between them changed unreliable (Table 2).

Table 2.

Dynamics of changes in the treatment background of indicators of the functional state of the kidneys in their patients

Parametrs	1-group (n-54)		2-group (n-47)	
	At the beginning of the study	After the study	At the beginning of the study	After the study
urea	12,1±0,85	10,44±0,47	12,5±0,89	9,2±0,38**^
Creatinine	156,1±6,13	138,2±6,2*	157,6±5,73	129,6±5,98**
glomerular filtration rate	49,3±1,74	56,7±2,21*	48,7±1,79	62,7 ±1,73***^

Note: * - differences are significant relative to Indicators at the beginning of the study (*- R<0.05, **- R<0.01, ***- R<0.001); ^ - differences are significant relative to Group 1 and 2 indicators (^- R<0.05, ^ ^ - R<0.01, ^ ^ - R<0.001).

In glomerular filtration rate Group 1 patients from the most reliable gradients that determine kidney function, the study was 49.3±1.74 ml/min at the beginning, with a low reliability (R<0.05) increase to 56.7±2.21 ml/min after treatment. This indicator is 48.7±1.79 ml/min at the beginning of the study in Group 2. the hiskft at the conclusion of the study was 62.7±1.73 ml/min.it was observed that there was a reliable (r<0.001) rise to. The fact that when the results of Groups 1 and 2 at the end of the study were compared with a statistical analysis, the difference between them changed if they were less reliable (r<0.05) is explained by the nephroprotective effect of the drug empagliflozin, which was added to this traditional treatment (table 2).

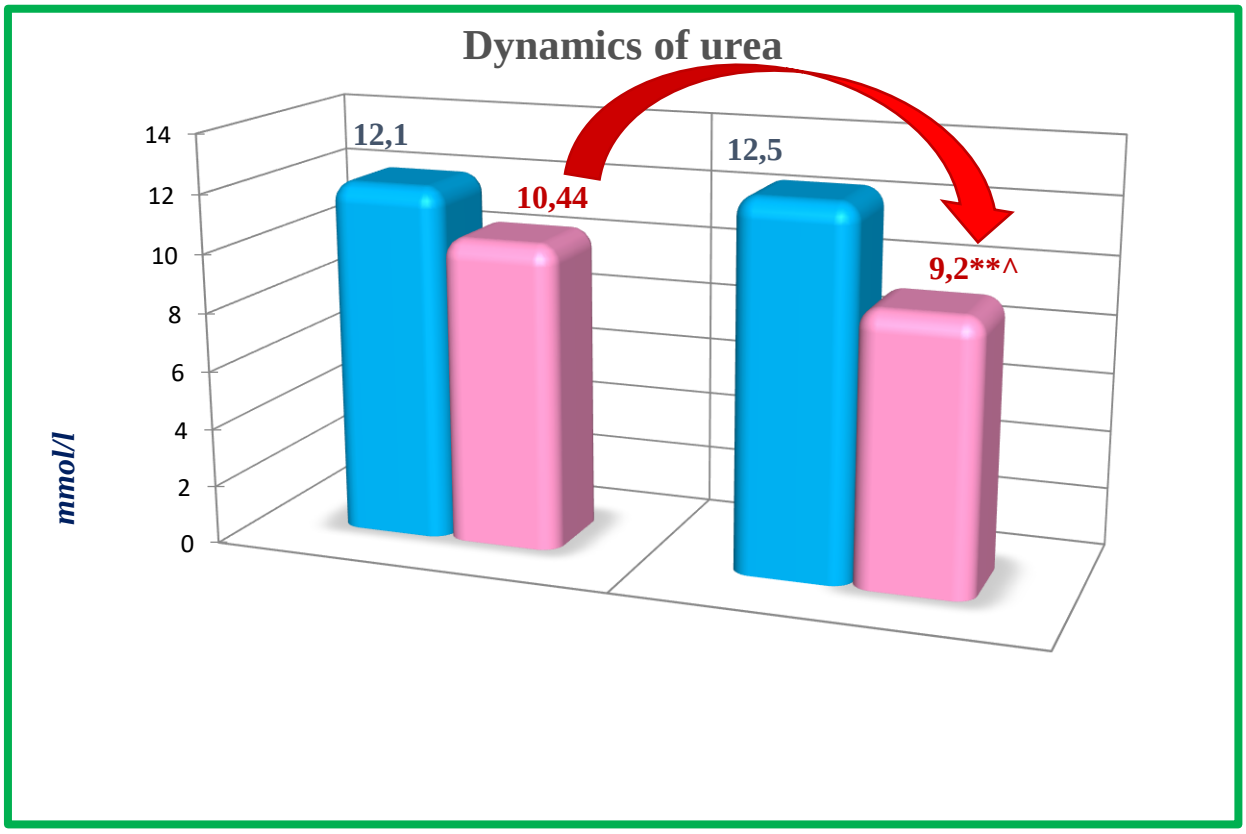
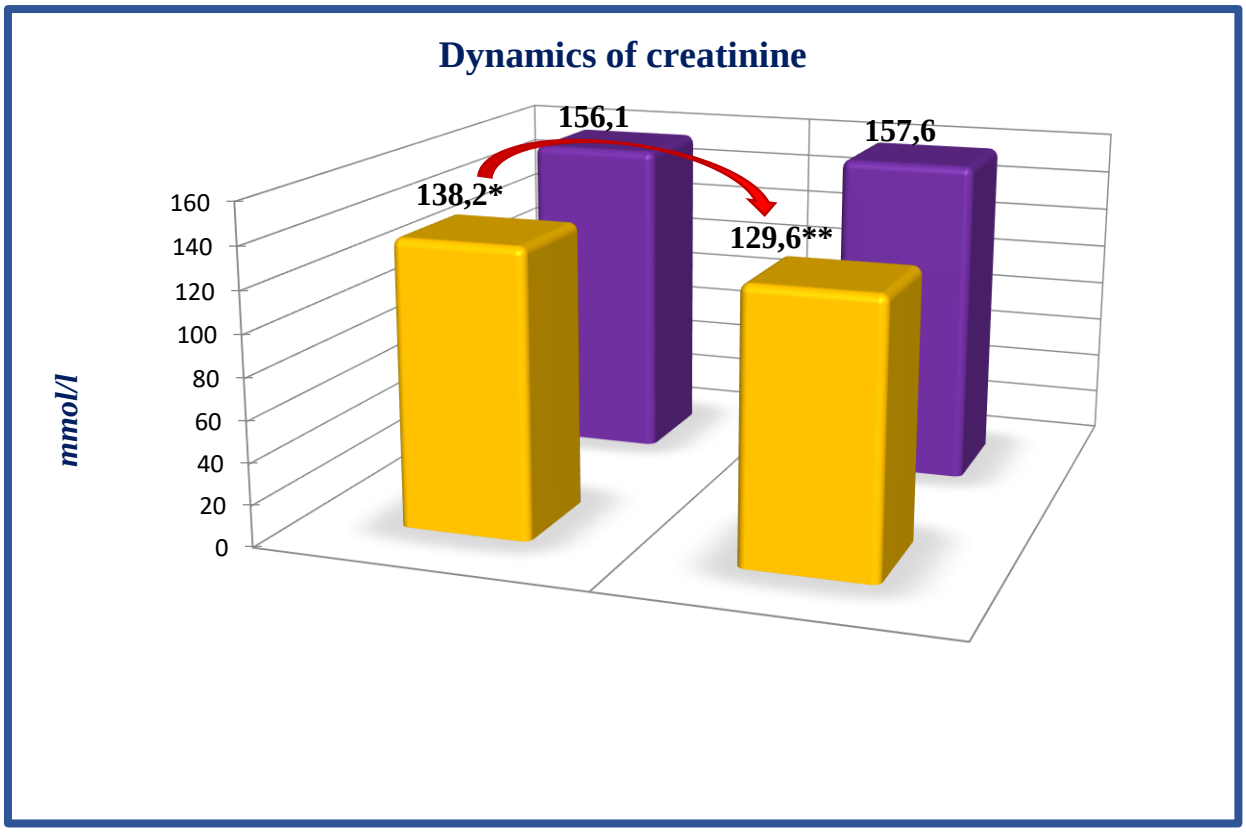


Figure 3. The picture of changes in the gradients of renal dysfunction against the background of various treatment regimens

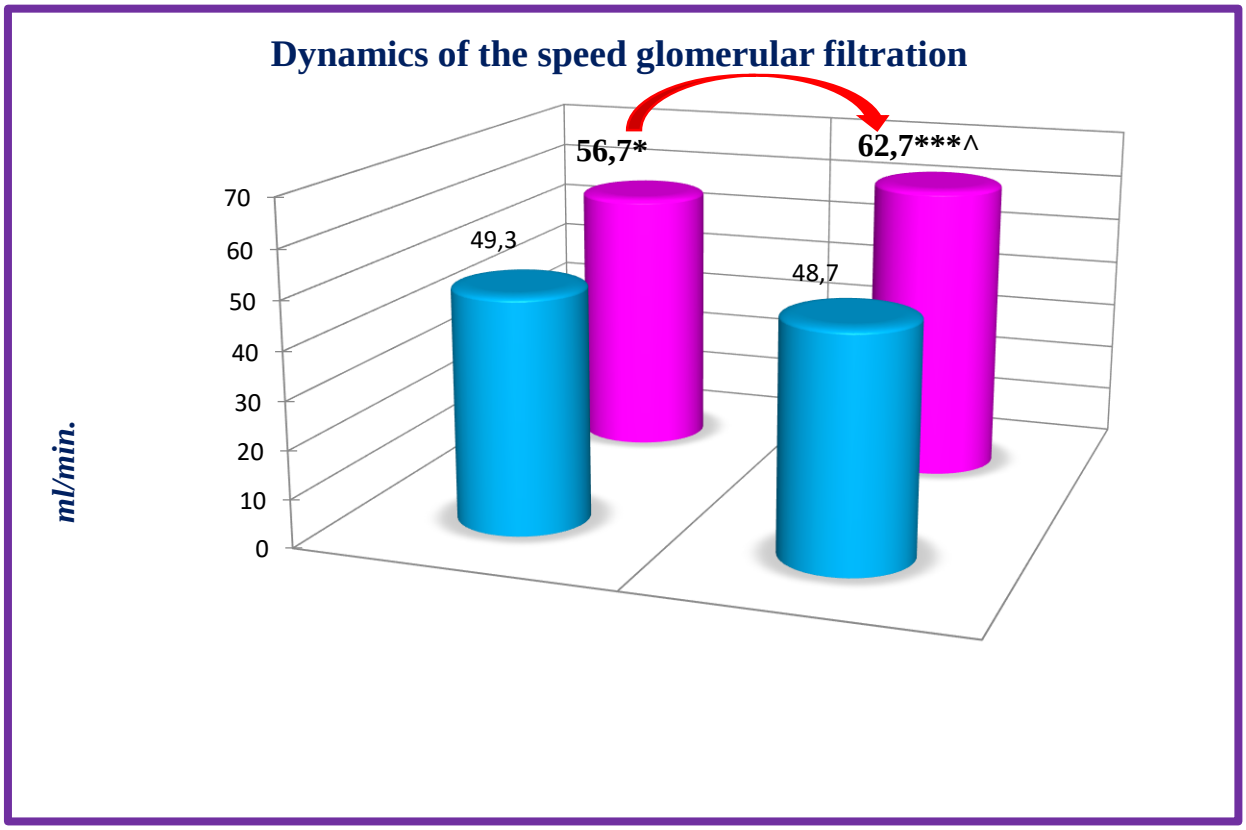
Looking at the diagram images formed by the results of renal dysfunction gradients in the patient, it is observed that mochevina decreased unreliable in Group 1 compared to the head of treatment, while in Group 2, which took the additional drug empagliflozin, decreased reliably (R<0.01). It is also significant that post-treatment values have changed in comparison with mochevina in Group 2 when there is low confidence (r<0.05) (Figure 3).



4-figure. The picture of changes in the gradients of renal dysfunction against the background of various treatment regimens

Creatinine has been described as having a low reliability (R<0.05) decrease in Group 1 compared to the beginning of treatment, and a decrease in reliability (R<0.01) in Group 2, which took the additional drug empagliflozin. When the results of creatinine after treatment are compared among themselves, it is noticeable that the values have changed unreliable (figure 4).

Glomerular filtration, one of the most basic gradients of renal dysfunction, has been described in Group 1 patients at the beginning of the study as exceeding low reliability (R<0.05) and rising to reliable (R<0.001) in Group 2. When the post-treatment results are compared, the differences are less reliable (r<0.05), but this is explained by the nephroprotective effect of the drug empagliflozin, which is added to the traditional treatment (Figure 5).



5-расм. the picture of changes in the gradients of renal dysfunction against the background of various treatment regimens

Conclusions.

From this, in our research, the nephroprotective effect of the drug empagliflozin in research groups consisting of chronic kidney diseases formed on the basis of diabetic nephropathies has once again found evidence of a positive shift in the markers of kidney damage, as well as a significant decrease in the amount of mochevina and creatinine in blood serum and a significant increase in Glomerular filtration Because, one of the main pategenetic joints that deepen diabetic nephropathy is when hyperglycemia occurs, an increase in glucose reabsorption in the renal ducts is a mechanism that negatively affects the process at this point. In this regard, it is advisable to achieve this effect by alternative treatment of these patients with the use of Type 2 sodium-glucose cotransporter inhibitors.

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