

Chronic Heart Failure Comorbid Changes in the Late Kidney and Influence of Complex Treatments on them

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Annotation: Experts of the World Health Organization describe the increasing prevalence of chronic diseases as a global epidemic of the 21st century. Currently, considerable attention is paid to the problem of mutual influence of the function of the heart and kidneys. The negative influence on each other of cardiac and renal dysfunction in an acute situation is usually defined as a cardiorenal syndrome. The aggravation or development of renal dysfunction in the presence of violations of the pumping function of the heart or the gradual development of chronic heart failure in patients with impaired renal filtration are considered within the framework of the chronic cardiorenal syndrome or the so-called cardiorenal continuum. In Uzbekistan, as in the rest of the world, cardiovascular diseases, in particular, SUE, occur in comorbid conditions in most cases. Among them, type 2 QD is common, and this condition leads to anemia and chronic kidney disease (CKD). A number of studies confirm that there is a correlation between (CHF) chronic heart failure and anemia. In this article, we decided to determine the effectiveness of the combined treatment to prevent changes in the kidneys in the case of CHF.

Key words: heart failure, anemia, chronic cardiorenal syndrome, chronic kidney disease, treatment.

Actuality. The results of the study of comorbid conditions in patients with CHF in Uzbekistan showed that the main factors determining myocardial damage, i.e., myocardial infarction, occurred in 91.1%, the presence of acute myocardial infarction with AH in 81.3%, obesity in 51.6%, CHD in 43.8%. [1,2,8,10,13,14,15]. In patients with low left ventricular ejection fraction, 26.8% had chronic obstructive pulmonary disease, 17.9% had comorbid conditions outside the heart such as obliterating atherosclerosis of the leg artery, and 23.4% had pneumonia and 34.4% had leg veins in patients with preserved ejection fraction. Varicose veins have been identified [3,5,9,12,17]. Various pathogenetic factors are involved in the development and exacerbation of nephropathy in CHF. Their effect becomes more evident as cardiac decompensation develops and FS increases [4,7,11,16,18]. The main reasons for its occurrence are activation of neurohumoral, hemodynamic, hypoxic mechanisms that

lead to sclerotic damage of kidney tissue as a result of neurohumoral activation and disruption of the arterial and venous blood flow system. [20,21,23]The first of them is a compensatory narrowing of the efferent glomerular arterioles, which causes an increase in the filtration fraction and causes persistent glomerular hypertension [6,19,22,25]. The mentioned hemodynamic changes, in turn, lead to mechanical damage to the fenestrated endothelium of the ball, podocytes and mesangial cells in the early stages [24,26]. Later, as a result of postglomerular blood circulation disorders, sclerotic lesions of kidneys and tissue hypoxia occur in patients with CHF anemia. It accelerates the loss of kidney function by developing hypoxic glomerulosclerosis and tubulointerstitial fibrosis.

The purpose of the study. Evaluation of the characteristics of functional fibrosis changes in the kidneys and the effectiveness of complex treatment when chronic heart failure is comorbid with anemia and diabetes.

Research material and methods. 323 patients diagnosed with chronic heart failure were observed in this research study. 150 of them (46.43%) were men and 173 (53.57%) were women. In order to solve the tasks set before us, the scientific research work was carried out as follows. General clinical-laboratory, instrumental and special biochemical tests, including cystatin S, blood sugar, glycosylated hemoglobin, microalbuminuria and overnight proteinuria, electrocardiography (ECG), ExoKG.

At the primary stage of the study, 323 patients with CHF were divided into 3 groups based on the conditions of anemia + diabetes (30 patients), anemia (30 patients) and without them (60 patients) and underwent primary observation. The first group, i.e., CHF with anemia and diabetes, hemoglobin values were 107.4 ± 8.2 , the second, i.e., CHF with anemia, hemoglobin values were 112.4 ± 10.2 , and the third, i.e., hemoglobin values in patients without CHF comorbid conditions were 134 ± 9.9 g/l ($R > 0.05$).

The average age of patients with anemia and diabetes was 67.5 ± 11.0 years, and the average age of patients with anemia and normal hemoglobin was 63.64 ± 10.13 and 57.9 ± 9.1 years, respectively ($R > 0.01$) was equal.

All three groups of patients in the follow-up were compared according to comorbid conditions, hemoglobin values, CHF FS, AG, body mass index values, healthy eating habits, genetic predisposition, main complaints, clinical signs and clinical status assessment scale, Minnesota questionnaire.

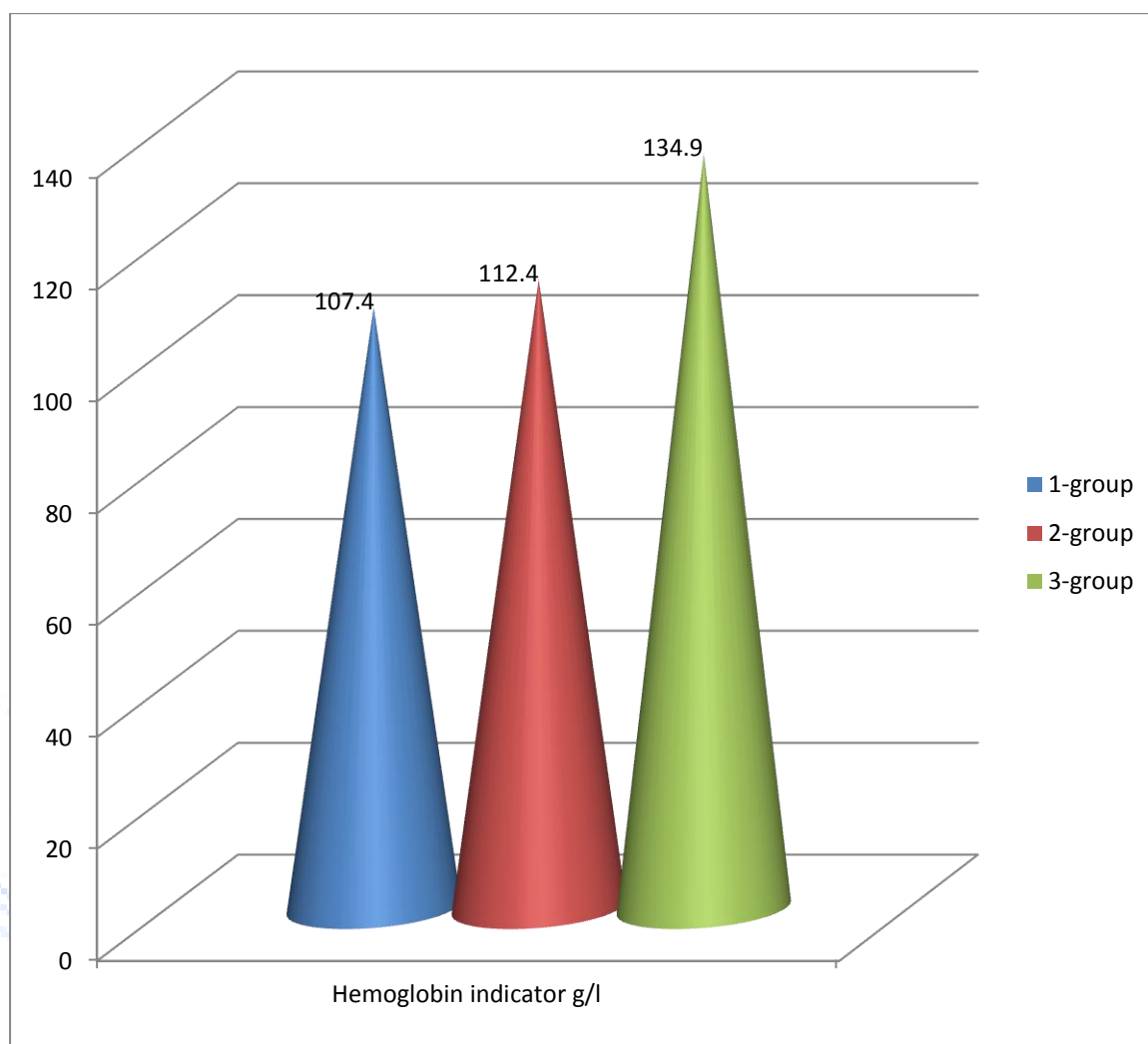
In addition, 120 patients with CHF were divided into 3 groups (30 of them with anemia + diabetes, 30 with anemia and 60 without anemia) and underwent separate excellent clinical and laboratory-instrumental examinations.

Their age ranged from 50 to 80, with an average of 64.6 ± 4.9 years. All patients were followed up in outpatient care after hospital treatment and divided into three main and control groups. The first main group was made up of 30 patients with diabetes mellitus and iron deficiency anemia, the second main group was made up of 30 patients with anemia, and the third main group was made up of 60 patients with chronic heart failure without anemia. In turn, each group was divided into two subgroups (II, III FS) in accordance with the CHF functional classes. The reliability of differences between groups was determined using Student's criterion for odd and even differences. Correlation analysis was performed by applying Pearson's correlation coefficient and determining its significance based on reliability tables.

Research results and its analysis. At the primary stage of the study, patients were divided into 3 groups based on the conditions of anemia+diabetes (30 patients), anemia (30 patients) and without them (60 patients) and underwent primary observation. The first group, i.e., CHF with anemia and diabetes, hemoglobin values were 107.4 ± 8.2 , the second, i.e., CHF with anemia, hemoglobin values

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Figure 1. Indicators of the average amount of hemoglobin in the groups.



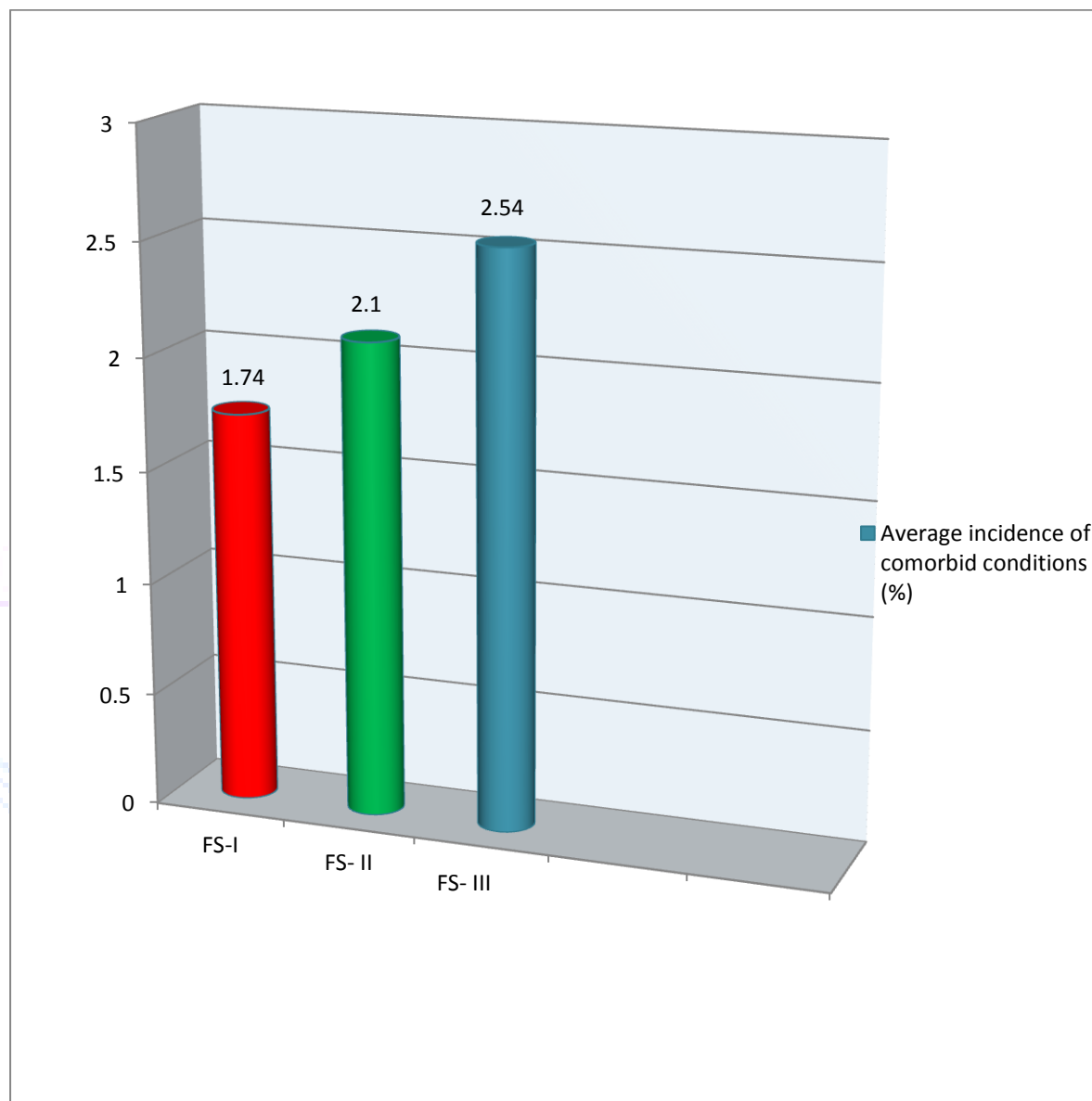
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All three groups of patients in the follow-up were compared according to comorbid conditions, hemoglobin values, CHF FS, AG, body mass index values, healthy eating habits, genetic predisposition, main complaints, clinical signs and clinical status assessment scale, Minnesota questionnaire.

Their body weight index was 29.4 ± 4.9 , 28.98 ± 5.8 and 28.1 ± 4.5 kg/m² ($R < 0.05$), respectively. When patients were separated by CHF FS, I-FS was found in 26.93%, II-FS in 50.51%, III-FS in 22.29% and IV-FS in 0.26% of cases. Most of the patients were in II-FS, and I and III-FS were detected in almost the same number. All of them had CHF with a number of different comorbid conditions. In particular, 23.31% of 43 patients had one comorbid disease, 66.25% of 214 had two comorbid diseases. Of the 56 examined patients, 17.33% had three and 9 had four or more concomitant, competing or background diseases. Comorbidity in all observed patients was equal to 2.1 ± 0.65 , and this indicator was equal to 1.9 ± 0.53 and 2.2 ± 0.75 ($R > 0.05$) in patients under 60 years of age and older, respectively.

When studying the comorbid conditions of FS in patients under observation, the following were noted. CHF averaged 1.74 ± 0.61 in 87 patients diagnosed with I-FS, 2.1 ± 0.57 in 164 patients with II-FS, and 2.54 ± 0.65 in 72 patients with III-FS, and in all cases $R > 0$ was equal to .05. (Figure 2).

Comorbid conditions such as diabetes mellitus, anemia, obesity, fatty liver disease, chronic pyelonephritis, deforming osteoarthritis, osteochondrosis were found in most patients.



Hemoglobin in patients under 60 years of age was 120.7 ± 9.8 g/l, and in older patients it was 117 ± 17.3 g/l ($R > 0.01$). It was also noted that the left ventricular ejection fraction was 41.3% when diabetes, anemia and other comorbid conditions were observed in patients, and 52.1% when there was one concomitant disease. These indicators confirm that comorbid conditions have a significant negative impact on myocardial activity. In addition to the above, patients were assessed medically using the Minnesota Questionnaire. In this case, the average score of patients with CHF with anemia was 32.3 ± 5.4 , and with anemia and diabetes, this indicator was equal to 40.0 ± 6.7 ($R > 0.01$).

Also, 230 patients with II-FS anemia had an average score of 4.56 using the clinical status assessment scale, while 25 patients with comorbidity with diabetes and anemia had an average score of 5.16 ± 1.7 points ($R > 0.05$).

When the existing risk factors were studied in the follow-up patients, arterial hypertension was found in 79% of those with one comorbid disease, and 86% of those with two, including one of them diabetes. 28.3% of CHF patients had anemia, which increased to 35% when second disease diabetes was included in the follow-up. Hypodynamia was noted in 54.8% of patients with CHF with only one comorbid disease. This indicator increased by 68% when there were two comorbid conditions, and the difference ($R>0.05$) was significant. Non-adherence to a healthy diet was found in 52.2% of those with one comorbidity, and 56% with two comorbidities.

Summary. The analysis showed an increase in the number of comorbid diseases in patients with CHF, corresponding to the severity of FS. In turn, it was found that the increase in the number of comorbid conditions has a negative effect on the course of CHF in all cases.

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