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PROGNOSTIC VALUE OF FERROKINETIC INDICATORS IN PATIENTS WITH HEPATITIS C IN ASSOCIATION WITH CHRONIC HEART FAILURE

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Annotation. Purpose of the study. To determine the prognostic value of ferrokinetic parameters in the diagnosis of anemia in patients with heart failure associated with chronic viral hepatitis C. Materials and research methods. The study included 110 patients, of which the first group consisted of 32 patients with chronic viral hepatitis C and anemia without CHF, the second group consisted of 78 patients with chronic hepatitis C, CHF and anemia. 50 practically healthy people made up the control group. Results. The results of the analysis of the severity of anemia in patients of the first group showed that mild anemia was observed in 28.1% of patients, moderate anemia was detected in 50% of patients and severe anemia was observed in 21.9% of patients. A comparative analysis of the erythropoietin index, calculated using laboratory markers for the diagnosis of chronic inflammatory anemia, showed that the amount of erythropoietin in patients of group 2 was 1.19 times higher than in group 1, and an inverse, significant difference was found between these two indicators correlation connection. Conclusions. According to the analysis of ferrokinetic parameters in patients of group 1, anemia in this condition is characterized by chronic inflammation. But noteworthy points were observed in patients of group 2, that is, in this group, the serum iron content and erythropoietin index were high, which indicated the presence of unidentified aspects in the pathogenesis of the development of anemia in patients.

Keywords:Chronic viral hepatitis C, chronic heart failure, anemia, ferrokinetic indicators.

Relevance. According to WHO, more than 71 million of the world's population are infected with CHC. Although today this figure is less than two times, the subclinical course of the disease, its late diagnosis and manifestation with complications increase mortality and disability (Lioznov D.A., Dunaeva N.V. et al., 2019).

Scientific research conducted around the world indicates that infection with hepatotropic viruses is one of the main causes of chronic liver diseases, which are becoming the most pressing medical and social health problem. The prevalence of CHCV varies from 1–5% in Europe to 1–4% in the United States, depending on population density and the prevalence of risk factors. CHCV is asymptomatic and usually manifests itself with a number of extrahepatic symptoms and results in complications such as liver cirrhosis and hepatocellular carcinoma. Inflammation in

viral hepatitis C is systemic in nature, and it has been established that patients experience damage to the immune system, metabolic disorders, kidneys, and cardiovascular system (Nevola et al., 2021). Anemia in chronic diffuse liver diseases develops on the basis of complex pathogenetic processes, which are based on a complex disorder of erythropoiesis.

Purpose of the study. ABOUT to determine the prognostic value of ferrokinetic parameters in the diagnosis of anemia in patients with heart failure associated with chronic viral hepatitis C

Materials and methods of research. The study was conducted at the Bukhara Multidisciplinary Medical Center, in the gastroenterology department. All laboratory tests were carried out in the scientific laboratory of the Bukhara State Medical Institute. Patients included in the study were divided into 2 groups, the incidence of anemia and the features of its relationship with comorbid diseases were studied.

The first group consisted of 32 patients with chronic viral hepatitis C and anemia without CHF. The average age of patients in the group was 42 ± 1.4 years, the duration of chronic hepatitis was 4.1 ± 0.9 years.

The second group consisted of 78 patients with chronic hepatitis C, CHF and anemia. The average age of patients is 50.1 ± 1.0 patients, the duration of chronic hepatitis is 6.7 ± 0.7 years.

Results. General information about the examinations and their results in patients included in the study is presented in the table.

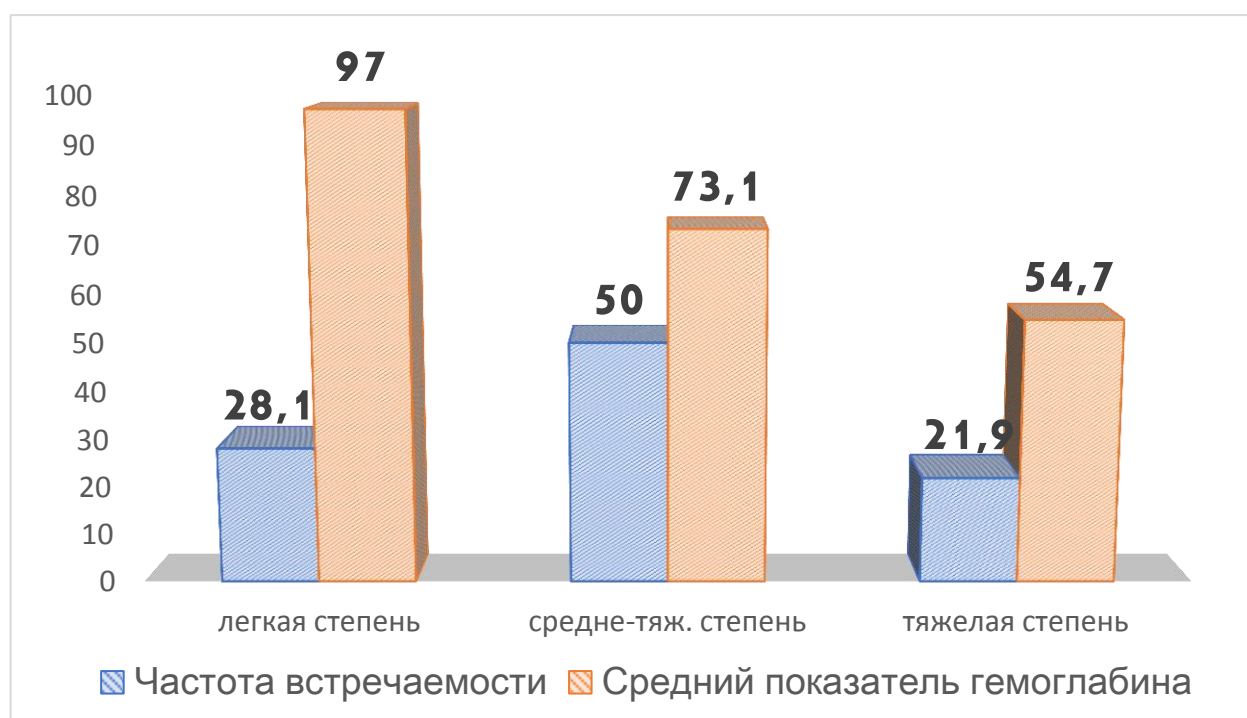
Table

General characteristics of the results of clinical, functional, laboratory and instrumental examination of patients included in the study.

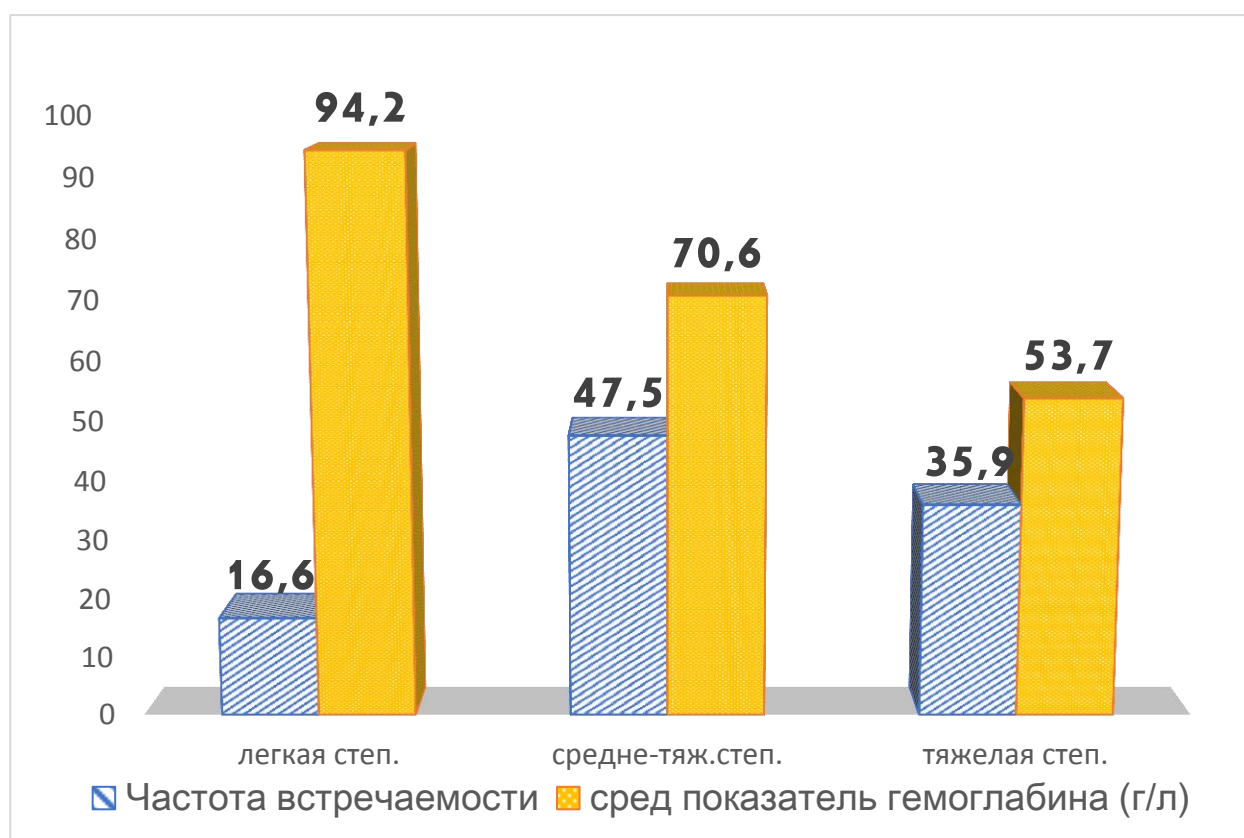
Indicators	Cont.gr. n=50	1 g n=32	2-gr n=78
Floor :			
husband.	24	13	41
wives	26	19	37
Age (years)	46 ± 1.4	42 ± 1.4	50.1 ± 1.0
Hemoglobin (g/l),	128.2 [52.7-103.4]	74.9 [52.7-103.4]	72.8 [47.8-97.7]
Platelet (109/l)	263.1 [206.1-287.3]	214.2 [196.3-271.2]	202.1 [174.1-223.6]
ALT (U/l)	23.4 [19.2-25.4]	50.3 [42.8-57.4]	52.6 [49.1-60.3]
AST (U/l)	28.2 [20.3-31.7]	62.7 [52.1-67.1]	73.4 [58.6-81.2]
Ferritin (ng/ml)	187.3 [91.5-199.1]	364.1 [356.3-402.3]	356.4 [289.3-382.7]

Hepcidin (ng/ml)	17.2 [13.6-24.4]	33.4 [29.3-36.6]	28.9 [27.6-32.5]
Erythropoietin (CB/ml)	18.3 [6.6-20.4]	21.7 [20.5-28.3]	29.3 [28.2-34.1]
CRP (ng/ml)	4.1 [2.7-4.8]	6.2 [5.1-7.1]	7.9 [6.7-9.8]
FC CHF (%)			-
I			29 (37.2%)
II			34 (43.6%)
III			15 (19.2%)
IV			

The results of the analysis of the severity of anemia in patients of the first group showed that (Fig. 1) mild anemia was observed in 28.1% of patients, the average hemoglobin was 97 ± 1.1 g/l. Moderate anemia was detected in 50% of patients, the average amount of hemoglobin was 73.1 ± 0.9 g/l, severe anemia was observed in 21.9% of patients, the average hemoglobin was 54.7 ± 0.9 g/l ($r > 0.05$).



Rice. 1. Analysis of the frequency of anemia in patients with chronic viral hepatitis C (%)



Rice. 2. Analysis of the frequency of anemia in patients with comorbidity of chronic viral hepatitis C and chronic heart failure (%)

A comparative analysis of the erythropoietin index, calculated using laboratory markers for the diagnosis of chronic inflammatory anemia, showed that the amount of erythropoietin in patients of group 2 was 1.19 times higher than in group 1, and an inverse, significant difference was found between these two indicators correlation connection. ($r = -0.6$; $p < 0.01$).

In patients with comorbid chronic viral hepatitis C and heart failure, the frequency of anemia is 0.89 times higher than in non-comorbid chronic hepatitis C, and the average hemoglobin level is 1.12 times lower than in the comparison group. Severe anemia was detected in 35.9% of comorbid cases, which is 1.6 times more than in the control group.

In patients with chronic viral hepatitis C and heart failure in a comorbid state, the hemoglobin content is 1.07 times lower than ferrokinetics, the serum iron content is 2.5 times higher than in the comparison group, erythropoietin is 1.31 times higher, CRP inflammatory cytokines are - 1.27. These indicators showed that anemia in these patients has a complex mechanism, multifactorial in nature.

Conclusions. According to the analysis of ferrokinetic parameters in patients of group 1, anemia in this condition is characterized by chronic inflammation. But

noteworthy points were observed in patients of group 2, that is, in this group, the serum iron content and erythropoietin index were high, which indicated the presence of unidentified aspects in the pathogenesis of the development of anemia in patients.

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