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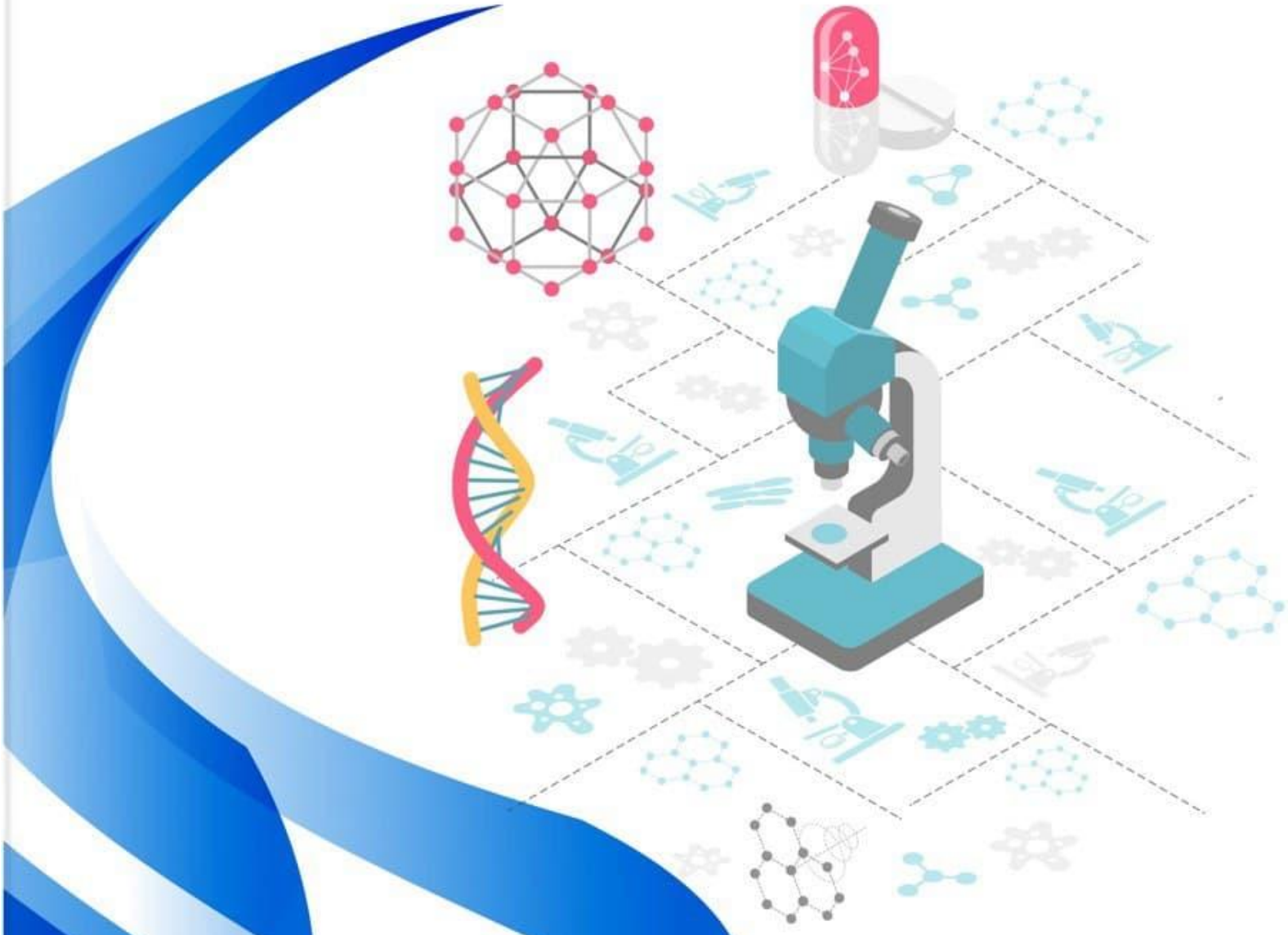

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ANALYSIS OF LIVER FIBROSIS BY NON-INVASIVE METHODS IN PATIENTS WITH HEPATITIS C IN ASSOCIATION WITH CHRONIC HEART FAILURE

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Relevance. The "gold standard" for assessing the process of liver fibrosis is the biopsy method. Although the reliability of this method is high, it is rejected by patients or their relatives due to its invasiveness.

In world medicine today, a large amount of scientific and practical research is being carried out on the transition from invasive diagnostic methods to non-invasive ones, and this is a requirement of modern medicine.

Purpose of the study:to determine the prognostic value of non-invasive methods of the liver fibrosis index and compare the indicators with elastometry indicators in patients with hepatitis C in association with CHF.

The study material included 110 patients with chronic viral hepatitis C who were being treated at the Bukhara Regional Multidisciplinary Medical Center and the Regional Infectious Diseases Hospital. 32 patients had chronic hepatitis C without chronic heart failure, and 78 patients had chronic hepatitis C and chronic heart failure as a comorbid condition. Clinical and laboratory aspects of liver status were compared.

The first group consisted of 32 patients with chronic viral hepatitis C and anemia without CHF. Average age of patients in the group52.58±1.27years, duration of chronic hepatitis 4.1±0.9 years.

The second group consisted of 78 patients with chronic hepatitis C, CHF and anemia. Average age of patients54.81±2.11In patients, the duration of chronic hepatitis is 6.7±0.7 years.

During the study, the following methods were used: viral hepatitis was diagnosed using general clinical laboratory, biochemical studies, PCR, ELISA analysis, functional diagnostic studies - liver ultrasound, fibroscan and echocardiography, APRI and FIB-4 liver fibrosis index tests, as well as statistical analysis.

Own results.

To achieve this goal, we studied the non-invasive liver fibrosis indices (LPI) APRI and FIB-4 in the study group. These tests were chosen because their test indicators are studied in each hospital according to the standard.

One of the simplest and most common tests is the APRI test (AST to Platelet Ratio Index) - this is the ratio of a multiple increase in AST activity in the blood serum (AST/UMN AST) to the number of platelets (109/l). With its help, the activity of fibrogenesis in the liver is studied.

APRI (aspartate aminotransferase to platelet ratio index) =
AST (aspartate aminotransferase) × 100 /

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((AST upper limit) × n platelets (109/L)).

An index value >1.0 was considered to correspond to a high risk of severe fibrosis; index value <0.5 – low risk of severe fibrosis.

FIB-4 (Fibrosis-4) =
age (years) × AST/(n platelets (109/l) × √(ALT)).

FIB-4 index values <1.45 indicate no high risk of fibrosis, and values >3.25 are highly likely to indicate severe fibrosis.

Table 1

Analysis of the levels of liver fibrosis indicators using non-invasive methods in the groups included in the study (%)

Groups	APRI			FIB-4		
	<0.3	**"gray area"**	**1.0<**	**<1.45**	**"gray area"**	**3.25<**
First group n = 32	31.25	46.88	21.87	53.12	31.255	15 625
Second group n = 78	19.2	56.45	24.35	51.28	28.21	20.51

*Explanation: CHCV – chronic viral hepatitis C; CHF – chronic heart failure. Level of statistical significance compared to the second group: * – p<0.05; ** – p<0.01; *** – p<0.001.*

As can be seen from Table 1, in both groups the number of patients with a high probability of developing fibrosis was determined. That is, according to the APRI method, the indicator greater than 1.0 was 21.87% in group 1 and 24.35% in group 2. On the other hand, according to the FIB-4 scale, these figures were 15.625% and 20.51%, respectively.

A comparative analysis between groups showed the following results. The number of patients with a low probability of developing fibrosis was 31.25% in group 1 and 19.2% in group 2 using the APRI method, 53.12% and 51.28% in groups 1 and 2, respectively on the FIB-4 scale.

The “gray zone” was 46.88% and 31.288% in the first group of patients with appropriate treatment by both methods, and in the second group - 56.45% and 28.21%, respectively. It is important to note that in both groups of patients, the FIB-4 score was superior to the APRI in predicting the presence of fibrosis (p>0.05).

In order to assess the prognostic value of these two methods used in determining FPI, a comparative analysis of the results obtained with elastography (fibroscan) indicators was carried out (Tables 2 and 3).

table 2

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Comparative analysis of the results of non-invasive and invasive methods for assessing the liver fibrosis index in patients with chronic hepatitis C and anemia

FPI methods	Indicators	%	Degree of fibrosis by elastometry (%)			
			F0	F1	F2	F3
APRI	<0.3	31.25	25.0	6.25	0.0	0.0
	0.3-1.0	46.48	21.87	25.0	0.0	0.0
	1.0<	21.87	0.0	9.37	9.37	3125
FIB 4	<1.45	53.12	28.12	21.87	3125	0.0
	1.45-3.25	31.25	18.75	12.50	0.0	0.0
	3.25<	15.62	3125	12.50	3125	3125

*Explanation: CHCV – chronic viral hepatitis C. Level of statistical significance compared to the second group: * – p<0.05; ** – p<0.01; *** – p<0.001.*

As can be seen from Table 2, in a comparative analysis of the indicators of non-invasive and invasive methods for assessing the liver fibrosis index in the first group of patients, cases with a low probability of fibrosis according to the APRI test were 31.25%. This indicator was F0 – 25.0% and F1 – 6.25% with the non-invasive instrumental method (elastometry). According to the FIB 4 scale, cases with a low probability of fibrosis were 53.12%, according to elastometry F0 - 28.12%, F1 - 21.87% and F2 - 3.125%.

A similar comparative analysis was carried out for group 2. That is, the level of liver fibrosis in patients diagnosed with anemia with comorbidity of chronic hepatitis C and CHF was compared with the results of tests based on serum parameters and elastometry using non-invasive methods (Table 3).

Table 3

Comparative analysis of the results of non-invasive methods for assessing the liver fibrosis index in patients with chronic hepatitis C+CHF and anemia

FPI methods	Indicators	%	Degree of fibrosis by elastometry (%)			
			F0	F1	F2	F3
APRI	<0.3	19.2	18.0	1.28	0.0	0.0
	0.3-1.0	56.45	36.0	18.0	1.28	1.28
	1.0<	24.35	8.97	7.69	5.13	2.56
FIB 4	<1.45	51.28	37.20	8.97	2.56	2.56
	1.45-3.25	28.21	15.40	12.8	0.0	0.0
	3.25<	20.51	10.25	5.13	3.85	1.28

*Note: CHCV – chronic viral hepatitis C, CHF – chronic heart failure. Level of statistical significance compared to the second group: * – p<0.05; ** – p<0.01; *** – p<0.001.*

As shown in Table 3, in a comparative analysis of the indicators of non-invasive and invasive methods for assessing the liver fibrosis index in the second group of patients, cases with a low probability of fibrosis according to the APRI test were 19.20%, while with the non-invasive instrumental method (elastometry) this indicator was F0 - 18.0% and F1 - 1.28%. According to the FIB 4 scale, cases with a low probability of fibrosis were 51.28%, according to elastometry F0 - 37.20%, F1 - 8.97%, F2 - 2.56% and F3 - 2.56%.

Conclusions. When assessing the liver fibrosis index in late patients with comorbidity of chronic hepatitis C + CHF + anemia, it was found that for the APRI scales, AUC = 0.878 and AUC = 0.878, respectively, for the FIB4 scale, it was determined that AUC = 0.823 and AUC = 0.725, respectively, have a prognostic value .

Non-invasive FPI methodsAPRI test and scalesFIB4are quite simple, reliable and economical, their use can provide an approximate understanding of the presence of high-stage fibrosis, based on publicly available indicators, and can be recommended as a screening examination.

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