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CIRRHOSIS OF THE LIVER. CONVERSATION BASED ON LABORATORY PARAMETERS

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Abstract: There is a lot of data in the world literature on the diagnosis of liver cirrhosis. But given these data, it can be noted that comparative data from clinical and laboratory diagnostic methods based on etiology are scarce. The article below describes real experience in the study of hepatic cirrhosis and the results of clinical and laboratory studies of this disease.

Key words: liver cirrhosis, laboratory parameters, biochemical blood test, general blood test.

Introduction. Cirrhosis has become a major public health problem and a significant cause of morbidity and mortality. According to WHO data for 2020, liver cirrhosis is in 8th place in the structure of causes of death for countries with lower middle income levels [1]. Non-alcoholic fatty liver disease (NAFLD) is clinically defined as hepatic steatosis in the absence of excessive alcohol consumption or other known chronic liver diseases, leading to end-stage cirrhosis or liver cancer [2]. The majority of patients with liver cirrhosis due to NAFLD are women, over 50 years of age, and often have obesity or type II diabetes mellitus [3,4,5]. The incidence of ascites and hepatorenal syndrome in patients with liver cirrhosis as a result of NAFLD is similar to that in patients with liver cirrhosis as a result of HCV infection [6].

In patients with CG and cirrhosis, an increase in the activity of ALT and AST in the blood serum is recorded. The highest value of the AST/ALT ratio was observed in cirrhosis due to a predominant increase in AST activity. ALT activity in cirrhosis is less than in CG. Thus, the development of cirrhosis is accompanied, in comparison with hCG, by an increase in AST activity, an increase in the AST/ALT ratio and a decrease in ALT activity [7].

In the work of Kuznetsov S.D., the ALT level was recorded within normal values in 48.9% of cases, up to 3 norms

- 35.6% and only 15.5% are above 3 norms. Thus, the majority of patients with CHC had normal and moderately elevated ALT levels [8]. Fazylov V.Kh. et al., during a dynamic study of activity, consistently noted normal values - not exceeding 1.5 norms in only 3.7% of patients with CHC. 23.9% had constantly elevated ALT levels (from 1.5 to 12 norms). The majority of patients (72.4%) had wave-like enzyme activity—from normal values to above 1.5 times the norm [9]. According to the works of Bondarenko A.L. and Baramzina S.V [10] in patients with liver cirrhosis as a result of CHC compared to CHC, symptoms of hepatic cell failure and cholestasis were significantly more often detected. In patients with cirrhosis, there was a greater decrease in albumin, an increase in globulins, and an acceleration of ESR. In her work, Voznesenskaya E. A. notes that the value of the de Ritis coefficient reliably and significantly increases in patients with cirrhosis ($P<0.05$), due to a predominant increase in AST activity. [eleven].

Concomitant infection with hepatitis B and C viruses did not affect the clinical picture of alcoholic cirrhosis, but led to higher levels of serum transaminase activity [12].

Thus, in the literature there are quite a lot of studies on liver cirrhosis as a result of alcoholic liver disease, less work on cirrhosis as a result of viral lesions, liver lesions of mixed origin and due to non-alcoholic fatty liver disease. But at the same time, there is practically no comparative data on clinical and laboratory parameters depending on the etiological cause of cirrhosis.

All this determines the relevance and prospects for further study of the hemato-biochemical features of cirrhosis of various etiologies.

Materials and methods of research. During the study, a retrospective assessment of the hemato-biochemical parameters of patients with cirrhotic liver disease who underwent inpatient treatment at the Bukhara region hospital in Gastroenterology department from September 2019 to February 2023 was carried out by studying data from medical records.

Statistical processing of the obtained data was carried out using IBM SPSS Statistics 23.0 software and the Microsoft Office 2019 package.

Research results. According to our data, from September 2017 to February 2020. In the conditions of the Almaty City Emergency Hospital, 132 patients with cirrhosis were treated, which amounted to 3.46% of the total number of patients treated in the therapeutic department. The criteria for inclusion in the study were: age over 18 years, established diagnosis of liver cirrhosis.

Exclusion criteria were: pregnancy, drug-induced liver damage, presence of HIV infection, verified hemoblastosis.

Thus, 127 patients were included in the study. Among the patients, there were 76 men, which was 60.2%, and 51 women, which was 39.8%.

The minimum age of patients was 29 years, the maximum was 87 years. The average age was 54.05 ± 12.16 years: men – 51.54 ± 11.58 years, women – 57.84 ± 12.13 years. After analyzing the medical documentation, we divided the patients into the following groups, taking into account the etiological cause of the development of cirrhosis: cirrhosis of alcoholic etiology - 24.4%, cirrhosis of viral etiology - 50.4%, cryptogenic cirrhosis of the liver - 16.5%, a combination of viral and alcoholic cirrhosis – 4.7%, non-alcoholic fatty liver disease – 3.9%.

Tables 1, 2 and 3 below show the average values of laboratory parameters for liver cirrhosis of various etiologies.

Tab. 1. Average values of hematological parameters in liver cirrhosis of various etiologies

Indicator	Alcohol	Virus	Alcohol+virus	Cryptogenic	NFLD	Stat. Value (p)
HGB	115,48±21,33	106,10±26,57	106,50±61,02	96,05 ± 31,12	106,40± 34,53	0,30
WBC	10,98 ± 6,45	10,38 ± 8,48	10,07 ± 5,39	9,69 ± 6,82	6,25 ± 2,95	0,55
RBC	3,52 ± 0,79	3,64 ± 0,88	3,36 ± 1,49	3,24 ± 1,13	4,34 ± 0,74	0,18
HCT	33,63 ± 7,67	32,55 ± 7,30	33,70 ± 15,22	28,65 ± 9,65	34,70 ± 8,02	0,31
PLT	142,77±65,05	136,01±86,86	134,33±74,59	205,86 ± 165,09	186,20± 133,56	0,85
LYM	14,71 ± 8,13	19,00 ± 15,58	14,95 ± 6,91	15,74 ± 8,54	16,78 ±	0,98

					6,77	
СОЭ	30,5 ± 17,20	30 ± 18,73	15,00 ± 15,5	36,46 ± 15,18	29,00 ± 287,03	0,62

Tab.2. Average values of coagulological indications for liver cirrhosis of various etiologies

Indicator	Alcohol	Virus	Alcohol+virus	Cryptogenic	NFLD	Stat. Value (p)
ПВ	20,85±9,25	20,32±7,75	17,64 ± 3,79	19,56 ± 9,02	16,58 ± 5,00	0,67
ПТИ	53,61±25,75	57,16±21,43	54,70 ± 7,70	65,33 ± 29,69	81,97 ± 36,24	0,19
АЧТВ	58,24±27,29	48,38 ± 16,9	43,2	44,65 ± 17,93	37,16 ± 6,26	0,50
МНО	1,73 ± 0,72	1,61 ± 0,54	1,43 ± 0,27	1,59 ± 0,67	1,22 ± 0,33	0,55
Фибриноген (сек)	23,08 ± 9,02	29,53±12,30	22,40 ± 5,37	18,22 ± 8,19	20,40 ± 9,71	0,23

Tab.3. Average values of biochemical readings for liver cirrhosis of various etiologies

Indicator	Alcohol	Virus	Alcohol+virus	Cryptogenic	NFLD	Stat. Value (p)
General protein	61,71 ± 8,7	62,39±10,16	54,20±11,9	57,28 ± 10,74	64,92 ± 7,33	0,135
Albumin	24,57±5,11	20,94 ± 4,37	27,5±6,3	25,16 ± 5,58	40,13± 7,46	0,05≤
Urea	6,72 ± 6,16	11,41 ± 9,12	10,26±7,4	12,64 ± 10,27	3,82 ± 1,52	0,05≤
Creatinine	88,78 ± 88,85	71,70±34,28	97,17±59,2	185,60 ± 217,18	122,88 ± 32,80	0,68
GFR	107,93	6,15 ± 1,91	88,6±45,2	62,33 ± 39,16	8,43 ± 4,13	0,05≤
Glucose	5.54±2.14	57,17±141,11	4,08±2,57	5,00 ± 1,58	8,43±4,13	0,05≤
ALT	70,25±62,5	57,17 ± 141,11	92,81±8,44	73,84±162,87	87,52±136,18	0,97
AST	140,46 ±161,03	111,23 ± 180,46	133,18±127,17	147,31±350,4	154,73±256,16	0,95
Коэфициент де Ритиса	0,62 ± 0,51	0,56 ± 0,24	0,73 ± 0,30	0,54 ± 0,22	0,64 ± 0,12	0,61
Общий биллирубин	188,49 ± 163,26	58,82±47,85	83,89 ± 139,69	75,99 ± 76,20	115,675 ± 159,67	0,05≤
Прямой биллирубин	179,26 ± 132,98	47,22 ± 4,59	39,63 ± 6,23	79,91 ± 78,42	18,93 ± 14,79	0,05≤
ГГТП	127,39 ± 109,16	49,07 ± 7,45	75,00 ± 6,34	30,39 ± 22,69	45,86 ± 23,56	0,05≤
Щелочная фосфотаза	146,65 ± 70,55	138,77 ± 82,90	92,99 ± 8,27	137,07 ± 76,52	164,40 ± 77,49	0,75
Общий холестерин	2,95 ± 1,38	2,66 ± 1,09	2,20 ± 0,87	3,01 ± 1,48	3,13 ± 1,26	0,75
Амилаза общая	32,5 ± 10,60	69,49 ± 58,30	184,15 ± 269,198	85,04 ± 169,83	40,57 ± 31,05	0.71

Results and discussion. In our study, the following characteristics of the sample were obtained: among the patients there were 76 men, which was 60.2%, and 51 women, which was 39.8%. The minimum age of patients was 29 years, the maximum was 87 years. The average age was 54.05 ± 12.16 years: men – 51.54 ± 11.58 years, women – 57.84 ± 12.13 years. In terms of etiological causes: cirrhosis of alcoholic etiology - 24.4%, cirrhosis of viral etiology - 50.4%, cryptogenic cirrhosis of the liver - 16.5%, a combination of viral and alcoholic cirrhosis - 4.7%, non-alcoholic fatty liver disease - 3, 9%.

According to literature data presented by researchers from Singapore, where the study included 564 patients with a median follow-up of 85 months. The mean age was 60.9 ± 12.5 years, and 63.8% were male. The main etiologies of liver cirrhosis were chronic hepatitis B (CHB) (63.3%), alcoholic (11.2%), cryptogenic (9%) and chronic hepatitis C (CHC) (6.9%) [13]. Thus, the patients in our sample were younger (54.05 ± 12.16 years), and there were slightly fewer men (63.8% versus 60.2% in our study). Similar to the Singapore

study, the majority of patients had liver cirrhosis as a result of viral damage (50.4%), alcoholic damage was twice as common (11.2% versus 24.4% according to our data), cirrhosis of unknown etiology was also found in twice as often (9% versus 16.5% according to our data). The combination of viral and alcoholic cirrhosis and non-alcoholic fatty liver disease were 4.7% and 3.9%, respectively.

When analyzing the hemato-biochemical parameters of patients with cirrhosis, no statistical significance was identified in the general blood count and coagulogram parameters depending on the etiological cause of cirrhosis. However, when comparing the parameters of a biochemical blood test, it was found that the albumin level was significantly lower in cirrhosis of viral etiology, and higher in cirrhosis as a result of NFDL. Urea levels were significantly lower in liver cirrhosis in the NFDL outcome, and higher in the cryptogenic cirrhosis outcome. GFR was significantly lower in cryptogenic cirrhosis, and higher in cirrhosis as a result of NFDL. Also significantly significant was the increase in the level of glycemia in the biochemical blood test in patients with liver cirrhosis as a result of NFDL. Cholestasis syndrome (increased levels of total and direct bilirubin) was more pronounced in alcoholic cirrhosis, and was least pronounced in cirrhosis of viral etiology.

In comparison with the results of a study conducted by Bilalova A.R., Makashova V.V., Shipulin G.A., in our work, the decrease in the number of red blood cells and hemoglobin did not depend on the etiological cause of cirrhosis, however, the statistical significance of the influence of the cause on the decrease in platelet levels not identified.

In this study, biochemical parameters were also assessed taking into account the degree of cirrhosis according to the Child-Pugh classification. In class B cirrhosis, the degree of change in the main biochemical parameters, as well as their duration, was greater in patients with cirrhosis of combined etiology than in patients with cirrhosis of alcoholic etiology, which may be due to the presence of two damaging factors in the body - HCV and alcohol.

When analyzing the biochemical parameters in patients with Child-Pugh class C cirrhosis, it turned out that the initial parameters reflecting cholestasis - total bilirubin, GGTP and alkaline phosphatase were recorded significantly higher in cirrhosis of alcoholic origin than in cirrhosis resulting from mixed hepatitis. The activity of cytolysis enzymes (ALT, AST) did not depend on the etiology of cirrhosis. It follows that the biochemical data in our study are similar to the results of the above study. However, in this work, in comparison with ours, the average age was significantly lower (42.0±4.3, 45.2±6.3 years) [14].

Thus, the hemato-biochemical parameters obtained in our work confirm the data of foreign authors. At the same time, it was found that statistically significant differences depending on the etiological cause of cirrhosis are detected during a biochemical blood test, while no statistically significant differences were identified in a general blood test and coagulogram.

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