

CLINICAL AND BIOCHEMICAL FEATURES OF THE DEVELOPMENT OF CHRONIC HEPATITIS B WITH FIBROTIC CHANGES

Nurali Narziyev

Tashkent State Medical University, Tashkent, Uzbekistan

Abstract

Hepatitis B virus (HBV) is one of the leading causes of chronic liver diseases, including hepatocellular carcinoma and cirrhosis. The number of people infected with HBV worldwide is estimated to exceed 400 million, and infection-related complications have become a serious global public health problem. Assessment of liver fibrosis is crucial for therapeutic decision-making and prediction of outcomes in patients with chronic hepatitis B.

Despite the availability of numerous non-invasive diagnostic methods, including the Fibrosis-4 (FIB-4) index, Hepascore, FibroScan, FibroTouch, FibroIndex, and the Forns index, data on the effectiveness of non-invasive tests for assessing liver fibrosis in patients with hepatitis B remain limited. Recent studies have shown that the prevalence of HBV (HBsAg-positive) infection in the general population ranges from 10% to 20%. Effective management of patients with HBV requires continuous monitoring and follow-up, as well as identification of factors associated with liver fibrosis.

Keywords: chronic hepatitis B, inflammation, liver injury.

Introduction

The aim of the study was to investigate the clinical and biochemical characteristics of patients with chronic hepatitis B (CHB) without fibrosis and those with fibrosis.

Materials and Methods

The study included 50 patients diagnosed with CHB who were hospitalized in the Department of General Therapy No. 2 of the Multidisciplinary Clinic of Tashkent State Medical University. The patients were divided into two groups: Group 1 consisted of patients with CHB without fibrosis, whereas Group 2 included patients with CHB and fibrosis. In addition, 15 apparently healthy participants were selected as a control group. The diagnosis of CHB was established based on the medical history, clinical manifestations, and laboratory and instrumental examination findings.

The laboratory examination included a comprehensive biochemical panel (alanine aminotransferase [ALT], aspartate aminotransferase [AST], bilirubin, and total protein), a coagulation profile, clinical laboratory assessment of hematological parameters (hemoglobin, erythrocyte, leukocyte, and platelet counts, and leukocyte differential), and urinalysis. Statistical analysis was performed using Student's t-test with Microsoft Office 2019 and Prism 8.

Group 1 comprised 25 patients with CHB: 14 men (44.0%) and 11 women (56.0%). The patients were aged 40–75 years, with a mean age of 64.4 years. Disease activity was moderate in 46% of patients, pronounced in 25.5%, minimal in 22.22%, and mild in 7.7%. Group 2 comprised 25 patients with CHB and fibrosis who received treatment in the Hepatobiliary Pathology Department of the Multidisciplinary Clinic of Tashkent State Medical University. There were 15 men (60.0%) and 10 women (40.0%). The patients were aged 40–75 years, with a mean age of 61.8 years. They were treated from October to December 2025 and received

standard therapy. The main complaints included heartburn, nausea, pain and heaviness in the right upper quadrant, fatigue, digestive disturbances, and reduced work capacity.

Table 1. Clinical characteristics of patients with chronic hepatitis B

Clinical feature	Group 1, n=25	Group 2, n=25
Pain in the right upper quadrant	17 (68%)	22 (88%)
Jaundice	1 (4%)	5 (20%)
Decreased appetite	18 (72%)	24 (96%)
Constipation	8 (32%)	8 (32%)
Weakness	19 (76%)	23 (92%)
Pruritus	3 (12%)	4 (16%)
Nausea	15 (60%)	18 (72%)
Vomiting	3 (12%)	4 (16%)
Reduced work capacity	18 (72%)	21 (84%)

Results and Discussion

The clinical presentation was characterized by weakness, decreased appetite, nausea, and pain in the right upper quadrant. According to the study text, vomiting was observed in 88%, decreased appetite in 96%, and weakness in 96% of patients with CHB and fibrosis, which was higher than in patients with CHB without fibrosis. In addition, five patients had jaundice accompanied by intense pruritus. Pain in the right upper quadrant was reported by 88% of patients in Group 2, which was 30% higher than in Group 1. Hepatomegaly was detected in the majority of examined patients; on average, the liver extended 2 cm below the costal margin. The characteristics of disease symptoms are presented in Table 1.

Table 2. Comparative analysis of blood biochemical parameters in patients with chronic hepatitis B

Parameter	Control, n=15	Group 1, n=25	Group 2, n=25	p-value
Total protein, g/L	63.1±3.4	72.3±8.1	66.8±10.1	0.0388*
Albumin, g/L	36.9±3.1	34.5±8	31.3±9.7	0.3860
Total bilirubin, μmol/L	13.1±1.02	28.3±15.9	32.9±17.8	0.0044*
Glucose, mmol/L	4.25±0.74	4.29±0.36	5.1±0.21	0.0001*
ALT, U/L	28.1±4.42	64.1±54.9	74.4±55.9	0.5141
AST, U/L	14.04±2.9	37.2±32.6	50.4±55.3	0.3090

Biochemical analysis of key liver-related parameters, including bilirubin (direct and total) and liver enzymes—alanine aminotransferase (ALT), aspartate aminotransferase (AST), gamma-glutamyl transferase (GGT), and alkaline phosphatase—can be used to assess hepatic function. A marked increase in blood bilirubin levels (hyperbilirubinemia) is often observed in patients with fibrosis (Table 2). ALT is one of the main laboratory indicators used in the assessment of liver pathology. Not only the individual concentrations of these parameters but also the AST/ALT ratio are important; according to the source, the normal ratio is 1.33±0.42. Patients with fibrosis and different disease courses demonstrated marked increases in ALT and AST

activity. Mild or asymptomatic viral infection usually causes a transient increase in ALT without significant impairment of liver function. In the group of patients with CHB and fibrosis, ALT, AST, and bilirubin levels increased by 16%, 35%, and 16.3%, respectively, compared with the group of patients with CHB (Figure 1).

Note: * indicates a statistically significant difference ($p \leq 0.05$).

Table 3. Comparative analysis of the lipid profile in patients with CHB without fibrosis and CHB with fibrosis

Parameter	Control, n=15	Group 1, n=25	Group 2, n=25	p-value
Total cholesterol, mmol/L	1.41±0.09	3.10±0.71	4.08±0.75	0.0001*
HDL-C, mmol/L	1.11±0.08	1.29±0.52	1.26±0.51	0.8377
LDL-C, mmol/L	2.3±0.09	2.34±0.71	3.2±0.14	0.0001*
Triglycerides, mmol/L	0.43±0.04	1.8±0.41	2.1±0.21	0.0001*

Note: * indicates a statistically significant difference ($p \leq 0.05$).

Assessment of the lipid profile revealed increased LDL-C, triglyceride, and total cholesterol levels in the group of patients with CHB and fibrosis by 36%, 16%, and 31.0%, respectively, compared with the group of patients with CHB without fibrosis ($p \leq 0.05$) (Table 3).

ALT levels were higher in patients with CHB and fibrosis than in those without fibrosis (47.1 ± 33.0 and 30.5 ± 19.0 , respectively).

Conclusions

1. Individual clinical symptoms were more pronounced in patients with CHB and fibrosis compared with the control group.
2. In patients with CHB and fibrosis, ALT, AST, and bilirubin levels increased by 16%, 35%, and 16.3%, respectively, compared with the control group, indicating a cytotoxic effect of the virus on liver cells.
3. Hyperenzymemia may aggravate the course of CHB and contribute to complications. In particular, LDL-C, triglyceride, and total cholesterol levels increased by 36%, 16%, and 31.0%, respectively, in patients with CHB and fibrosis compared with the control group.

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