DIAGNOSTIC SIGNIFICANCE OF LIVER ELASTOGRAPHY IN PATIENTS WITH LIVER CIRRHOSIS OF VIRUS ETIOLOGY

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ABSTRACT

This study included data from 150 patients aged 18 to 65 years with cirrhosis of the liver with viral etiology. With METAVIR ultrasound elastography of the liver, the F4 fibrosis stage ranges from 12.5 kPa to 75 kPa. In the corresponding case, the following indicators of the development of complications of liver cirrhosis were obtained: 23.9 kPa – dilation of esophageal varicose veins, 25.2 kPa – hepatic encephalopathy, 25.2 kPa – ascites, 31.5 kPa – stages of decompensation B and C by Child - Pugh cirrhosis, 35.3 kPa – bleeding from enlarged esophageal varicose veins.

Cirrhosis of the liver takes the leading place among gastrointestinal diseases and remains a very urgent clinical-epidemiological and economic problem in the healthcare system of many countries.The main reason for such a large problem is the prevalence of etiological factors in the form of persistent hepatotropic viruses, combined with high rates of alcohol consumption, obesity and mortality [1,4]. Complications of liver cirrhosis are the most common cause of death in gastroenterology patients, accounting for at least 40% of the total number of patients.

According to the US National Center for Health Statistics, death from liver cirrhosis accounts for 0.27% of all deaths in the population [8,9-20]. Epidemiological studies in Europe have shown that currently approximately 29 million people in these countries suffer from severe liver disease. According to the WHO, among 187 countries of the world, the annual death rate from cirrhosis exceeds one million, which is 2% of the total death of the world population [5].

The increase in the number of etiological factors that play a role in the development of cirrhosis of the liver determines the need for a differentiated approach to preventive and therapeutic measures. To date, the analysis of data in the literature shows that none of the prognostic classifications (Child-Pugh, GAHS, MELD) allows to reliably assess the risk of complications and death in liver cirrhosis in a prognostic direction [2,7].

The process of fibrogenesis is an integral pathogenetic link in all chronic liver diseases [3]. One of the directions of modern non-invasive diagnostics of liver fibrosis assessment is imaging methods, among which ultrasound elastometry of the liver is the leader [6]. In view of the above, this study showing the superiority of liver elastography in 3 prognostic aspects for the risk of developing liver cirrhosis complications, regardless of

etiology, is not only relevant, but is undoubtedly one of the first in the series of further large studies in the future. The relevance of such studies is determined by the need to reduce the risk of liver cirrhosis complications and the death of patients with liver cirrhosis.

The purpose of the studyto evaluate the diagnostic value of elastography is to develop a program to monitor fibrogenesis in patients with liver cirrhosis of viral etiology.

Research material and methods. This study included data on 150 patients aged 18 to 65 years with cirrhosis of the liver of viral etiology. 72 of the patients were men and 78 were women (gender ratio 0.96). The average age of patients (M±m) was 42.3±9.7 years.

The diagnosis of liver cirrhosis was determined based on the results of clinical examination, laboratory and instrumental examination. The etiology of liver cirrhosis is determined by the laboratory signs of viral hepatitis, in particular by the detection of anti-hepatitis C antibody (anti-HCV) HCV RNA, viral hepatitis B surface antibody (HBV) along with the detection of HBV DNA, viral hepatitis D (anti-HDV) HDV RNA. done by determining.

Liver elastography was performed on a Siemens Acuson Juniper apparatus (Siemens, Germany) using a 4C1 sensor. The study was carried out according to the standard method with the patient lying down, on an empty stomach or at least 2 hours after eating, with at least 10 reliable measurements during one examination. At the same time, if the interquartile range of liver elastography values was not more than 25% of the median of the study, and the proportion of time measurements was 30% or more of their total number, the study was sufficient is considered to be fulfilled.

Research results. Esophageal varicose veins (Esophageal Varicose Veins) were detected in 84 patients, and this symptom was not detected in 66 patients. Liver elastography in patients with esophageal varices was 23.9 kPa on average.

Ascites was detected in 37 patients, and liver elastography was 27.8 kPa on average. Bleeding from esophageal varices (Esophageal variceal bleeding) was observed in 28 patients, and this sign was not observed in 122 patients. Liver elastography averaged 35.3 kPa in these patients.

Liver cirrhosis decompensation was detected in Child Pugh stage B and C patients, which accounted for 24.6% (n=37) of the total number of patients, and liver decompensation was not detected in 76.4% (n=113), respectively. Liver elastography averaged 31.5 kPa.

Hepatic encephalopathy was detected in 56 patients and not detected in 94 patients. Liver elastography averaged 25.2 kPa.

The results of liver elastography depending on the clinical course of the disease are presented in Table 1 (one patient example) and Figure 1.

Table 1

Liver elastography results

No	EVV n=84	Ascites n=37	EVB n=28	Liver decompensation n=37	Hepatic encephalopathy n=56
	kPa				
1	23,25	28.35	31.8	30.8	24.55
2	23.35	28.45	32.6	31.15	25
3	23.45	28.6	33.6	31.4	25.45

4	23.75	28.8	34.1	31.8	25.55
5	24.15	28.9	34.2	32.6	25.7
6	24.4	29	34,35	33.6	26.1
7	24.5	29.5	34.65	34.05	26.45
8	25	30.2	35.25	34,15	26.65
9	25.45	30.8	35.85	34,35	26.85
10	25.55	31.15	36.05	34.65	-

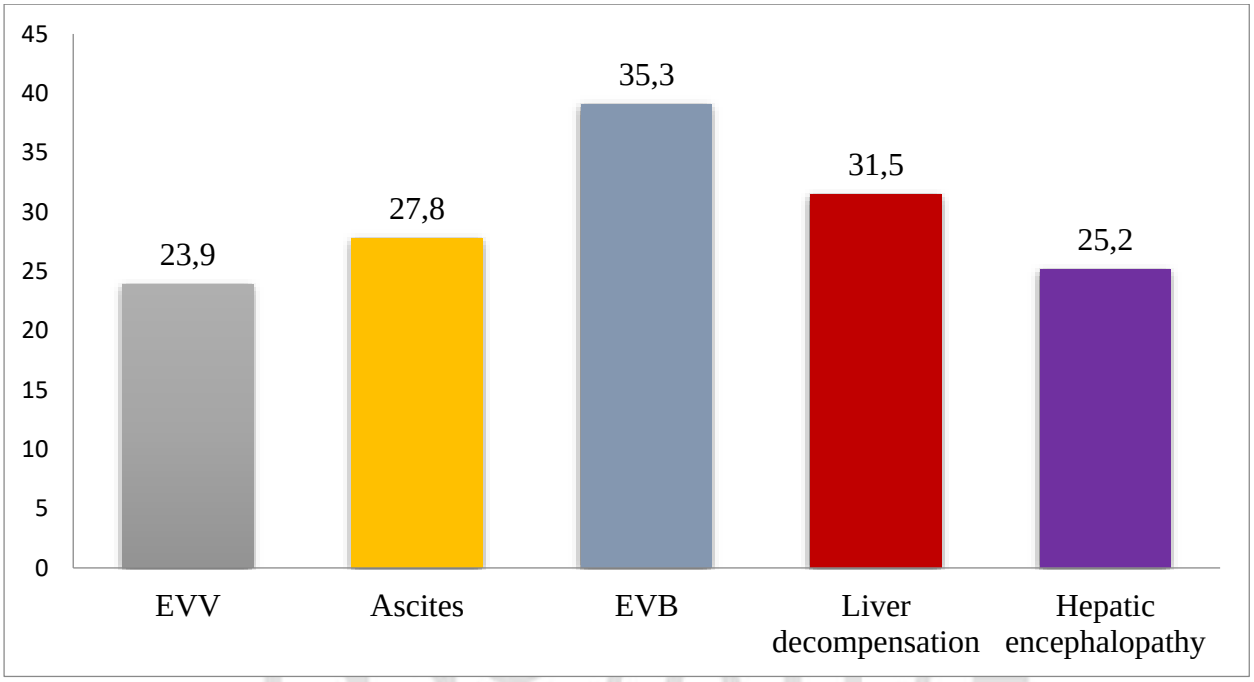

Figure 1.Average results of liver elastography

However, for true positive values, elastography values that were assumed to be at or above the threshold were accepted when they corresponded to the presence of a sign (for example, the presence of esophageal varices and liver elastography values higher than 24.5 kPa). For a true negative result, the absence of a sign was accepted when the liver elastography values were lower than the elastography value accepted as a threshold. Results were considered false negative when liver elastography values were below the threshold and a marker was present. Results were considered false positive when liver elastography values were at or above the cutoff and no analyzable marker was present.

Conclusion. According to METAVIR, the F4 fibrosis stage in ultrasound elastography of the liver is from 12.5 kPa to 75 kPa. Accordingly, the following indicators were obtained for the development of complications of liver cirrhosis: 23.9 kPa - dilatation of esophageal varicose veins, 25.2 kPa - hepatic encephalopathy, 25.2 kPa - ascites, 31.5 kPa - Child's disease of liver cirrhosis. B and C stages of decompensation according to Pugh, 35.3 kPa – bleeding from dilated varicose veins of the esophagus.

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