



## VALUE OF ULTRASONIC ELASTOMETRY IN DIAGNOSIS OF CHRONIC LIVER DISEASES

Shodiyeva Gulzoda Rabimkulovna  
Assistant Samarkand state Medical Universite  
Department of Internal Disease

### Abstract

Ultrasound liver elastometry is important for determining diagnostic value in assessing liver fibrosis in patients with chronic liver disease. 86 patients with liver diseases of various etiologies were under observation. Ultrasound elastometry was performed to assess the degree of fibrosis, and liver fibrosis was assessed using the Metavir system. When evaluating the results of ultrasonic elastometry in liver diseases of viral etiology using the Metavir system, the diagnostic accuracy of this method is 91%, the sensitivity is 100%. For patients with non-alcoholic fatty liver disease, the sensitivity of this method was relatively low. In chronic liver diseases, ultrasound elastometry allows you to determine the degree of fibrosis.

**Keywords:** chronic liver diseases, ultrasonic liver elastometry, fibroscan, Metavir.

### Relevance

Currently, liver cirrhosis is one of the most pressing social and medical problems in the world. According to the World Health Organization for 2020, mortality from liver cirrhosis in developing countries ranks 8<sup>th</sup> [1]. According to the latest data, the incidence of cirrhosis in the world is 40-45 patients per 100 thousand population, and this figure is constantly growing. The main etiological factors of liver cirrhosis and primary liver cancer in Europe are alcohol abuse, viral hepatitis B, C, metabolic syndrome [2,3]. An important risk factor for the development of hepatocellular carcinoma is chronic hepatitis C. The presence of liver fibrosis is important for determining its stage, final diagnosis, treatment of patients, regardless of the etiology of chronic liver disease, and conclusions about its consequences [4,5].

Morphological examination of liver tissue is the main method of investigation to assess the stage of fibrosis [6,7]. Ultrasound elastometry of the liver is becoming increasingly popular as a non-invasive diagnostic method [8].

### Purpose of Scientific Research

Determine the value of ultrasound elastometry in determining the degree of liver fibrosis in liver diseases of various etiologies.





## Materials and Methods of Research

The study was conducted in 2019-2021 in 86 patients who were being treated in the hepatology department of the Samarkand Regional Infectious Diseases Hospital. All patients underwent a comprehensive examination, including extensive clinical, instrumental and laboratory tests, as well as the use of ultrasound elastometry. This method is based on determining the mechanical properties of liver tissue, in particular its elasticity, depending on the severity of liver fibrosis [9,10]. Liver elasticity is determined by means of special sensor emitting low-frequency mechanical pulses. Hepatic ultrasound elastometry was determined on a Fibrosan instrument (Exosens, France). There were 35 men (41%) and 51 women (59%) under observation. The median age was 43.5 years. According to the nosological criteria of the disease, patients were divided into 4 groups:

- 1 Group: 28 (32 %) patients with HCV of viral etiology (HCV 72%, HBV 28%).
- 2 Group: 24 patients (28 %) with liver damage of alcoholic etiology.
- 3 Group: 18 patients (21 %) with liver damage of toxic etiology.
- 4 Group: 16 patients (19 %) with liver damage of cryptogenic etiology.

Morphological assessment of the stages of liver tissue fibrosis was performed on the generally accepted Metavir scale. Stage F0 corresponds to the absence of fibrosis, F1 - expansion of the portal tract without the formation of partitions, F2 - portal fibrosis with single partitions, F3 - portal fibrosis with multiple partitions without false segments, F4 - cirrhosis of the liver. In all groups of patients, the specificity and sensitivity of this method at stages F3 and F4 of fibrosis ranged from 91% to 100%. Based on the analysis of the obtained data, an important diagnostic value of ultrasound elastometry in the diagnosis of liver fibrosis was revealed. High efficiency of ultrasound elastometry is obtained when detecting stage 4 fibrosis by the Metavir system.

Liver elasticity interval depending on the stage of hepatic fibrosis in the Metavir system	
F 0	4,5-5,8
F 1	5,9-7,2
F 2	7,3-9,5
F 3	9,6-12,5
F 4	more 12,5



Patients with viral cirrhosis also underwent a series of tests to compare with fibroscan results. They had the following data on the degree of fibrosis: nonspecific complaints, in particular, general weakness, fatigue, dyspepsia, flatulence, joint pain, sleep disorders, nervousness. In addition, the classic clinical signs of cirrhosis of the liver are lacquered tongue, vascular asterisks, erythema of the palms, ulcers in the corners of the mouth, gynecomastia.

### **Results of the Study**

In stage 4 of metavir fibrosis, liver palpation is possible in 90% of patients, and in some cases the spleen is palpated depending on the presence or absence of portal hypertension. In all patients with cirrhosis, multiple telangiectasias and hepatic plaques were detected on the surface of the skin. Some patients develop toxic encephalopathy due to prolonged CNS intoxication. A biochemical blood test showed a slight increase in bilirubin, in most cases a moderate increase in transaminase activity. Serum showed increased gamma-GT, hypoalbuminemia. A complete blood count of most patients showed thrombocytopenia and severe anemia. Asthenia, dyspepsia, portal hypertension, hepatocellular insufficiency, cholestasis, gamma globulin decreased, ESR increased in 23.4% of patients. An objective examination of patients with alcoholic hepatitis revealed signs of long-term alcohol abuse: telangiectasia, hair loss, palm erythema, decreased muscle mass, testicular atrophy, dilation of capillaries, swelling of the facial area. In the biochemical blood test of patients with alcoholic hepatitis, an increase in transaminases and an increase in gamma-HT activity were observed. The activity of gamma-HT in the blood increases in 80-90% of patients who regularly consume a large amount of alcohol. An increase in the activity of this enzyme can also be observed in patients receiving drugs that stimulate the activity of liver enzymes, in patients with cholestatic and hepatocellular liver lesions of another etiology. Evidence of the origin of hyperenzymaemia of alcoholic etiology is a decrease in gamma-HT activity during repeated examination after treatment of patients for some time. With alcoholic hepatitis, hyperbilirubinemia, hypoalbuminemia, hypocoagulation due to both fractions are observed. In alcoholic etiology liver diseases, this method has low sensitivity. Correlation analysis of hepatic fibrosis stage by hepatic ultrasound elastometry revealed a significant correlation in the detection of Metavir stage 4 fibrosis (F4) in all groups. The least sensitivity was noted in non-alcoholic toxic liver diseases. In assessing hepatic fibrosis, low sensitivity of hepatic ultrasound elastometry is associated with high body mass index (MI = 30.1) (3.8 kg/m<sup>2</sup>) and hepatic steatosis.





## Conclusion

Ultrasound elastometry of the liver is of important diagnostic importance in determining the stage of fibrosis, stages F3-F4 of liver disease. The course and consequences of alcoholic hepatitis are associated with the severity of hepatic impairment and the pronounced development of histological changes. The results of ultrasound elastometry of the liver help to carry out antiviral therapy, correction of treatment and assessment of the consequences of the disease in liver diseases of viral etiology.

## Literature

1. World health statistics 2020: monitoring health for the SDGs, sustainable development goals. Geneva: World Health Organization; 2020. License: CCBY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>.
2. Yamanaka N. et al. Consistency of human liver // J. Surg. Res. - 2018. - Vol. 39. - P. 192 – 198.
3. Sandrin L. et al. Transient elastography: a new noninvasive method for assessment of hepatic fibrosis // Ultrasound Med. Biol. - 2018. - Vol. 29. - P. 1705 – 1713.
4. Bekmuradova M. S., Shodieva G. R. HELICOBACTER PYLORI WORSENING FACTOR OF THE PATIENT'S CONDITION IN PATIENTS WITH LIVER ENCEPHALOPATHY // Web of Scientist: International Scientific Research Journal. – 2021. – Т. 2. – №. 11. – С. 133-137.
5. Шодиева Г. Р., Ибрагимова Э. Ф. КОМОРБИДНОСТЬ ПРИ БРОНХИАЛЬНОЙ АСТМЕ // БАРҚАРОРЛИК ВА ЕТАКЧИ ТАДҚИҚОТЛАР ОНЛАЙН ИЛМИЙ ЖУРНАЛИ. – 2022. – С. 264-266.
6. Шодиева Г. Р. Роль Цитокинов у больных циррозом печени вирусной этиологии // Вестник науки и образования. – 2020. – №. 10-4 (88). – С. 104-106.
7. Шодиева Г. Р., Улугбеков К. У. У. НЕИНВАЗИВНЫЙ МЕТОД ОЦЕНКИ СТЕПЕНИ ОБСТРУКЦИИ БРОНХОЛЕГОЧНОЙ СИСТЕМЫ У БОЛЬНЫХ БРОНХИАЛЬНОЙ АСТМОЙ // Современные инновации. – 2020. – №. 4 (38). – С. 15-17.
8. Bekmuradova M. S., Xaydarov S. N. JIGAR SIRROZI BILAN OG'RIGAN BEMORLARDA Helicobacter pylori INFEKSIYASINING PEPTIK YARA RIVOJLANISHIDAGI O'RNI // Scientific progress. – 2022. – Т. 3. – №. 2. – С. 886-890.





9. Шодиева Г. Р., Низомов Б. У. Роль функциональной диагностики в оценке степени обструкции дыхательных путей при бронхиальной астме //Наука и образование сегодня. – 2020. – №. 5 (52). – С. 81-82.
10. Бекмурадова М. С., Норматов М. Б. СРАВНИТЕЛЬНАЯ ОЦЕНКА ДИНАМИКИ ПЕЧЕНОЧНОЙ ЭНЦЕФАЛОПАТИИ У БОЛЬНЫХ С ЦИРРОЗОМ ПЕЧЕНИ //Scientific progress. – 2022. – Т. 3. – №. 2. – С. 895-899.

