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LIVER BIOPSY OR FIBROSCAN

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ABSTRACT

The liver is the most complex organ in terms of metabolism. Specific diseases primarily affect certain parts of the hepatobiliary system (e.g. acute viral hepatitis is primarily manifested by liver cell damage or hepatocellular damage, primary biliary cirrhosis by impaired bile secretion, and cryptogenic cirrhosis by liver fibrosis and consequent portal hypertension). FibroScan (FS) is a non-invasive, reliable method, which serves to detect liver cirrhosis and exclude significant liver fibrosis and steatosis. Unlike a standard biopsy, there is no pain or risk of bleeding and other complications. The examination was performed using FibroScan mini 430+, the latest generation from 2022. Fast, Agile 3+ Agile 4 calculators were used for the analysis. Fatty liver disease is a major socio-epidemiological problem. Today it is presented as the leading cause of diffuse liver disease. It is associated with cardiovascular risk and metabolic disease. It is also a risk factor for hepatocellular carcinoma, which continues to increase significantly worldwide. Based on our study, we concluded that the use of FibroScan is relatively accessible, with less financial burden, non-invasive for the patient, and significant data on the liver disease itself is obtained, which correctly identifies patients

KEYWORDS: FibroScan, steatosis, liver fibrosis, NASH, NAFLD.

INTRODUCTION

The liver is the most complex organ in terms of metabolism. The metabolic function of the liver is performed by hepatocytes (hepatic parenchyma cells): they create and excrete bile; they regulate carbohydrate homeostasis; they synthesize lipids and secrete plasma lipoproteins; they control cholesterol metabolism; they produce urea, serum albumins,

clotting factors, enzymes and numerous other proteins; and metabolize or detoxify drugs and other foreign substances.

Liver diseases can be the result of various influences, such as infection, drugs, toxins, ischemia and autoimmune diseases, and can also occur postoperatively. Liver diseases usually lead to a certain stage of hepatocellular damage and necrosis, causing disturbances in the values of various laboratory tests, and sometimes subjective disturbances.

Specific diseases primarily affect certain parts of the hepatobiliary system (e.g. acute viral hepatitis is primarily manifested by liver cell damage or hepatocellular damage, primary biliary cirrhosis by impaired bile secretion, and cryptogenic cirrhosis by liver fibrosis and consequent portal hypertension). Symptoms, signs and disturbance of laboratory findings depend on the part of the hepatobiliary system that is affected. Some disorders (e.g. severe alcoholic liver disease) affect multiple structures within the liver, resulting in a combination of symptoms, signs, and laboratory abnormalities. Alcohol can cause a range of liver damage that can progress from fatty liver through alcoholic hepatitis (often considered an intermediate stage) to cirrhosis. Fatty liver, alcoholic hepatitis and cirrhosis are often considered separate, progressive manifestations of alcoholic liver disease. However, their characteristics often overlap.

MATERIALS AND METHODS

Diagnostics of liver disease includes laboratory tests, imaging methods and liver biopsy. Laboratory tests are used to detect liver dysfunction, assess the severity of liver damage, determine the cause of liver function disorders, monitor the course of the disease and therapeutic response. Other laboratory tests may indicate various specific disorders, such as α-fetoprotein in hepatocellular carcinoma.[2] Imaging methods: Ultrasound, CT, Cholescintigraphy, native X-ray of the abdomen, Magnetic resonance (MR), Endoscopic retrograde cholangiopancreatography (ERCP), Percutaneous transhepatic cholangiopancreatography (PTC).

Transient elastography — Vibration-controlled TE uses ultrasound wave imaging to assess liver stiffness. A mechanically vibrating source is applied to the tissue, and the ultrasound waves created by the excitation are measured by an ultrasound detector (Figure 1). During the inspection, the operator should make at least ten valid measurements. The system for performing TE, FibroScan, has been approved by the US Food and Drug Administration.[3]

FibroScan (FS) is a non-invasive, reliable method, which serves to detect liver cirrhosis and exclude significant liver fibrosis and steatosis. Unlike a standard biopsy, there is no pain or risk of bleeding and other complications.

Assessment of liver fibrosis has traditionally been performed by liver biopsy, but clinical practice is changing because liver biopsy has several disadvantages: it is invasive; it is associated with rare but serious complications; and only a small portion of the liver parenchyma can be sampled, making it susceptible to sampling variation.[4] In patients with cirrhosis, FibroScan can be used to predict complications (including the development of large varices and hepatocellular carcinoma) and mortality. FibroScan has been used both for the indicated indications and for determining the stage of fibrosis in other etiologies as well as determining the stage of liver steatosis. The importance of determining the stage of steatosis is great, because the latest guidelines of European associations of gastroenterologists, hepatologists and endocrinologists indicate that steatosis is a predictor for the development of liver cancer. In this research, the data obtained from the examination of 103 patients. The examination was performed using FibroScan mini 430+, the latest generation from 2022. Fast, Agile 3+ Agile 4 calculators were used for the analysis. The patient lies on his back with his right arm tucked under his head. The probe, similar to an ultrasound probe, is placed in VII. or VIII. intercostal space in the middle axillary line on the right. There are no absolute contraindications for FS examination, although the presence of ascites prevents wave propagation. The manufacturer advises that FS tests are not used in pregnant women and patients with implanted electrical heart stimulators (pacemakers).[5]

RESULT AND DISCUSSION

Fatty liver disease is a major socio-epidemiological problem. Today it is presented as the leading cause of diffuse liver disease. It is associated with cardiovascular risk and metabolic disease. It is also a risk factor for hepatocellular carcinoma, which continues to increase significantly worldwide. According to currently available data, hepatocellular carcinoma ranks seventh in terms of frequency in the world, but in second place in terms of mortality.

The study included 103 patients with various liver diseases, 46 women (44.6%) and 57 (55.3%) men. The average age of the patients was 54.0 ± 10.58.

Diagnosis of liver disease includes laboratory analyzes (increased levels of aminotransferases and gamma-glutamyl transferase), radiological tests, immunological and serological diagnostics, as well as anamnestic information about alcohol abuse.

We found elevated ALT values in 75 patients out of 103 who came for an examination with a gastroenterologist.

Liver biopsy is the gold standard in the diagnosis of liver disease, but it carries the risk of many serious complications, and is not indicated for patient monitoring. Liver biopsy is considered the gold standard for the diagnosis of chronic liver diseases.[7] Due to the complications that can arise during the liver biopsy itself, numerous studies have been conducted that are focused on non-invasive diagnostic procedures.

Given that we are located in an area where the use of alcoholic beverages dominates, there is also a high incidence of alcoholic liver disease with eventual fibrosis and cirrhosis. To date, several hundred studies have demonstrated the feasibility and usefulness of the FibroScan method in patients with various liver conditions, including chronic hepatitis B and C, liver transplantation, and nonalcoholic steatohepatitis (NASH). The justification for performing this method is of great importance, given that based on the data obtained during the examination itself, we can identify patients who do not need a liver biopsy, which reduces the risk of complications as well as financial costs. Also, as a screening method for assessing liver parenchyma, timely diagnosis and initiation of adequate treatment will reduce the risk of liver cancer, the need for prolonged hospitalization and numerous complications that come with the terminal stage of liver disease.

FibroScan is a device that simultaneously obtains CAP data, which achieves rapid quantification of liver fibrosis and steatosis.[7] On the basis of our study, we confirmed that an elevated ALT level is highly correlated with liver steatosis verified by FibroScan. However, we must keep in mind that only about 40% of patients with NASH have elevated ALT values.[8] Therefore, liver disease screening should be performed in patients whose "bright" liver has been verified by echosnography without pathological laboratory findings.

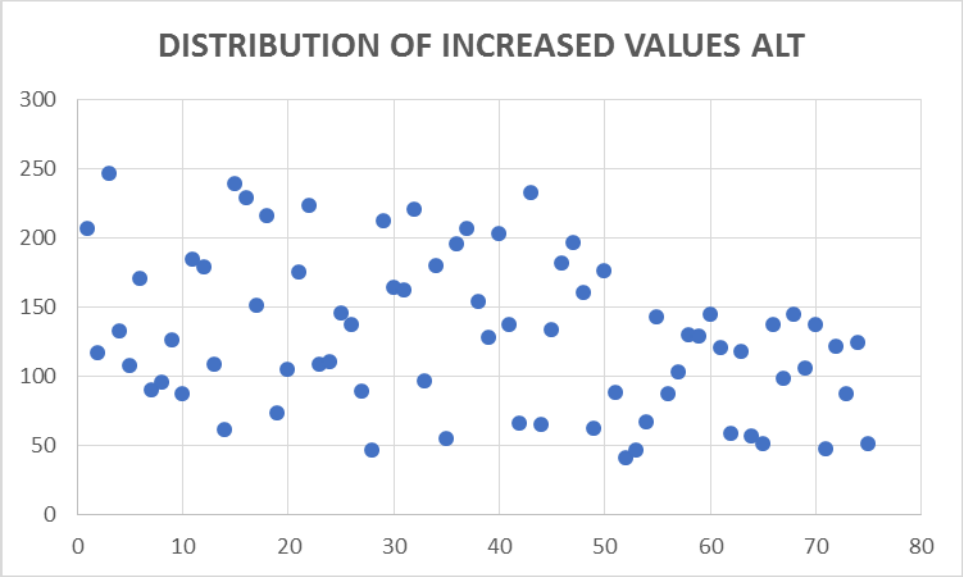

Figure 1.

During the echosonographic examination of the abdomen, fatty liver was visualized in 57% of the patients, of which 58% were female and 42% were male. When performing FibroScan, we verified: steatosis S0 38%, S1 21%, S2 23%, S3 18%. (Figure 2.)

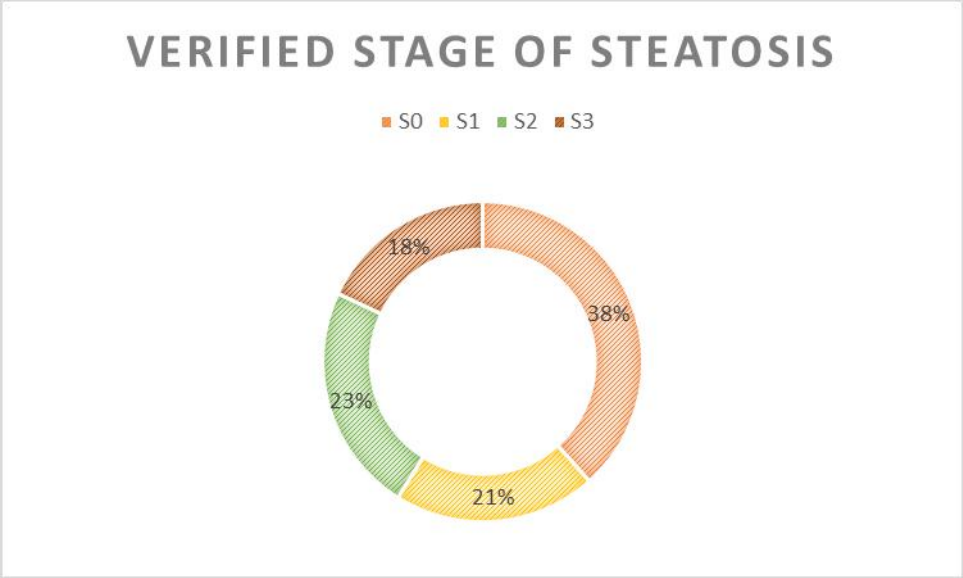

Figure 2.

CAP was significantly correlated with SteatoTest, CAP for detecting and grading liver steatosis was higher than during the echosnographic examination of the liver itself. Our study has a limiting factor, which is certainly the small number of patients included in it, and the patients were chosen randomly, not from the group of liver diseases. Based on our study, we concluded that the use of FibroScan is relatively accessible, with less financial burden, non-

invasive for the patient, and significant data on the liver disease itself is obtained, which correctly identifies patients

CONCLUSION

Study included 103 patients, of whom 44.6% were female and 55.3% male of approximately the same age. Elevation of alanine amninotransferase was verified in 72.8% of patients who were referred for echosnographic examination of the abdomen after laboratory analysis. (Figure 1.)

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