

A single-center experience: Liver biopsy results during a year

✉ Cenk Emre Meral¹, ✉ Genco Gencdal², ✉ Murat Akyildiz², ✉ Fulya Gunsar³, ✉ Deniz Nart⁴, ✉ Funda Yilmaz⁴,
✉ Zeki Karasu³, ✉ Galip Ersoz³, ✉ Ulus Salih Akarca³

¹Department of Gastroenterology, Baskent University School of Medicine, Izmir, Turkey; ²Department of Gastroenterology, Koc University School of Medicine, Istanbul, Turkey; ³Department of Gastroenterology, Ege University School of Medicine, Izmir, Turkey; ⁴Department of Pathology, Ege University School of Medicine, Izmir, Turkey

Abstract

Background and Aim: Liver biopsy is the gold standard method for the diagnosis and treatment of liver diseases. In this study, we aimed to evaluate the results of liver biopsies performed in a year in our clinic. In addition, we also aimed if these liver biopsies could reveal the etiology of liver disease in patients with elevations of transaminases or/and alkaline phosphatase levels or liver masses.

Materials and Methods: Patients who had liver biopsies for persistently elevated transaminases or/and alkaline phosphatase levels, protocol biopsies after liver transplantation, or liver masses in our hepatology clinic between 2011 and 2012 were included in the study. Liver biopsy decisions were made by experts during the hepatology council. Liver biopsies were previously performed using classical percutaneous liver biopsy or ultrasonography-guided Sonocan[®] liver biopsy sets. The pathology results of liver biopsies and clinical data of the matching patients were obtained from the liver biopsy record archives and patient files, respectively.

Results: Totally, 479 liver biopsy results (male=252, 52.6%, mean age 49±14.5 years) were evaluated in the study. Of these patients, 432 (male=228) underwent percutaneous liver biopsy and 47 (male=24) underwent Sonocan[®] needle biopsy. The most common histopathologic diagnoses in the percutaneous liver biopsy group were chronic hepatitis B (n=127, 29.4%), normal histopathological findings (n=50, 11.6% and 32 of them were protocol biopsies after liver transplantation), and nonalcoholic steatohepatitis (NASH, n=41, 9.5%). The most common histopathologic diagnoses in the Sonocan[®] group were 25 liver metastasis out of 29 liver tumors (n=25, 53.2% of all) chronic hepatitis B (n=5, 10.6%), and NASH (n=3, 6.4%).

Conclusion: In this study, diversity in liver biopsy results indicates the importance of histopathological evaluation. The most prevalent pathology in the liver biopsies was chronic hepatitis B, which is the most common chronic liver disease in Turkey. The metastatic liver tumor was the most common among the liver masses.

Keywords: Cirrhosis; fatty liver; hepatitis; liver biopsy.

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Corresponding author: Genco Gencdal; Koc Universitesi Tip Fakultesi, Gastroenteroloji Anabilim Dalı, Istanbul, Turkey

Phone: +90 850 250 82 50 - 29926; **e-mail:** gencogencdal@yahoo.co.uk



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Introduction

Liver biopsy, which has been performed since the end of the nineteenth century, remains the gold standard method for evaluating the etiology and extent of liver disease. Paul Ehrlich first performed a percutaneous liver biopsy in Germany in 1883. In the late 1950s, Menghini adapted the procedure with a 1-s aspiration technique that led to wider use and broader applications of the percutaneous liver biopsy. The evolution of liver biopsy has been rapid since Menghini's contributions. Today, percutaneous biopsies are primarily performed by gastroenterologists or radiologists.^[1]

Histopathological examination of liver tissue is often performed by percutaneous liver biopsy. Today, this method, which is usually marked with ultrasonography, is still the gold standard method in the diagnosis and treatment of liver diseases. Liver biopsies can be used to evaluate acute liver enzyme elevations whose cause cannot be determined, suspicious liver lesions detected in imaging methods, and the extent of fibrosis and liver damage in chronic hepatitis.^[2-4] Combining detailed clinical information with a liver biopsy will make the biopsy results more illuminating. In this study, we aimed to evaluate and present the results of liver biopsies performed in our clinic within 1 year.

Materials and Methods

Of the 503 liver biopsies performed between January 2011 and January 2012, 479 were included in this study. The biopsies of 24 patients were excluded because of insufficient clinical data. Due to the retrospective nature of this study, the pathology results of liver biopsies were obtained from the pathology archive of our hospital, and the clinical information of the matching patients was obtained from the patient files.

Liver biopsies were previously performed using classical percutaneous liver biopsy (Hepafix[®] liver biopsy set; B. Braun Melsungen AG, Melsungen, Germany; C17-gauge biopsy needle) or ultrasonography-guided Sonocan[®] liver biopsy sets (B. Braun Melsungen AG, Melsungen, Germany; 20-gauge biopsy needle). The hepatic samples were fixed in 10% formalin and embedded in paraffin. Sections were stained with hematoxylin–eosin, Masson's trichrome, and reticulin stains. Demographic characteristics of the patients, pathology results, and descriptive statistics were analyzed using the SPSS v.21 statistical program.

Results

In total, 479 liver biopsy results (male=252, 52.6%, mean age 49±14.5 years) were included in the study. Liver biopsy was per-

Table 1. Liver biopsy results of the patients

	Conventional liver biopsy results (n=432)		Sonocan® biopsy results (n=47)		Total (n=479)	
	n	%	n	%	n	%
Chronic hepatitis B	127	29.4	5	10.6	132	27.6
Normal	50	11.6	0	0	50	10.4
Nonalcoholic steatohepatitis	41	9.5	3	6.4	44	9.2
Nonspecific chronic hepatitis	27	6.3	2	4.3	29	6.1
Autoimmune hepatitis	25	5.8	0	0	25	5.2
Simple steatosis	22	5.1	2	4.3	24	5.0
Chronic hepatitis C	20	4.7	1	2.1	21	4.4
Primary biliary cholangitis	20	4.7	0	0	20	4.2
Cholestatic hepatitis	13	3.0	0	0	13	2.7
Metastasis	12	2.8	25	53.2	37	7.7
Toxic hepatitis	10	2.3	3	6.4	13	2.7
Others	8	1.9	0	0	8	1.7
Granulomatous hepatitis	6	1.4	1	2.1	7	1.5
Acute rejection	6	1.4	0	0	6	1.3
Autoimmune overlap	6	1.4	0	0	6	1.3
Lymphoma	5	1.2	1	2.1	6	1.3
Nodular regenerative hyperplasia	5	1.2	0	0	5	1.0
Chronic rejection	4	0.9	0	0	4	0.8
Primary sclerosing cholangitis	4	0.9	0	0	4	0.8
Autoimmune cholangitis	3	0.7	0	0	3	0.6
Nonspecific acute hepatitis	3	0.7	0	0	3	0.6
Hepatocellular carcinoma	2	0.5	1	2.1	3	0.6
Amyloidosis	2	0.5	0	0	2	0.4
Wilson disease	1	0.2	1	2.1	2	0.4
Epithelial tumor	0	0	2	4.3	2	0.4
Congenital hepatic fibrosis	1	0.2	0	0	1	0.2
Metabolic storage diseases	1	0.2	0	0	1	0.2
Drug induced liver injury	1	0.2	0	0	1	0.2
Insufficient material	1	0.2	0	0	1	0.2
Graft versus host disease	1	0.2	0	0	1	0.2

formed in 432 (male=228) of these patients using the traditional percutaneous liver biopsy technique (group 1) and in 47 (male=24) using the Sonocan® needle with ultrasonography (group 2). The most common histopathological diagnoses in group 1 were chronic hepatitis B (n=127, 29.4%), normal histopathological findings (n=50, 11.6%), and nonalcoholic steatohepatitis (NASH, n=41, 9.5%). The most common histopathological diagnoses in group 2 were liver metastasis (n=25, 53.2%), chronic hepatitis B (n=5, 10.6%), and NASH (n=3, 6.4%). Liver biopsy diameters were 2.98±1.21 in the percutaneous group and 2.88±1.66 in the Sonocan group. There was no statistically significant difference between the two groups according to the biopsy diameters. Detailed results of the patients are presented in Table 1. Normal histopathological findings were detected in 50 patients: 32 of them were protocol biopsies after liver transplantation and 13 of them were for high transaminase levels (Table 2). Fatty liver rates in patients with chronic liver disease were determined and presented in Table 3.

Discussion

Today, liver biopsy is performed in three ways: percutaneous, transvenous, and laparoscopic. In our study, liver biopsy was performed on patients using the conventional percutaneous liver biopsy method and less frequently with the ultrasonography-guided Sonocan® needle. The most common uses of liver biopsy in our clinic and worldwide are for the staging of chronic liver diseases, determination of treatment indications in liver diseases, histopathological evaluation of treatment responses, diagnosis of liver diseases of unknown origin, diagnosis of lesions occupying space in the liver, and evaluation of hepatic involvement of systemic diseases.^[5,6]

The length of the material obtained after liver biopsy is an important factor that directly affects the success rate of diagnosis. Generally, it is suggested that a tissue sample 1.5 cm long and 1.2-2 mm thick will contain at least 6-8 portal areas, which is sufficient for successful diagnosis. The average length of the tissue samples in this study was

Table 2. Distribution of patients with normal histopathological liver biopsies

Reason for liver biopsies	Number of patients
Protocol biopsies after liver transplantation	32
Elevated transaminase levels	13
HBV infection before renal transplantation	1
Variceal bleeding	1
Portal vein thrombosis	1
Sjogren's syndrome	1
Chronic Hepatitis B infection	1

Table 3. Fatty liver and nonalcoholic steatohepatitis rates in different liver diseases

Diagnosis	Fatty liver		NASH	
	n	%	n	%
Hepatitis B (n=132)	17	12.9	1	0.8
Hepatitis C (n=26)	4	15.4	1	3.8
Autoimmune hepatitis (n=25)	1	4.0	2	8.0
Acute rejection (n=6)	1	16.7	0	0
Primary biliary cholangitis (n=20)	1	5.0	0	0
Primary sclerosing cholangitis (n=4)	0	0	1	25.0

NASH: Non-alcoholic steatohepatitis.

2.97 cm. We think that the length of the material directly affects the quality and reliability of the pathological evaluation. In addition to the technical aspects, the patient's compatibility with the doctor is also extremely important for a successful tissue biopsy. In patients with high anxiety, problems are often encountered during the biopsy, which directly affects its rate of success. In a study, Sezgin et al. evaluated the efficacy and safety of percutaneous liver biopsy performed under the assistance of ultrasonography in diffuse liver disease. Macroscopically adequate tissue was obtained in 780 cases (99.5%) with a mean tissue length of 15.5 mm. In 755 patients (96.4%), an adequate tissue sample was obtained after one pass. The authors conclude that routine ultrasound of the puncture site is a quick, effective, and safe procedure.^[2, 7-9]

Hepatitis B is the most common chronic viral hepatitis in our clinic and our country. As a requirement of the Healthcare Implementation Communique (SUT), we frequently use liver biopsy to begin treatment and follow-up in patients with hepatitis B. Therefore, the most common histopathological diagnosis in this study was chronic hepatitis B. Fatty liver (simple lipidosis, NAFLD, and NASH), which has attracted attention and gained importance in recent years, was the second most common histopathological diagnosis detected in our study. Fatty liver is common in our country and worldwide. Relationships of this disease with insulin resistance, metabolic syndrome, and cardiac diseases have been determined, and early diagnosis and treatment of this disease have gained importance. For this reason, liver biopsy has been started to be performed more frequently in patients with radiological liver lesions and high scores in scoring based on noninvasive examination results in our clinic.^[10-13]

In patients who underwent liver biopsy using the Sonocan® needle, the most common histopathological diagnosis was metastatic liver tumors. This was because, in our clinic, liver biopsy using the Sonocan® needle was preferred in suspicion of liver metastasis in radiological imaging. Liver biopsies are not usually needed in primary liver tumors like hepatocellular carcinoma because the diagnosis can be obtained from radiologic imaging.

In the literature, the normal histopathology rate of liver biopsies ranged approximately between 3.3% and 13%.^[14-17] Normal histopathology rates of liver biopsies were quite high (11.5%) in our cohort because 32 of these patients had undergone liver biopsies because of the protocols after liver transplantation. Thirteen of the normal liver biopsies were for high transaminase levels. These thirteen patients had good clinical outcomes without chronic liver disease. There are conflicting results about the outcome of patients with normal or near-normal liver histology who had abnormal liver tests at the time of biopsy in the current medical literature; one study suggested that most patients will not develop evidence of clinical liver disease during long-term follow-up.^[18] However, another study that followed up patients with normal or almost normal liver biopsy specimens for 4 years found the following diagnoses: autoimmune systemic inflammatory conditions (18%), vascular/ischemic events (13%), metabolic syndrome (11%), drug effects (8%), and inflammatory conditions of the gastrointestinal tract (7%). In the same study, approximately 57% of patients developed clinical diagnoses.^[19]

As a secondary aim in our study, fatty liver and NASH rates detected in chronic liver diseases were examined. Fatty liver was detected most frequently in patients with hepatitis C (n=4, 15.3%), followed by acute rejection (n=1, 16%), Hepatitis B (n=17, 12.8%), PBC (n=1, 5%), and autoimmune hepatitis (AIH) (n=1, 4%). NASH was most frequently detected in patients with primary sclerosing cholangitis (PSC) (n=1, 25%), followed by AIH (n=2, 8%), Hepatitis C (n=1, 3%), and Hepatitis B (n=1, 0.8%). As the number of patients with NASH in this study was small, it is necessary to conduct further studies in larger populations.

There are some limitations of our study, including limited access to demographic and clinical characteristics of patients, primarily because this was a retrospective study. Additionally, because this study included a single center, the data reflected only one region and may differ from countrywide trends.

There is a need for studies that present epidemiological data in Turkey. In this study, we evaluated the results of cross-sectional liver biopsies performed in our center within 1 year. In our center, hepatitis B was the most common etiology for the indication of liver biopsies. We presented the rates of fatty liver in patients with chronic liver disease. Metastatic liver tumor was the most common one among the patients with suspicion of liver tumors according to radiological imaging. These data require further support from multicenter prospective randomized studies.

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