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Pathology

SPECTRUM OF LIVER DISEASES DIAGNOSED ON LIVER BIOPSY: A STUDY FROM A TERTIARY CARE CENTER OF UTTAR PRADESH

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ABSTRACT Percutaneous liver biopsy is a minimally invasive outpatient procedure and widely used diagnostic tool for liver lesions. This study was conducted with an aim to examine demographic and histopathological data of liver biopsy in a tertiary care setup. Out of 50 studied liver biopsy, the mean age of the patients was 32.82±12.38 years and the male:female ratio of 2.8:1. The most common diagnosis was chronic steatohepatitis (48%), followed by chronic hepatitis (14%), HBV associated chronic hepatitis (12%), and steatosis (10%). Other diagnoses were: congenital hepatic fibrosis, embryonal rhabdomyosarcoma, extrahepatic cholestatic pericholangitis, granulomatous hepatitis, hepatocellular carcinoma, metastatic adenocarcinoma, poorly differentiated carcinoma, and suspect malignancy. Thus, hospital based data on liver biopsy helps in identifying both benign and malignant lesions. It also provides vital information regarding relative frequencies of various lesions involving the liver.

KEYWORDS : . Fatty liver, hepatitis, cirrhosis, hepatocellular carcinoma

Introduction:

Percutaneous liver biopsy is the gold standard diagnostic tool in assessing the acute and chronic liver diseases. It's a simple, safe, and inexpensive minor OPD procedure that helps in making specific diagnosis and accordingly allows planning for the therapeutic intervention. Paul Ehrlich (1880) was the first person who performed liver core biopsy for the determination of glycogen in the livers of diabetic patients [1]. In the year 1957, after the introduction of "One second needle biopsy" aspiration technique by Menghini, liver biopsy was widely adopted as a diagnostic tool [2]. Liver diseases have worldwide distribution irrespective of the age, gender, religion, region or race of the patients. Cirrhosis is the end result of chronic liver diseases, which is characterized by triad of distorted liver architecture, fibrosis, and formation of regenerative liver nodules. The rate of liver disease is steadily growing over the years. According to the World Health Organization (WHO) data published in May 2014, the deaths due to liver diseases in India reached to 2.44% of total deaths with the age adjusted death rate of 21.96 per 100,000 populations. Based on this data, India ranked 61st in the world for mortality due to liver diseases [3].

The present study was conducted with the aim to examine the demographic and histopathological characteristics of liver biopsy specimen submitted to Department of Pathology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, which is a tertiary care health center situated in eastern part of Uttar Pradesh, India.

Material and methods:

We have collected demographic and histopathological data of percutaneous liver biopsy samples submitted to the Department of Pathology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India. During the six months' study period, total 50 liver biopsy samples were included from April 2015 to September 2015. The percutaneous liver biopsy was performed in the Department of Gastroenterology, Institute of Medical Sciences, Banaras Hindu University, Varanasi. Histopathological diagnosis was given on hematoxylin and eosin-stained glass slides by reporting pathologist. The details of patients namely age, gender and histopathological diagnosis was noted from the record register. The histopathological diagnosis of this study was broadly categorized into benign, malignant and suspicious for malignant groups. Calculation of frequency, mean values, and percentage was done using online Graphpad software, which is freely available at: http://www.graphpad.com.

Observations:

Total 50 liver biopsy samples of the patients were examined during a period of 6 months.

a. Demographic details

The mean age of the patients was 32.82±12.38 years. The age range of patients undergoing liver biopsy was 1 to 70 years. The number of males and females were 37 and 13, respectively; with the male: female ratio of 2.8:1. The age group and gender wise distribution of patients is given in **Table 1.** The age groups with maximum number of patients were in 21-30 years followed by 31-40 years. The maximum number of male and female patient was seen in 21-30 years of the age group.

b. Histopathological details

Out of 50 biopsy samples, 90% diagnoses were benign, 8% were malignant and 2% were suspicious of malignancy. The gender-wise distribution of various diagnostic lesions in the liver biopsy is presented in **Table 2**.

1) Benign Group:

The maximum numbers of patients of liver biopsy were diagnosed under the benign group. The benign diagnostic group was comprised of following lesions: (a) chronic steatohepatitis (b) chronic hepatitis, (c) chronic HBV hepatitis, (d) steatosis, (e) granulomatous hepatitis, (f) congenital hepatic fibrosis, and (g) extrahepatic cholestatic pericholangitis. The chronic steatohepatitis lesion refers to biopsy samples showing features of steatosis, inflammation and fibrosis. The chronic hepatitis lesion refers to biopsy samples showing features of chronic liver injury. The chronic HBV hepatitis lesion refers to biopsy samples showing features of inflammation along with serological evidence of raised hepatitis B surface antigen (HBsAg). The steatosis lesion refers to biopsy samples showing microscopic features of steatosis. The extrahepatic cholestatic pericholangitis lesion refers to biopsy samples showing features of cholestasis along with inflammation of liver parenchyma. The granulomatous hepatitis lesion refers to biopsy samples showing features of inflammation and granuloma formation.

2) Malignant Group:

The malignant diagnostic group had following lesions: (a) hepatocellular carcinoma, (b) metastatic adenocarcinoma, (c) poorly differentiated carcinoma, and (d) embryonal rhabdomyosarcoma. The hepatocellular carcinoma lesion refers to a definite diagnosis of primary malignancy or hepatocellular carcinoma. The metastatic adenocarcinoma lesion refers to definite diagnosis of metastasis.

Table 1: Age-group and gender-wise distribution of liver biopsy patients (n=50)

Age group (years)	Gender		Grand Total No. (%)
	Female No. (%)	Male No. (%)	
1-10	1 (2.0)	1 (2.0)	2 (4.0)
11-20	1 (2.0)	2 (4.0)	3 (6.0)
21-30	4 (8.0)	15 (30.0)	19 (38.0)
31-40	3 (6.0)	12 (24.0)	15 (30.0)
41-50	2 (4.0)	6 (12.0)	8 (16.0)
51-60	2 (4.0)	0 (0.0)	2 (4.0)
61-70	0 (0.0)	1 (2.0)	1 (2.0)
Grand Total	13 (26.0)	37 (74.0)	50 (100.0)

Table 2: Frequency of gender-wise distribution of various histopathological diagnoses on liver biopsy (n=50)

Histopathological diagnosis	Gender		Total No. (%)
	Female No. (%)	Male No. (%)	
Chronic steatohepatitis	4 (8.0)	20 (40.0)	24 (48.0)
Chronic hepatitis	1 (2.0)	6 (12.0)	7 (14.0)
Chronic HBV hepatitis	2 (4.0)	4 (8.0)	6 (12.0)
Steatosis	0 (0.0)	5 (10.0)	5 (10.0)
Congenital hepatic fibrosis	0 (0.0)	1 (2.0)	1 (2.0)
Embryonal rhabdomyosarcoma	1 (2.0)	0 (0.0)	1 (2.0)
Extrahepatic cholestatic pericholangitis	1 (2.0)	0 (0.0)	1 (2.0)
Granulomatous hepatitis	1 (2.0)	0 (0.0)	1 (2.0)
Hepatocellular carcinoma	1 (2.0)	0 (0.0)	1 (2.0)
Metastatic adenocarcinoma	0 (0.0)	1 (2.0)	1 (2.0)
Poorly differentiated carcinoma	1 (2.0)	0 (0.0)	1 (2.0)
Suspect Malignancy	1 (2.0)	0 (0.0)	1 (2.0)
Grand Total	13 (26.0)	37 (74.0)	50 (100.0)

The poorly differentiated carcinoma lesion refers to the diagnosis of malignancy showing microscopically compact growth pattern with difficulty in recognizing the origin or differentiation of the malignant epithelial tumor. The embryonal rhabdomyosarcoma lesion refers to definite diagnosis of embyonal rhabdomyosarcoma.

3) Suspect malignant group:

The suspect malignant group refers to biopsy sample where there is strong suspicion of malignancy but definite evidence of malignancy was not present.

As seen in the **Table 2**, chronic steatohepatitis was the most commonly offered diagnosis, seen in 48.0% of the study. This was followed by chronic hepatitis (14.0%). Hepatitis B virus associated chronic hepatitis was seen in 12.0% studied subjects. Steatosis was observed in 10% of biopsy samples. With reference to gender, the maximum diagnosis in the males and females were chronic steatohepatitis only.

Discussion:

Hospital based data on liver biopsy helps in identifying both benign and malignant lesions prevailing in the region. It gives vital information regarding relative frequencies of various lesions involving the liver. This is important as early diagnosis and treatment can interrupt the progression to end stage liver disease (cirrhosis). Most of the Indian harbor gene APOC3 due to which they are genetically pre-disposed to liver diseases [4]. In the present study, liver biopsy was performed in 50 patients between 1 year and 70 years of the age. The liver biopsy tissue submitted for histopathological examination was adequate in all cases in our study. We have found maximum number of patients suffering from chronic steatohepatitis (48%) followed by chronic hepatitis (14%), chronic HBV hepatitis (12%), steatosis (10%), and 2% cases each of congenital hepatic fibrosis, embryonal rhabdomyosarcoma, extrahepatic cholestatic pericholangitis, granulomatous hepatitis, hepatocellular carcinoma, metastatic adenocarcinoma, poorly differentiated carcinoma and suspect malignancy. Studies from India and China suggest that males are more prone to liver diseases than females [5,6]. We have also observed similar findings in our study. In today's era non-alcoholic steatohepatitis (NASH) is the major cause of chronic liver disease worldwide, which progressively lead to cryptogenic cirrhosis of liver and even hepatocellular carcinoma. Studies from various regions of India reported a prevalence of NASH varying from 28% to 72% [7,8,9]. In our study, we found 48% cases of chronic steatohepatitis forming the bulk. Centers for disease control and prevention conducted viral hepatitis surveillance in India during 2011 to 2013 and reported that hepatitis E virus was responsible for maximum number of outbreaks of viral hepatitis (48%) followed by hepatitis A virus (33%), hepatitis A and E (12%) and hepatitis B or C (7%) [10]. However, we did not study hepatitis viral serological markers in the present study. Puri (2014) reported that HBV carrier rate in India is 3% with a high prevalence rate in the tribal population [11]. In our study, we found 12 % cases of chronic HBV hepatitis. Acharya (2014) in his study reported that in India the age adjusted incidence rate of hepatocellular carcinoma (HCC) ranges from 0.7 to 7.5 per 100,000 population per year for males and 0.2 to 2.2 per 100,000 population per year for females [12].

In conclusion, varied spectrum of liver diseases are seen in hospital based data of liver biopsy. Benign liver diseases are the most common indication of liver biopsy. Further study is required to correlate the clinical outcome with liver biopsy findings.

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