



## Research Paper

# Histopathological Spectrum of Liver Diseases in Autopsy Cases

Authors

**Dr Ritu Bhagat<sup>1</sup>, Dr Suby Singh<sup>2</sup>, Dr Vinod Kumar<sup>3\*</sup>**

<sup>1,2</sup>Senior Resident Pathology GMC, Jammu

<sup>3</sup>Assistant Professor Medicine, GMC Doda

\*Corresponding Author

**Dr Vinod Kumar**

Address: House no 209, Colonel Colony, Talab tillo-Bohri, Jammu (J&K) Pin 180002, India

## Abstract

**Background:** Liver is the site of many diseases, many of which become symptomatic while some are diagnosed only on autopsy. The underlying causes of chronic liver diseases vary in different geographic areas and are based on various factors such as socioeconomic status, life style, diet, local or regional infections, and other endemic diseases.

**Methods:** Our study was prospective study conducted in the department of pathology, GMC Jammu for a period of one year from jan 2018 to jan 2019. A total of 120 autopsy specimens of liver irrespective of age, sex, and cause of death were included in this study. After fixation in 10 % formalin, sections from representative areas were submitted for processing. Sections were stained with H&E stain. Different findings of cases were analysed and expressed as frequency and percentage.

**Results:** A total of 120 specimens were studied. Age ranges from 9 years to 80 years, with M:F ratio of 3:2. On histopathology the most common finding was steatosis 32.5%, followed by normal liver findings in 21.7% cases, chronic hepatitis in 18.3% cases, cirrhosis in 7.5% cases, 5.8% cases showed autolytic changes, necrosis seen in 3.3% cases and tuberculosis was seen in 0.8 % cases.

**Conclusion:** From our study we conclude that silent liver diseases are not uncommon, autopsy helps to identify the silent liver diseases like steatosis, chronic hepatitis, cirrhosis and tuberculosis.

**Keywords:** Autopsy, Steatosis, Histopathology, Liver diseases.

## Introduction

Liver is vulnerable to a variety of metabolic, toxic, microbial and circulatory insults. Sometimes, the disease is primary while in others the hepatic involvement is secondary to cardiac de-compensation, alcoholism or extrahepatic infections. Quite rightly liver is, called as “the custodian of milieu interior”.<sup>1</sup> Abnormal findings in liver autopsy can be fatty change, heparlobatum, glycogen storage disease, acute

phosphorus poisoning, hemosiderosis, syphilis, actinomycosis, infarcts, cloudy swelling, tuberculosis, acute passive hyperemia, chronic passive hyperemia, amyloidosis, abscess, hydatid cyst, malignancy, cirrhosis and acute yellow atrophy.<sup>2</sup>

Alcohol abuse generally leads to three pathologically distinct liver diseases viz. fatty liver, hepatitis and alcoholic cirrhosis. One or all of the three can occur at the same time and in the

same patient.<sup>3</sup>Fatty change (steatosis) is a very common finding both in biopsies and at post mortem examination. Liver cell involvement may be focal, diffuse, or zonal.<sup>4</sup>

Fatty liver develops within a short period (days) of alcohol abuse whereas more severe liver injury requires prolong alcohol abuse for a period of years. Nonalcoholic fatty liver disease (NAFLD) includes a spectrum of liver diseases, ranging from simple steatosis to steatohepatitis, advanced fibrosis and cirrhosis.<sup>4</sup>

Chronic hepatitis is usually due to hepatotropic viruses, or conditions like auto immune chronic hepatitis or chronic idiosyncratic drug-induced hepatitis. Similar features (like presence of piecemeal necrosis) are also found in Wilson's disease, primary biliary cirrhosis and primary sclerosing cholangitis. It varies in different geographic areas and is based on various factors such as socioeconomic status, life style, diet, local or regional infections, and other endemic disease. Most of the chronic liver diseases even in advance stages may cause no prominent clinical signs or symptoms and are undiagnosed or found incidentally during general checkups, investigations for other diseases or during autopsy.<sup>4</sup>

### Material and Methods

This is a prospective study carried out in the department of pathology GMC Jammu over a period of one year from January 2018 to January 2019. Liver specimens were received as a part of multiple viscera from mortuary for histopathological examination of medicolegal cases. A total of 120 specimens of liver irrespective of age, sex, and cause of death were included in this study.

After fixation in 10 % formalin, sections from representative areas were submitted for processing. Sections were stained with H&E stain. Different findings of cases were analysed and expressed as frequency and percentage.

### Results

During the study period a total of 120 cases were evaluated, out of which there were 91/120 (76%) were males and 29/120 ( 24%) were females with M:F ratio of 3:2 (Table 1).

**Table 1:** Showing sex distribution.

Sex	No.of cases	Percentage%
Males	91	76
Females	29	24
Total	120	100

Age ranges from 9 years to 80 years. Maximum liver autopsies were in the age group of 41-50 years i.e 25 cases followed by 21-30 years of age, 22 cases. as shown in (Table 2.)

**Table 2:** Showing age and sex wise distribution of cases.

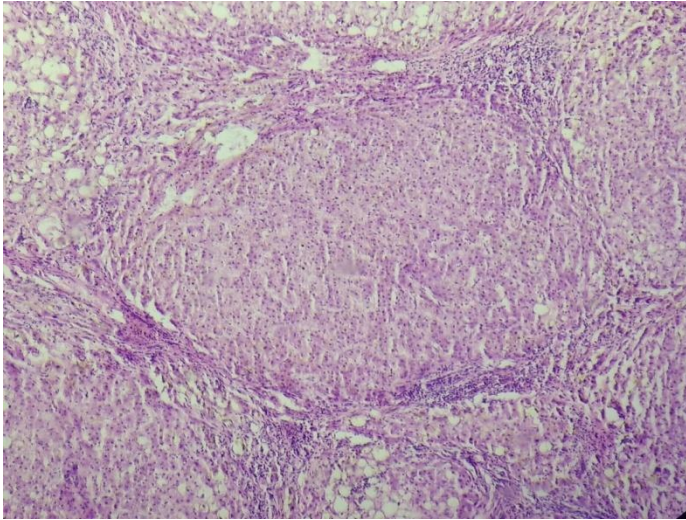
Age group	Males	Females	Total (%)
0-10	01	-	01(0.8)
11-20	04	-	04( 3.3)
21-30	17	05	22 (18.3)
31-40	15	01	16 (13.3)
41-50	24	01	25( 20.8)
51-60	10	-	10( 8.33)
61-70	08	-	08( 6.7)
71-80	-	01	01 (10.8)

On histopathological examination of 120 liver autopsy specimens, the most common finding was steatosis 32.5%, followed by normal liver findings in 21.7% cases, chronic hepatitis in 18.3% cases, cirrhosis in 7.5% cases, 5.8% cases showed autolytic changes, necrosis seen in 3.3% cases and tuberculosis was seen in 0.8 % cases. (Table 3).

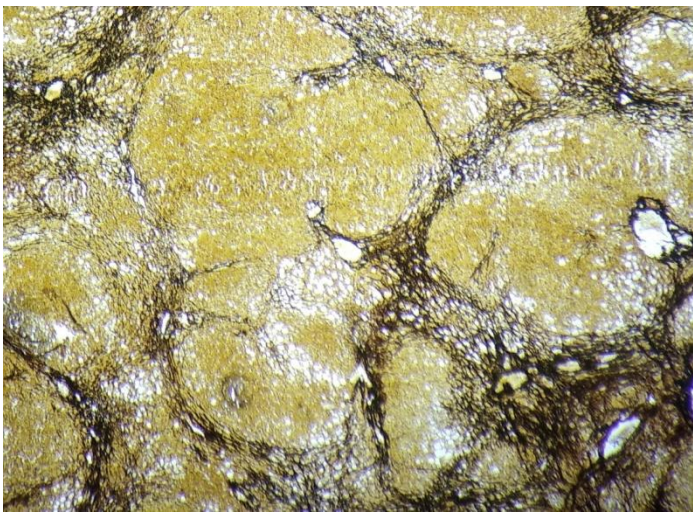
**Table 3:** Showing histopathological findings

Histopatholgy	No. of cases	Percentage%
Steatosis	39	32.5
Normal	26	21.7
Chronic hepatitis	22	18.3
Congestion/haemorrhage	12	10
Cirrhosis	09	7.5
Autolysed	07	5.8
Necrosis	04	3.3
Tuberculosis	01	0.8
Total	120	100

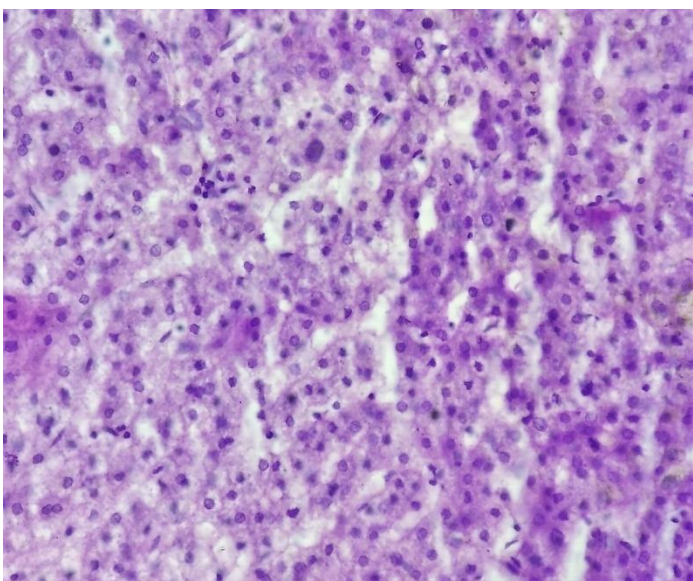




**Fig 1.** Showing Cirrhosis of liver (H&E X40).



**Fig 2.** Showing reticulin stain for cirrhosis of liver (H&E X40).



**Fig 3.** Showing steatosis of liver (H&E X40).

### Discussion

The importance of silent liver disease in the overall perspective of pathology and clinical medicine cannot be overemphasized. Histopathology is the most important and useful way of diagnosing liver diseases as some may remain silent and diagnosed only at autopsy.

In our study majority of cases were seen in 41-50 (20.83%) years of age, which was similar to studies conducted by Singhal P et al<sup>5</sup> (28.5%), Bal MS et al<sup>3</sup> (53.85%) and Fubra DS et al (28%).<sup>6</sup>

Liver diseases were most commonly seen in males 76% as compared to females 24%, this is comparable to studies done by Bal MS et al<sup>3</sup> (83%) and Sotoudehmanesh R et al<sup>4</sup> (86.7%).<sup>[4,6]</sup> This may be attributed to the fact that men are more prone to alcohol consumption.

In our study steatosis 39/120 (32.5%) was the most common silent liver disease observed over the study period, which was similar to studies by Bal MS et al<sup>3</sup>(39%) and Selvi RT et al<sup>7</sup> (26.9%). This is because a large percentage of people take alcohol which is major causative factor for developing fatty change. Regular intake of alcohol between 40-80 gm increases the liver weight and frequency of fatty changes in liver. Even moderate intake of alcohol, microvesicular lipid droplets accumulate in hepatocytes. With chronic intake of alcohol lipid accumulates creating large, clear macrovesicular globules that compress and displace the hepatocyte nucleus to the periphery of the cell. The fatty change is completely reversible if there is abstention from further intake of alcohol.<sup>8</sup>

Second most common finding in our study was chronic hepatitis 22/120 (18.3%). This finding is in accordance to the studies conducted by Selvi RT et al<sup>7</sup>(13.90%), Madhu bala devi et al<sup>9</sup> (22%), and Umesh babu et al<sup>10</sup> (20.90%).

Venous congestion was seen 12/120 (10%) of liver autopsies. This is similar to the studies by Umesh babu et al<sup>10</sup> (9.52%), Selvi RT et al<sup>7</sup> (16.70%) and Bal MS et al<sup>3</sup> (9%). Venous congestion of liver is terminal end stage of the death seen in most of the liver autopsies.

Cirrhosis was seen in 9/120 (7.5%) cases. Cirrhosis is the final and irreversible form of alcoholic liver disease usually evolves slowly and insidiously but may develop in 1-2 years in some cases. Initially the developing fibrous septa are delicate and extend through sinusoids from central to portal regions as well as from portal tract to portal tract. Regenerative activity of entrapped parenchymal hepatocytes generates uniform micronodules.<sup>8</sup> In our study, 6 out of 9 cases (66.4%) had history of alcohol intake; of these all were males. 7 out of 9 cases showed micronodularity while remaining 02 cases showed mixed nodularity. Similar results were seen in a study by Majethia NK et al<sup>11</sup> who studied the pattern of liver cirrhosis in 118 autopsy patients. History of alcohol was seen in 83.25% of cases of which 95% were males. Among alcoholics, 48.4% showed micronodularity. Alcoholism contributes to an increase in chronic liver diseases especially cirrhosis which is completely preventable by abstinence from alcohol. Studies by Selvi RT et al<sup>7</sup>, Bal MS et al<sup>3</sup> and Smita et al<sup>12</sup> also reported 7.40% , 14% and 4.43% incidence of cirrhosis respectively.

In our study, one case (0.8%) showed caseating granulomas with giant cells. Liver was part of generalised military tuberculosis. Sotoudehmanesh R et al<sup>4</sup> observed granulomatous hepatitis in only 0.2%, which was lower as compared to our study and 2% cases of hepatic granulomatous lesions were seen in a study by Devi Ph. M et al.<sup>13</sup> Hepatic TB is reported to occur in 50-80% of patients as a part of generalised military tuberculosis. Liver is a common site of granuloma formation owing to its rich blood supply. Primary hepatic tuberculosis is rare because low oxygen tension in liver is unfavourable for growth of mycobacteria as per Zheng Wu et al.<sup>14</sup>

Granulomas are frequently encountered in liver biopsies and their existence captures the attention of clinicians and pathologists.<sup>15</sup> They are found virtually in all patients with disseminated tuberculosis.<sup>16</sup> Drugs are an important cause of

otherwise unexplained granulomas. They are sometimes the only or main manifestation of a drug reaction but can also form part of cholestasis or hepatitis picture. In the study by Cunningham et al they have detected granuloma in 2 - 10% of liver biopsies in large series.<sup>16</sup>

### Conclusion

From our study we conclude that autopsy specimens of liver helps to identify the silent liver diseases, among them steatosis is the most common. In our study mostly liver diseases were mostly seen in 41-50 years of age and that too more in males as compared to females. Our study was conducted only on specimens collected from the mortuary that include piece of liver or whole liver specimens so it may not reflect the actual pattern of liver diseases. The use of histopathological findings along with other scientific techniques remains as valuable today as it was centuries ago, both in daily practice and for scientific endeavor. Liver is said to be "The Custodian of Milieu Interior" hence autopsy is useful to identify the cause of death and to plan further approach.

### Declarations

Funding: None

Conflict of interest: None

Ethical approval: Not required

### References

1. Rezek R Philipp and Max Millard. Autopsy pathology; a guide for pathologists and clinicians: Springfield , Thomas ;1963: 464-467.
2. Saphir O: Liver 4th Ed. autopsy diagnosis and techniques by Paul B, Hobber, New York. 1958: 354-365.
3. Bal MS, Singh SP, Bodal VK, Oberoi SS, Surinder K. Pathological findings in liver autopsy. Journal of Indian Academy of Forensic Medicine 2004; 26(2):971-73.
4. Sotoudehmanesh R, Sotoudeh M, Asgari A, Abedi-Ardakani B, Tavangar SM,



- Khakinejad A et al. Silent Liver Diseases in Autopsies from Forensic Medicine of Tehran. Archives of Iranian Medicine 2006 Oct; 9(4):324-28.
5. Singal P, Kaur M, Deepika. Incidental Findings in Autopsy Examination of Liver: A Study of 70 Cases. Ann. Int. Med. Den. Res. 2017; 3(3): PT30PT32.
  6. Fubara DS and bbin NJ. Hepatocellular carcinoma in Port Harcourt, Nigeria: Clinicopathologic Study of 75 Cases. Annals of African Medicine 2007; 6(2):54-7.
  7. Selvi RT, Selvam V, Subramaniam PM. Common Silent liver Diseases In and Around of Salem Population: An Autopsy study. Journal of Clinical and Diagnostic Research. 2010 Apr; 6(2):207-10.
  8. Kumar V, Abdul, Fousto N. Aster J. Robbins and Cotran, pathologic Basic of disease, 7th edition. Elsevier. 2007.
  9. Madhu Bala devi et al. Pathological findings of liver in autopsy cases, A study at Imphal. J Indian Acad Forensic Med 2013 ;35(3):206-210.
  10. Umesh Babu et al .Spectrum of liver pathology at autopsy. IJRR 2015; 2 (3):79-85.
  11. Majethia NK, Patil MV, Kalgutkar AD. A Histo-Pathological Study of Liver in 118 Cases of Cirrhosis. J Liver. 2016; 5:193.
  12. Smita et al. Study of liver pathology in autopsy cases. International Journal of Current Research 2014 ; 6 (3) : 5795-5797.
  13. Devi Ph. M, Myrthong B G, Meera Th., Nabachandra H. Pathological Findings of Liver in Autopsy Cases A Study at Imphal.J Indian Acad Forensic Med. 2013;35:206-10.
  14. Zheng Wu, Wan-Li Wang, Ying Zhu, Ji-Wen Cheng, Jian Dong, Mu-Xing Li et al. Diagnosis and treatment of hepatic tuberculosis: report of five cases and review of literature. Int J Clin Exp Med. 2013; 6(9): 845–850.
  15. Zumla A, James DG. Granulomatous infections: Etiology and Classification. Clin Infect Dis. 1996;23:146-58.
  16. Cunnigham D, Mills PR, Quigley EM, Patrick RS, Watkinson G, MacKenzie JF. Hepatic Granulomas: Experience over a 10-year period in the West of Scotland. Q J Med. 1982;51:162-70.