



HISTOPATHOLOGICAL SPECTRUM OF HEPATIC LESIONS IN AUTOPSIES RECEIVED IN TERTIARY CARE CENTRE OF WESTERN HARYANA: A CROSS SECTIONAL STUDY

Pathology

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ABSTRACT

Background: The liver is vulnerable to a wide array of diseases due to its central role in metabolism and detoxification. Despite the high global burden of liver diseases, many hepatic lesions remain undetected during life and are discovered only at autopsy. **Methods:** A cross-sectional study was conducted on 150 formalin-fixed liver specimens over one year. Histopathological evaluation was performed using routine hematoxylin and eosin (H&E) staining, along with special stains such as Masson trichrome and Reticulin. Chronic liver diseases were graded and staged using the Ishak scoring system. **Results:** In our study males outnumbered females i.e. 84%. Most common histopathological finding was congestion (66%) followed by steatosis (33.3%), cirrhosis (14.7%), ballooning degeneration (13.3%), steatohepatitis and centrilobular necrosis (6%), cholestasis and sinusoidal dilatation (2.7% each), tubercular pathology (1.37%) and malignancy (0.7%). **Conclusion:** This study highlights the crucial role of autopsy-based histopathological analysis in identifying silent liver diseases. The findings reinforce the need for early detection and preventive strategies to mitigate liver disease progression.

KEYWORDS

Liver autopsy, cirrhosis, congestion, Ishak grading and staging

INTRODUCTION

Autopsy is a procedure that aids to identify the changes occurring in organs and helps to establish the time and cause of death. It unravels the alterations in liver pathology due to inflammatory, infectious and neoplastic lesions and helps to find out diseases in liver about which the person was unaware during his lifetime.¹ The liver is a vital organ responsible for various physiological functions, including digestion, protein synthesis, bile production, nutrient storage, and detoxification. Despite its resilience, the liver is susceptible to a wide range of diseases that often progress silently over years due to its large functional reserve.²

Chronic liver diseases (CLD) affect millions globally, with viral hepatitis B and C, alcohol-related liver disease, and non-alcoholic fatty liver disease being the most common causes. CLD progresses along a continuum beginning with hepatic steatosis, advancing to inflammation (steatohepatitis or hepatitis), fibrosis, and ultimately cirrhosis. Cirrhosis, characterized by extensive scarring, predisposes patients to serious complications such as portal hypertension, liver failure, and hepatocellular carcinoma.³

AIMS AND OBJECTIVE:

- To find out the histopathological spectrum of liver disorders in autopsy in tertiary care centre.
- To estimate proportion of various histopathological findings of liver in autopsy cases.
- To estimate the spectrum of chronic liver disease by Ishak staging and grading system.

MATERIAL AND METHODS:

This hospital-based cross-sectional study was conducted in the Department of Pathology at Maharaja Agrasen Medical College, Agroha, between July 2023 and June 2024. A total of 150 autopsy liver specimens were examined irrespective of age, gender and cause of death. Specimens were fixed in 10% formalin, processed, and stained using hematoxylin and eosin. Special stains like Masson Trichrome and Reticulin were used. Chronic liver diseases were staged and graded according to Ishak staging and grading system.

RESULTS AND OBSERVATIONS:

The age ranged from less than 3 year to 70 years. Majority of the cases were seen in the age group 41–50 years (42 cases, i.e. 28.0%). Number of males were 126 (84.0%), much higher than females (24 cases,

16.0%) with male: female ratio of 5.2: 1 (Table 1). Out of 150 cases, grossly nodules were seen in 14 (9.3%) cases. The most common finding observed was congestion (66.0%) followed by steatosis in (33.3%), cirrhosis (14.7%), ballooning degeneration (13.3%), steatohepatitis and centrilobular necrosis (6%), cholestasis and sinusoidal dilatation (2.7% each), tubercular pathology (1.37%) and malignancy (0.7%) (Table 2). In our study, maximum necroinflammatory score was observed in 13 (59.1%) cases (Table 3) and maximum fibrosis score was seen in 14 (63.6%) cases (Table 4). Both were statistically significant.

Table 1: Age And Gender Wise Distribution

Age group (in years)	Male	Female	Total	Percentage
0-10	1	3	4	2.7%
11-20	3	4	7	4.7%
21-30	24	9	33	22.0%
31-40	31	4	35	23.3%
41-50	40	2	42	28.0%
51-60	17	2	19	12.7%
61-70	10	0	10	6.7%
Total	126	24	150	100.0%

Above data suggest maximum liver autopsies were in the age group 41–50 years (28%) followed by 31–40 years (23.3%).

Table 2: Histopathological Features Wise Distribution Of Cases

Morphological features	Male	Female	No. of cases	Percentage
Congestion	82	17	99	66.0%
Steatosis	45	5	50	33.3%
Ballooning degeneration	18	2	20	13.3%
Steatohepatitis	8	1	9	6.0%
Centrilobular Necrosis	9	0	9	6.0%
Cholestasis	4	0	4	2.7%
Cirrhosis/Chronic Liver Disease	20	2	22	14.7%
Sinusoidal dilatation	3	1	4	2.7%
Granuloma (Tuberculosis)	2	0	2	1.3%
Primary malignancy	1	0	1	0.7%

Table 3: Assessment Of Ishak Necroinflammatory Scoring (0-18)

Necroinflammatory score	No. of cases	Percentage
0-8	4	18.2%
9-12	5	22.7%
13-18	13	59.1%
Total	22	100%

Maximum necroinflammatory score 13-18 was observed in 13 cases (59.1%), followed by score of 9-12 in 5 cases (22.7%) and score of 0-8 in 4 cases (18.2%).

Table 4: Assessment Of Ishak Fibrosis Score (0-6)

Fibrosis Score	No. of cases	Percentage
0	0	0%
1	1	4.5%
2	4	18.2%
3	1	4.5%
4	1	4.5%
5	1	4.5%
6	14	63.6%
Total	22	100%

Maximum score of 6 was seen in 63.6% cases followed by score of 2 in 18.2% cases and score 1,3,4,5 was seen in 4.5% cases each.

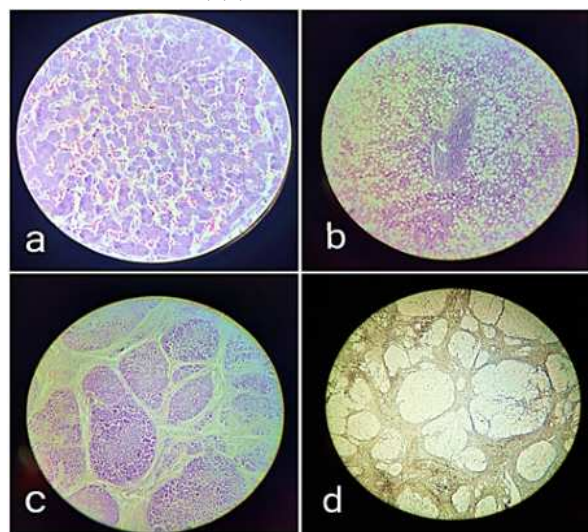


Figure 1 (a) marked sinusoidal congestion, (b) diffuse macrovesicular steatohepatitis, (c) loss of lobular architecture and thick bridging fibrotic septa, (d) special stain reticulin showing fibrosis.

DISCUSSION

The liver is vulnerable to various diseases, many of which remain clinically silent and are only identified at autopsy. These undiagnosed liver conditions are increasingly recognized as a major public health issue. Their true prevalence remains unclear due to the limited use of invasive diagnostic methods like liver biopsy in asymptomatic individuals. This highlights the need for improved screening and the adoption of non-invasive diagnostic techniques to enable early detection and timely management.⁴

In the present study, 150 cases were studied in which highest incidence was in the 41-50 years age group i.e. 42 (28%) cases followed by 31-40 years i.e. 35 (23.3%) cases. These findings were in concordance with the study done by Nigam A et al, Singal P et al, Bal MS et al in which the most common age group was 41-50 years.^{5,6,7} Ageing contributed to the cumulative effects of metabolic stressors, alcohol consumption, and undiagnosed viral hepatitis, increasing the likelihood of steatosis, fibrosis, and cirrhosis.

A strong male predominance (84%) was noted compared to females (16%) with male: female ratio of 5.2:1, likely reflecting higher alcohol use and related lifestyle risk factors. Similar gender trends have been documented in studies done by Kevadiya R et al and Singal P et al where males outnumbered females i.e. 80% and 82.8% with male: female ratio of 4:1 and 4.8:1 respectively.^{8,6}

In our study, congestion (66%) and steatosis (33.3%) were the most common histopathological findings. Congestion may result from

circulatory compromise in traumatic deaths, while steatosis is typically linked to alcohol use and metabolic syndrome. This finding was similar to the studies conducted by Porwal V et al and Rathod D et al (Table 5).^{9,10} Bal MS showed reported steatosis as the most common finding in 39% cases.⁷

Table 5: Comparison Of Histopathological Features In The Present Study And Other Studies

Histopathological features	Porwal V et al ⁹	Rathod D et al ¹⁰	Bal MS et al ⁷	Present study
Congestion	49.31%	58%	9%	66%
Steatosis	39.72%	20%	39%	33.3%
Steatohepatitis	18.21%	-	3%	6.0%
Cirrhosis	3.42%	8%	14%	14.7%
Granuloma	2.05%	-	-	1.3%
Primary malignancy	-	-	3%	0.7%
Metastasis	-	-	-	-

Cirrhosis was observed in 14.7% cases in the present study whereas Hanif G et al and Bhagat R et al reported cirrhosis in 4.5% and 7.5% of total cases, respectively.^{11,12}

In our study, granulomas and liver cancer were found in 1.3% and 0.7% cases respectively which are consistent with findings of Soutoudehmanesh R et al who observed granulomatous hepatitis in 0.2% of cases and Simon KA et al who reported 1% cases of malignancy.^{13,14}

In the present study, grading of necroinflammatory activity and staging of fibrosis was assessed by Ishak staging and grading system and maximum cases were observed in scores ranging from 13-18 (59.1%), followed by scores of 9-12 (22.7%) and scores of 0-8 (18.2%) which is similar to the study done by Petrescu et al, who reported 13-18 score in 36.5% cases, 9-12 score in 40.4% cases, and 1-8 score in 23.1% cases.¹⁵

CONCLUSION

The study underscores the pivotal role of histopathological examination in diagnosing and understanding liver diseases, particularly through autopsy based analysis. Autopsy not only diagnose silent liver diseases like fatty change, venous congestion, cirrhosis and malignant tumors but also, it is a magnificent learning tool for pathologists to study the spectrum of Chronic Liver Diseases using grading systems such as Ishak which facilitates a comprehensive and standardized assessment of liver histopathology. Advancements in molecular diagnostics, artificial intelligence, and non-invasive imaging techniques can complement traditional histopathology, and ultimately helps in early disease detection and management.

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