



A RETROSPECTIVE STUDY OF HISTOPATHOLOGICAL FINDINGS IN LIVER IN POST-MORTEM SPECIMENS – A TERTIARY CARE CENTER STUDY.

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ABSTRACT

Liver is the largest solid organ in the body. It performs numerous and vital functions including metabolism of nutrients, detoxification of xenobiotics, synthesis of plasma proteins, storage of vitamins and minerals and immunological surveillance. It gets involved by many diseases, some of which presents with clinical signs and symptoms while some are diagnosed only on post-mortem examination. **Aim-** To study the histopathological spectrum of liver lesions in post-mortem cases. **Material and Methods-** This was a retrospective observational study done in the Department of Pathology of our Medical College during 2024 and 2025. **Result-** Out of 200 cases studied, males predominated with 170 cases (90%) while females were with 30 cases only (10%). The male to female ratio was 5.7:1. The maximum number of cases were seen in the age group of 40-49 years while the least number of cases were seen in age group >80 years. The most common cause of death was found to be road traffic accidents (26.5%) followed by hanging (19%), sudden death (16%), poisoning (10.5%), drowning (9%), unknown cause (6.5%), natural cause (5%), hospital death (3.5%), custodial death (2%) and electrocution (2%). Majority of the specimens examined histologically were within normal histological limits (33.5%); followed by fatty change (28%), autolysed specimen (12%), chronic venous congestion (10%), steatohepatitis (7.5%), cirrhosis (3%) and tuberculosis (2%). **Conclusion-** Our study provides valuable insights into the histopathological findings of autopsy cases in a tertiary care hospital. The sex and age distribution as well as prevalence of various pathologies were highly consistent with other studies conducted in other parts of the country and globally. Histopathological examination of autopsy cases is very important in understanding the magnitude of clinically silent liver lesions.

KEYWORDS : Liver; Autopsy; Steatosis

INTRODUCTION

Liver is the largest solid organ in the body. It performs numerous and vital functions including metabolism of nutrients, detoxification of xenobiotics, synthesis of plasma proteins, storage of vitamins and minerals and immunological surveillance. A wide spectrum of diseases both primary as well as secondary can involve liver. The morphological spectrum of liver lesions includes reversible injuries like steatosis, steatohepatitis to chronic end stage liver diseases [1]. Secondary involvement of liver can be seen in cardiac de-compensation, poisoning, drugs, inherited conditions, alcoholism and infections [2]. Liver has got enormous functional reserve masking the clinical impact of mild liver damage or disrupted bile flow however, the consequences of deranged liver function may be life threatening. Therefore, liver autopsy serves as an eminent tool in helping pathologists reach a definitive diagnosis and forensic experts to specify the cause of death and to plan medical intervention [3].

Our study provided histopathological spectrum of liver lesions identified in medicolegal autopsies over a period of two years in a tertiary care hospital and assessed their distribution by age, sex and the cause of death.

MATERIAL AND METHODS

This was a retrospective observational study done in the Department of Pathology of our Medical College during January 2024 and December 2025.

Inclusion Criteria

All medicolegal autopsy specimens sent to the Department of Pathology for histopathological examination to ascertain the cause of death.

Exclusion Criteria

1. Severely autolysed or decomposed liver specimens unsuitable for histopathological evaluation.
2. Cases with incomplete autopsy records.

A total of 360 autopsy specimens were received during the study period out of which only 200 cases had liver included as specimen. Out of these 200 cases, "part of liver" was received in 190 cases whereas in 10 cases whole liver specimen was

sent. Information regarding age, sex, marital status and alcohol intake was taken from the autopsy forms. Samples from grossly visible lesion as well as random sections were taken. All the sections were fixed in 10% buffered formalin. Processed tissue sections were stained with Haematoxylin and Eosin according to standard procedures. Special stain like Reticulin was also done wherever required. The cases were then examined under microscope.

RESULT

A Total Of 360 autopsy specimens were received during the period of study, out of these only 200 cases included liver. Histopathological examination of specimens sent was carried out in each case. Among cases with pathological liver findings, males predominated (170 cases) compared to females (30 cases). The male to female ratio was 5.7:1. The age distribution of our cases showed the highest frequency in the 40-49 years age group, followed by 30-39 years age group and 20-29 years of age group as shown in Table 1.

Specimens sent varied from "part of liver" (190 cases) weighing from 250 to 400 grams to whole liver (10 cases) ranging from 1400 grams to 1700 grams. In the current study, the most common cause of death was found to be road traffic accidents (26.5%) followed by hanging (19%), sudden death (16%), poisoning (10.5%), drowning (9%), unknown cause (6.5%), natural cause (5%), hospital death (3.5%), custodial death (2%) and electrocution (2%) as shown in Table 2.

Most common histopathological finding was liver with in normal histological limits (33.5%) followed by steatosis (28%), autolysed (12%), chronic venous congestion (10%), chronic hepatitis (7.5%), sinusoidal dilatation and haemorrhage (4%), cirrhosis (3%) and tuberculosis (2%) as shown in Table 3. Macrovesicular steatosis was more common than microvesicular steatosis. Few cases also showed mixed steatosis. Hepatocellular changes in cirrhosis in the form of regenerative hyperplasia were seen. One of the cases with micronodular cirrhosis was found to have bridging fibrous septa between portal to portal tracts and central vein. There was periportal and portal – portal fibrosis in 7 cases. Architecturally cirrhotic changes are best seen on reticulin stain [4].

Tuberculosis was seen in 4 (2%) cases with histopathological examination showing epithelioid cell granuloma and giant cells which were parenchymal in location. Out of four, three of the cases were positive with Ziehl -neelsen stain and were also associated with granulomas in the lung.

Table 1 Distribution of Autopsy Cases According to Age and Sex (n=200)

AGE (years)	Male	Female	Total
<20	8	7	15
20-29	27	14	41
30-39	49	2	51
40-49	54	3	57
50-59	23	2	25
60-69	5	1	6
70-79	3	1	4
>80	1	0	1
Total	170	30	200

Table 2- Distribution of Cause of Death (n=200)

Cause of death	Total number	Percentage%
Road traffic accident	53	26.5
Hanging	38	19
Sudden death	32	16
Poisoning	21	10.5
Drowning	18	9
Unknown cause	13	6.5
Natural cause	10	5
Hospital death	7	3.5
Custodial death	4	2
Electrocution	4	2
Total	200	100

Table 3- Histopathological Findings Along with Sex Wise Distribution (n = 200)

Histopathology	Male	Female	Total number of cases	Percentage%
Normal	57	10	67	33.5
Steatosis	51	5	56	28
Autolysed	21	3	24	12
Chronic venous congestion	14	6	20	10
Chronic hepatitis	12	3	15	7.5
Sinusoidal dilatation and haemorrhage	6	2	8	4
Cirrhosis	6	0	6	3
Tuberculosis	3	1	4	2
Total	170	30	200	100

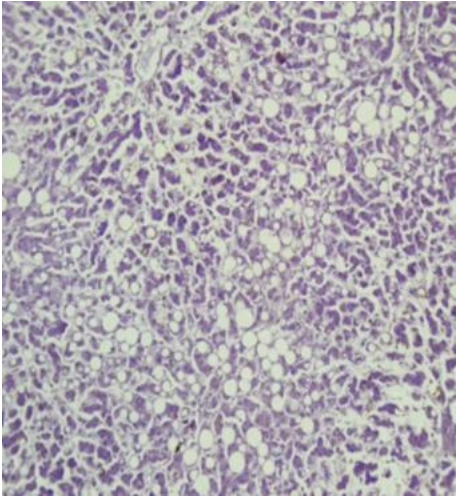


Fig 1- Steatosis Liver (H&E,40X)

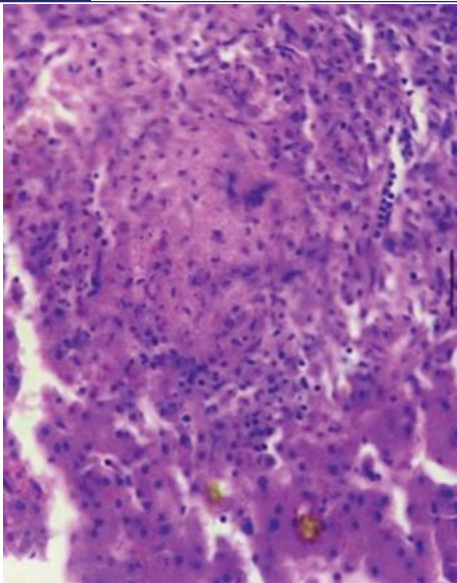


Fig 2- Well Formed Epithelioid Cell Granuloma with Langhans Giant Cell (H&E,40X)

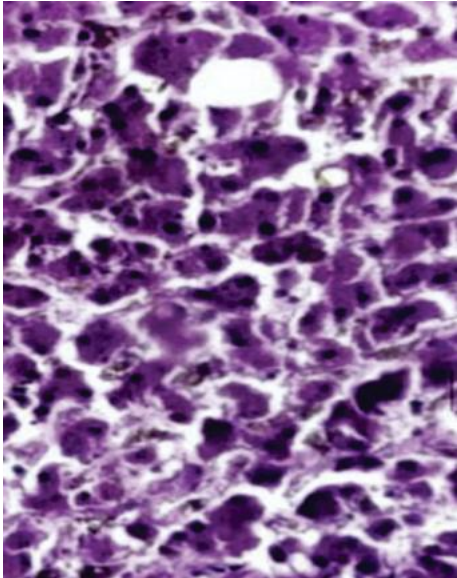


Fig 3- Sinusoidal Dilatation with Congestion (H&E,40X)

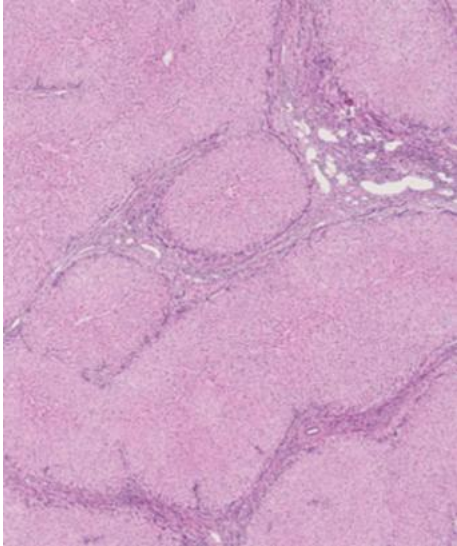


Fig 4- Liver Cirrhosis Showing Multinodular Pattern (H&E,40X)

DISCUSSION

Histopathological study continues to serve as the gold standard for the diagnosis and classification of liver diseases, offering definitive insights into the type, stage and extent of hepatic injury. This plays a vital role in study of various incidental and unexpected lesions of liver related or unrelated to cause of death which are imperative in academic purposes as well as contributes in estimating the true prevalence of various silent pathologies or lesions.

In this study, liver lesions were more common in males as compared to females with age range from 15 to 82 years. Male to female ratio was found to be 5.7:1. Bal MS et al [5] also showed liver diseases tend to be more common in males than females with a male:female ratio of 4.88:1. Other studies done by Devi M et al [6], Devi NP [7] and Singh S et al [8], showed Male to female ratio of 6:1, 2.4:1 and 2.1:1 respectively. The male preponderance in these cases may be attributed to the fact that alcoholism is seen more commonly in male patients which is one of the etiological factors for liver diseases.

The maximum number of cases recorded were between the age group of 40-49 years followed by 30-39 years and 20-29 years. Nigam A et al [9] found that maximum number of cases were seen in 41-50 years of age with male to female ratio of 6:1. Sameer MA et al [10] in his study found the peak between 4th and 6th decade. Male were found to be more than female cases. Venu A et al [11] found that male cases were more than female cases similar to our study.

In the current study, the most common cause of death was road traffic accident (26.5%) followed by hanging (19%), sudden death (16%), custodial death (2%) and electrocution (2%). Selvi RT [12] also reported road traffic accident as the cause of death in most of the cases (35%).

Most common histopathological finding was liver with in normal histological limits (33.5%) followed by steatosis (28%), autolysed (12%), chronic venous congestion (10%), chronic hepatitis (7.5%), sinusoidal dilatation and haemorrhage (4%), cirrhosis (3%) and tuberculosis (2%). Bahera A et al [13] also found that most of the specimen received were within normal histological limits (26.56%) followed by steatosis (21.87%), congestion (20.31%), chronic hepatitis (12.5%) and cirrhosis (9.37%). Patel RP et al [14], found 56.97% cases had no remarkable pathology. It was followed by steatosis that made 35.6% cases followed by cirrhosis of liver (2.4%). Alagarsamy J et al [15] observed that cases with normal histology of liver was 22%, fatty liver 20%, hepatitis 10%, congestion 26%, cirrhosis 16% similar to our study.

In our study, 24 specimens received were autolysed or poorly preserved. Out of these, histopathological examination could detect steatosis in two cases only as rest of the specimen showed no viable tissue microscopically. This necessitates the emphasis to be laid on proper transport and preservation of the specimens sent for histopathology.

Among the pathological conditions, steatosis was seen in 28% of the cases. Macrovesicular steatosis was more common than microvesicular steatosis. Few cases had mixed steatosis. Tamil Selvi R et al found steatosis in 26.9% cases [16]. Study done by Devi NP et al [7] showed steatosis in 28% cases which is in concordance to our study.

Granulomatous pathology is mainly seen as secondary or in disseminated cases of tuberculosis. In our study, tuberculosis was seen in 4 (2%) cases and microscopically showed epithelioid cell granuloma formation, langhans multi-nucleated giant cells and caseous necrosis. 3 out of 4 cases were Ziehl-Neelsen stain positive and were also associated with granulomas in lung. Patel S et al [17] found tuberculosis in 3.46% of cases with all the cases having pulmonary

involvement and one having extrapulmonary involvement. Garg M et al [18] found tuberculosis in 8.7% of cases, of which 90% suffered from pulmonary tuberculosis with miliary tuberculosis in 10% cases and 30% cases had extrapulmonary manifestations. The diagnosis of tuberculosis was incidental in all cases with post-mortem diagnosis of tuberculosis. This probably is because latent phase of tuberculosis is common with only 10% of it eventually progress into active disease. In other studies by Singal P et al (1%) and by Kataria SP et al (2%) cases of granulomatous pathology were seen [19,20]. Liver also gets involved in large cases of miliary tuberculosis whereas primary hepatic tuberculosis is rare due to its low oxygen tension [21].

CONCLUSIONS

Our study provides valuable insights into the histopathological findings of autopsy cases in a tertiary care hospital. The sex and age distribution as well as prevalence of various pathologies were highly consistent with other studies conducted in other parts of the country and globally. Histopathological examination of autopsy cases is very important in understanding the magnitude of clinically silent liver lesions.

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