Case Study

Histopathological Spectrum of Findings in Liver in Autopsy Cases: A Case Study in Tertiary Centre

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Abstract

Background: Liver is the most vulnerable and major organ in our body which undergoes variety of insults like metabolic, toxic, microbial and circulatory disturbances. Liver is the site of many diseases which become symptomatic while some are diagnosed only on autopsy.It is beneficial for clinician and pathologist to reach accurate diagnosis through histopathological examination of liver and determine the involvement of liver in autopsy cases.

Methods: A prospective study was conducted in the Department of Pathology, Government Medical College, Amritsar from January 2021 to December 2022. One hundred liver specimens were studied in autopsy cases of different age groups received in department of Pathology. Gross examination of liver specimen was done and. Hand E stained slides were subjected to microscopic examination. The aim of the study was to see the prevalence of liver diseases in medicolegal autopsies and their histopathological examination**.**

Conclusion: In our study number of males was more than females. Liver congestion was the most common finding in our study followed by fatty liver. Alcohol intake was the common findings in large number of autopsy cases.

Keywords: Autopsy, Cirrhosis, Steatosis.

Introduction

Autopsy is a procedure that aids to identify the changes occurring in the organs which help to establish the cause of death and time of death. It also helps to study the antemortem as well as post mortem aspect of death.[1] Histopathological examination is an important aspect that helps to identify many incidental findings which is an essential tool for the pathologist and forensic experts.[2] Autopsies are performed either for medical or legal purposes but aim is to determine the cause of death. Various incidental findings which otherwise have been unnoticed during person's life are identified during autopsy which may or may not be the contributary factor for cause of death.

Liver is the most vulnerable and major organ in our body which undergoes variety of insults like metabolic, toxic, microbial and circulatory disturbances. In some instances, the disease is primary while in others hepatic involvement is secondary to cardiac decompensation, alcoholism, poisoning, toxins and extrahepatic infections.[3] Liver diseases may either go undetected or not identified during health checkups or investigations required for other conditions or surgery.[4] Most of the chronic

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liver diseases , even in advanced stages, may cause no prominent signs and symptoms. The underlying cause may vary in different geographical areas and are based on various factors such as socioeconomic status, lifestyle, diet, local or regional infections and other endemic diseases.[5]

Abnormal findings in liver autopsies can be fatty change, hepatitis, cirrhosis, acute poisoning, glycogen storage disease, hemosiderosis, infarct, tuberculosis, acute passive hyperemia, chronic passive hyperemia, abscess, malignancy, metastasis, amyloidosis, hydatid cyst.[6]Liver is the site of many diseases which become symptomatic while some are diagnosed only on autopsy.

The medicolegal autopsy helps to find out diseases occurring in the liver about which the individual is not getting attention during his or her lifetime. The examination served animportanthistopathological evidence to detect various changes occurring in liver and also help forensic experts to ascertain the cause of death. Microscopic examination however is still a very useful method to study the disease process.[7]

Thusthe main purpose of autopsy is to learn about deceased's condition which may lead to death. This study was planned to know the spectrum of pathological causes and morbid anatomical changes in liver autopsy.

Aims and Objectives

To study the prevalence of liver diseases in medicolegal autopsies and their histopathological examination**.**

Material and Methods

A prospective study was conducted in the Department of Pathology, Government Medical College, Amritsar from January 2021 to December 2022. One hundred liver specimens were studied in autopsy cases of different age groups received in department of Pathology.

Inclusion criteria

All autopsy cases, where liver was received, irrespective of age, sex and cause of death, were included in the study.

Exclusion criteria

Autolysed specimens were excluded from the study.

The information of age, gender, marital status, alcohol or any other abuse history, previous medical history was taken from death register report during autopsy or records whenever available. Liver specimen was received in the department in 10% formalin used as fixative. Liver specimen were mostly received in small pieces as a part of multiple viscera and only in occasional cases whole liver was received.

Gross examination of liver specimen was done and weight, size, texture, external appearance of liver like infarction, nodules, tumors, abscess, haemorrhagic areas was noted. Sections from representative areas were submitted. All the pieces were fixed in 10% formalin and processed, sectioned and stained with routine Hematoxyl in and Eosin stain following standard procedure. Hematoxylin and Eosin stained slides were subjected to microscopic examination. Special stains were done wherever required.

Result

In the present study conducted Department of Pathology, Government Medical College, Amritsar from January 2021 to December 2022, one hundred liver specimens were studied in autopsy cases of different age groups received in Department of Pathology.

Table 1. Age and Sex Distribution of the Cases

AGE GROUP (years)	MALE	FEMALE	TOTAL
1-10	01	0	01
11-20	01	01	02
21-30	05	02	07
31-40	10	03	19
41-50	24	13	37
51-60	21	02	17
61-70	12	02	14
71-80	03	0	03
TOTAL	77	23	100

In the received autopsies of liver age ranged from 4 years to 75 years and majority of patients belonged

to 4th decade followed by 3rddecade as shown in Table 1. Out of 100 cases 77% were males and 23% were females.

Table 2: Histopathological Findings of Liver Autopsy Cases According To Gender

HISTOPATHOLOGICAL FINDINGS	MALE	FEMALE	TOTAL
Fatty change	18	05	23
Hepatitis	06	02	08
Cirrhosis	03	01	04
Portal tract inflammation	06	02	08
Tubercular Granuloma	04	01	05
Congestion	20	05	25
Cholestasis	02	0	02
Hepatocellular Carcinoma	01	0	01
Metastasis	0	01	01
Candidiasis	01	0	01
Unremarkable	14	06	20
Abscess	02	0	02
Total	77	23	100

On histopathology most common findings in liver was chronic venous congestion (25%) followed by fatty liver (23%). Other findings were hepatitis and portal tract inflammation each seen in eight percent. Hepatitis and cirrhosis were seen in 8% and 4 % respectively. Histopathological findings were unremarkable in 20% cases.

Granulomatous pathology likely tuberculosis was seen in five cases. On histopathology well formed granuloma were seen comprising of epithelioid cells and lymphocytes and many multinucleated Langhan's type giant cells. There was also seen caseous necrosis. Out of five, two cases were of disseminated tuberculosis and one case was seen in known case of HIV positive.

Hepatocellular carcinoma was an incidental finding seen in 62 years male with no prior history mentioned.On gross examination well circumscribed area was seen in liver measuring 3 x 2 cm and was pale white in colour. On microscopy there were seen atypical cells lyingin sheets and trabecular pattern with cells exhibiting moderate nuclear pleomorphism, nucleomegaly, irregular nuclear contour, vesicular nucleus with prominent nucleoli with variable cytoplasm.Metastatic deposits of carcinoma colon were seen in liver in known case of primary Adenocarcinoma colon.

Cirrhosis of liver were seen in four cases and maximum had history of alcohol intake. On gross examination variable size nodules were seen on external surface of liver. On microscopy hepatic parenchyma show variable macro and micronodules formed by fibrous bands forming bridges from central zone to central and portal zone. There was seen fatty change in hepatic cells and periportal chronic inflammation.

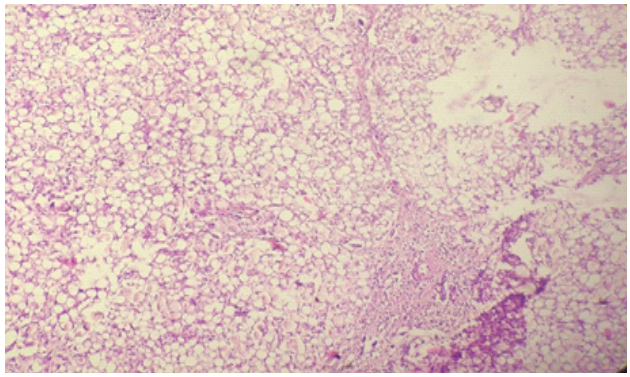

Figure 1: Fatty change seen in hepatocytes (H and E stain; 100X)

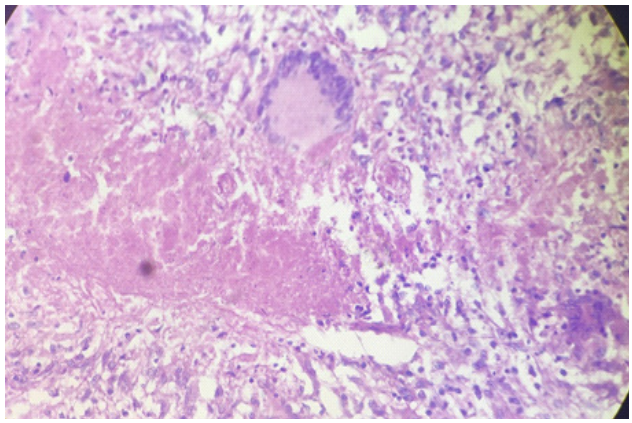

Figure 2: Langhan's giant cell and caseous necrosis seen in patient of granulomatous liver disease likely Tuberculosis (H and E stain; 400X)

Table 3. Histopathological Findings as Per Cause of Death

Histopathological Findings	Road side Accident	Poisoning	Burns	Hanging	Gun shot injury	Chronic Illness	Cardiac arrest	Others	Total
Fatty change	05	04	04	01	02	01	05	01	23
Hepatitis		01	01			03	02	01	08
Cirrhosis	01					03			04
Portal tract inflammation		02	01		01		02	02	08
Tubercular Granuloma		01				03		01	05
Congestion	05	04	02	02	02	05	02	03	25
Cholestasis		01				01			02
Hepatocellular Carcinoma						01			01
Metastasis						01			01
Candidiasis						01			01
Unremarkable	04	02	03	04	02	02	02	01	20
Abscess						01		01	02
Total	15	15	11	07	07	22	13	10	100

Chronic illness was the most common cause in autopsy cases followed by road side accidents, poisoning and cardiac arrest. Congestion was most common finding on histopathology followed by fatty liver. Alcohol intake was the common findings in large number of autopsy cases. There were cases with history of poisoning, known case of hepatitis, neurological symptom like paralysis and coma and known case of primary malignancy of colon.

Discussion

In the present study, maximum number of cases were seen in age group 41-50 years (37%) which was similar to studies conducted by Bal MS et al(53.85%),Fubara DS et al (28%) and Singal P et al. [3,8,9]

Liver disease was predominantly seen more in males (77%) as compared to females (23%) in the present study similar to the studies conducted by Behera et aland Rani E et al.[10,11] Alcohol consumption is attributed to be the main cause of male predominance of liver involvement in autopsy findings.

According to the present study congestion was the most common histopathological finding on liver autopsy seen in 25% cases out of which in maximum cases death was due to road side accident(5%), chronic illness(5%) and poisoning (4%). The results were similar to the study by Kataria SP et alin which Chronic venous congestion was the most important finding(61%) and was seen in cases of road side accident(10%) and poisoning(13%).[12] In the other studies conducted by Singal P et aland Hingway S et al chronic venous accounts for 27% and 26% of cases on autopsy which is similar to the present study.[9,13]

Fatty liver was one of the most common finding in liver autopsy in 23% cases in the present study and male population was dominating mainly due to alcohol consumption. Road side accident and cardiac arrest were the most cause of death in those cases. In the study conducted by Singal P et al(34.2%), Hingway S (32.08%), Patel PR et al(22.5%). hepatic steatosis was found in majority of the cases.[9,13,14]

Hepatitis accounts for eight cases in the present study showing balloon degeneration, periportal and intertrabecular chronic inflammation and fibrosis. Chronic hepatitis is usually due to hepatotropic viruses, autoimmune chronic hepatitis or drug induced. In the study by Kataria SP et al such twelve cases were found and all were having chronic hepatitis.[12]

Granulomatous pathology is mainly seen as secondary or in disseminated cases of tuberculosis.

Granulomatous Pathology was seen in 5% cases in our study out of which two cases were of disseminated tuberculosis in which well formed granulomas were seen in other organs sent for autopsy including kidney, lung and spleen. Caseating necrosis was seen in three cases. In the other three cases of miliary tuberculosis primary foci was in lungs. Primary liver Tuberculosis is very rare. Cunningham et alconducted a study on liver autopsies in which 2-10% cases were reported of granulomatous pathology.[15] In other studies by Singal P et al (!%) and byKataria SP et al (2%) cases of granulomatous pathology were seen.[9,12]

Cirrhosis of liver is mainly caused by chronic alcohol consumption, chronic hepatotropic viruses, metabolic disorders, due to prolonged venous congestion and use of hepatotoxic drugs. In the present study cirrhosis liver was seen in 4 (4%) cases and majority were males(75%). Alcohol consumption was associated in 3 (75%) of total cases. Similar findings were seen in the study by Kataria SP et alin which (5%) cases were of cirrhosis liver mainly associated with alcohol intake.[12]Chronic illness and road side accident were the cause of death in these cases in our study.

Both benign and malignant tumours occur in liver. One case of Primary Hepatocellular carcinoma was reported as incidental finding in our study. Metastatic tumors are more common in liver. Hingway S et al observed three cases (1.1%) in their study similar to Sameer MA et al (1.33%).[16]

Conclusion

Liver is metabolically very active and essential organ and silent liver diseases are also very common in healthy individuals. In our study males had more cases of liver involvement as compared to females with male to female ratio (3.3:1). Maximum cases were in age group 41-50 years. Congestion liver was the most common histopathological finding followed by fatty liver. Alcohol consumption was the major cause of cirrhosis liver. Since we have only reported cases sent for autopsy in the department, the actual pattern of the diseases cannot be made on this basis.

Liver is directly or indirectly involved in majority of medical conditions irrespective of patient's clinical picture. Thus with the help of histopathology the better understanding of the underlying cause of death can be diagnosed in autopsy cases which can be useful for clinicians and pathologists.

Conflict of Interest: None

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