

STUDY OF HISTOMORPHOLOGICAL PATTERN OF LIVER DISEASES IN AUTOPSY CASES: A RETROSPECTIVE STUDY AT A TERTIARY CARE HOSPITAL

Pathology

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ABSTRACT

Introduction: Liver is affected by a variety of diseases, primary as well as secondary. The majority of chronic liver diseases may remain undiagnosed as some lesions have no clinical signs and symptoms. They are found incidentally during general health check-ups or at autopsy. **Aims & Objective:-** To study the histomorphological spectrum of liver lesions at autopsy irrespective of the cause of death., To assess the frequency of the different types of lesions. **Material And Methods:** The present study was conducted on 400 liver autopsy specimens received in the department of Pathology, Medical College, Baroda, Gujarat. Tissue sections from representative areas were processed, stained, and examined under the light microscope. **Result:** Out of 400 specimens, 36 (9%) cases were autolyzed, 164(41%)cases showed congestion, followed by 110 (27.5%) cases of hepatic steatosis. Normal histology was found in 40(10%) cases, 20(5%) cases showed cirrhosis. Other findings included periportal inflammation in 10 (2.5%)cases, tuberculous granuloma in 5(1.25%)cases, metastatic tumor in 5(1.25%)cases, and 3(0.75%) cases showed the presence of sickle-shaped RBCs in blood vessels of the liver. Males predominated the study with a Male: Female ratio of 3.16:1. Maximum cases was in the age group of 31-40 years. **Conclusion:** Autopsy examination of liver is a valuable tool to identify silent liver diseases. In the present study, liver pathology is more common in males, the most common age group is 31-40 years, congestion and steatosis comprise significant findings.

KEYWORDS

Steatosis, Congestion, Cirrhosis.

INTRODUCTION:

Professor William Boyd said that "Pathology has its beginning on the autopsy table".¹ Autopsy also called necropsy is a detailed examination of a dead body. The word autopsy is derived from the Greek word autopsia means "The act of seeing for oneself".² Autopsy is a magnificent learning tool for the pathologist to study the histopathology of diseases.

Liver is the most common site for metabolic functions which is prone to get various types of injury due to exposure of chemicals, toxic metabolites and drugs.^{3,4} It is a known fact that silent liver diseases are common amongst apparently healthy individuals and most of diseases come to the light of the clinician only during autopsy.⁴ Liver diseases are an important cause of morbidity and mortality. The occurrence and pattern of liver disease vary from one region to another region depending on the various etiological factors.⁵

The medico-legal autopsy helps to find out diseases occurring in the liver about which the individual is not getting attention during his or her lifetime and has never undergone for any diagnostic procedures due to lack of any symptoms.^{3,5} Thus, an autopsy study of liver was performed to evaluate the prevalence and relative frequency of various type of liver diseases which are often asymptomatic till late in the course of diseases. Abnormal findings in liver autopsy can be Chronic venous congestion, hepatitis, steatosis, cirrhosis, tuberculosis, hepatocellular carcinoma, metastatic deposits, etc.^{3,4,5}

AIMS AND OBJECTIVES:

- To study the Histomorphological spectrum of liver lesions at autopsy irrespective of the cause of death.
- To assess the frequency of the different types of liver lesions.

MATERIALS AND METHODS:

This is retrospective study was carried out in the department of Pathology, Medical College Baroda from January 2021 to May 2022.

The study comprises of 400 specimens of liver irrespective of age and sex. Specimens were received as a part of an examination of multiple viscera in autopsy section. The liver specimens were thoroughly examined grossly and representative areas were submitted for microscopic examination. Formalin-fixed tissue stained with hematoxylin and eosin according to standard procedures were examined under the light microscope. The findings were analyzed.

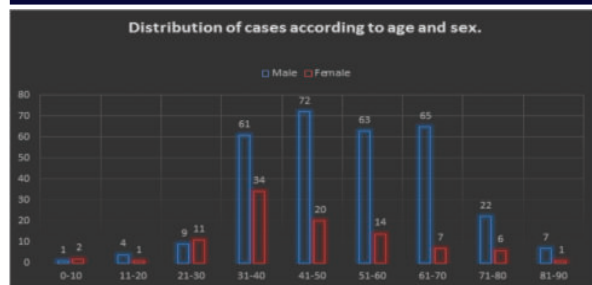
OBSERVATIONS:

In the present study, out of 400 cases, 324 cases showed pathological lesions, 36 cases were autolyzed and 40 specimens showed no remarkable pathology. Males predominated the study, 304(76%) out of 400 cases were males, while 96(24%) were females with Male:Female ratio of 3.16:1 (Table 1 & Graph 1).

Table 1. Distribution of cases according to age and sex.

AGE GROUP	MALE (NUMBER)	FEMALE (NUMBER)	TOTAL	
			NO.	PERCENTAGE(%)
0-10	01	02	03	0.75%
11-20	04	01	05	1.25%
21-30	09	11	20	5%
31-40	61	34	95	23.75%
41-50	72	20	92	23%
51-60	63	14	77	19.25%
61-70	65	07	72	18%
71-80	22	06	28	7%
81-90	07	01	08	2%
TOTAL	304	96	400	100%

In the present study, the age ranged from newborn to 90 years as depicted in Table 1, maximum number of cases were observed in the age group of 31-40 years, 95(23.75%) cases followed by 41-50 years age group, 92(23%) cases.



Graph 1. Distribution of cases according to age and sex

Table 2: Gender-wise distribution of liver lesions

LIVER DISEASES	MALE	FEMALE	TOTAL NO
NORMAL	26 (6.5%)	14 (3.5%)	40 (10%)
NON-NEOPLASTIC			
Congestion	136 (34%)	28 (7%)	164 (41%)
Steatosis	77 (19.25%)	33 (8.25%)	110 (27.5%)
Cirrhosis	18 (4.5%)	2 (0.5%)	20 (5%)
Tuberculosis	4 (1%)	1 (0.25%)	5 (1.25%)
Periportal Inflammation	7 (1.75%)	3 (0.75%)	10 (2.5%)
Periportal Fibrosis	1 (0.25%)	1 (0.25%)	2 (0.5%)
Periportal Necrosis	1 (0.25%)	2 (0.5%)	3 (0.75%)
INCIDENTAL FINDINGS			
Sickle cell RBCs in congested vessels in case of sickle cell anemia	1 (0.25%)	2 (0.5%)	3 (0.75%)
Immature WBCs in blood vessels	0	2 (0.5%)	2 (0.5%)
NEOPLASTIC			
Metastasis	2 (0.5%)	3 (0.75%)	5 (1.25%)
AUTOLYSIS	30 (7.5%)	6 (1.5%)	36 (9%)
TOTAL	304 (76%)	96 (24%)	400 (100%)

In the present study out of 400 specimens, 36 cases (9%) were autolyzed, 163 (41%) cases showed congestion followed by 110 (27.5%) cases of hepatic steatosis, normal histology was found in 40 (10%) cases, 20 (5%) cases showed cirrhosis of liver. Other findings included periportal inflammation in 10 (2.5%) cases, Periportal necrosis in 3 (0.75%) cases, and Periportal fibrosis in 2 (0.5%) cases. Tuberculous granuloma was found in 5 (1.25%) cases.

Metastatic tumors included 3 (0.75%) cases each of metastatic adenocarcinoma, small round cell tumor, and metastasis from invasive ductal carcinoma of breast. Incidental findings included 3 (0.75%) cases that showed the presence of sickle-shaped RBCs and 2 cases (0.5%) that showed the presence of immature WBCs in the blood vessels of liver. (Table 2)

DISCUSSION:

Liver is most commonly affected by a variety of metabolic, toxic, infectious, and circulatory disturbances.^{3,4,5} Many of the liver diseases are primary in nature while in other conditions secondary involvement is due to cardiac decompensation, alcoholism, and extrahepatic infections.^{4,5,6}

The panorama of pathological lesions found in liver extends to a wide range of histological patterns. Apart from common liver diseases- Abscesses, yellow atrophy, infarcts, swelling, and cyst can be seen as "silent liver disease" in the histological examination.^{5,6}

Table 3. Comparison of the Age distribution of cases in the present study with other studies.

AGE	Present study	Porwal et al ⁷	Ekta et al ⁸	Patel et al ⁹	Umesh babu et al ¹⁰
0-10	0.75%	2.05%	2.5%	2.4%	1.9%
11-20	1.25%	3.42%	2.5%	3.8%	6.7%
21-30	5%	21.91%	22.5%	23%	18.1%
31-40	23.75%	27.39%	22.5%	22.4%	26.7%
41-50	23%	22.60%	12.5%	21.8%	19.1%
51-60	19.25%	13.01%	12.5%	18.2%	15.2%
61-70	18%	5.47%	15%	6%	8.6%
71-80	7%	3.42%	-	1.8%	3.8%
81-90	2%	0.68%	-	0.6%	-

In the present study, age ranges from 0- 90 years and maximum cases were seen in the 4th decade which is almost in concordance with the study by Porwal et al⁷, Ekta et al⁸, Patel et al⁹ and Umeshbabu et al¹⁰. (Table 3)

Table 4. Comparison of the Gender distribution of cases in the present study with other studies.

GENDER	Present study	Porwal et al ⁷	Patel et al ⁹	Thamilselvi et al ⁵	Bhagat et al ¹¹
TOTAL CASES	400	146	500	108	120
MALE	306	119	396	82	91
FEMALE	96	27	104	26	29
MALE: FEMALE RATIO	3.18:1	4.4:1	3.8:1	3.1:1	3.13:1

In the present study male: female ratio is 3.18:1 which is comparable with the study done by Thamilselvi et al⁵, Patel et al⁹ and Bhagat et al¹¹. There is a male predominance which is almost comparable with all studies. (Table 4).

Table 5: Comparison of liver lesions with other studies.

Pathology	Present Study	Porwal et al ⁷	Smita. Pudale et al ¹²	Thamils elvi et al ⁵	Patel et al ⁴	Umesh babu et al ¹⁰
Total Case	400	146	451	120	500	105
Congestion	41%	49.31%	29.05%	16.70%	57.6%	9.52%
Steatosis	27.5%	39.72%	15.52%	26.90%	30%	22.90%
Cirrhosis	5%	3.42%	4.43%	7.40%	5.6%	1.90%
Tuberculosis (Hepatic Granuloma)	1.25%	2.05%	3.10%	-	0.2%	3.80%
Tumors	1.25%	-	2.88%	1.90%	0.8%	-
Normal	10%	6.84%	21.51%	25.90%	4%	4.76%
Autolyzed	9%	13.69%	-	-	-	-

Congestion is the most common hepatic manifestation of circulatory disturbance. In the present study in 41% of cases showed congestion which was comparable with the studies of Porwal et al⁷ (49.31%), Patel et al⁴ (57.6%), Smita et al¹² (29.05%), and Sameer et al¹³ (31.33%).

In the present study, steatosis was seen in 27.5% of cases which was similar to the studies of Thamilselvi et al⁵ (26.90%), Patel et al⁴ (30%), Porwal et al⁷ (39.72%) and Behera et al¹⁴ (21.87%). Alcohol intake is the major cause of steatosis.^{5,11} However, Non-alcoholic fatty liver disease (NAFLD) is another cause of the development of steatosis which is associated with metabolic syndrome, obesity, type 2 diabetes mellitus, dyslipidemia, and hypertension. Women in our study most commonly suffered from steatosis (NAFLD) which is similar to the study done by Simon K et al.¹⁵ Maximum number of steatosis in female was seen mainly in the age group of 41 to 60 years.

Cirrhosis constituted 5% of the liver diseases which is similar to the study by Patel et al⁴ and Smita et al.¹² Out of the total 20 cases of cirrhosis, 18 cases were recorded in males and only 2 cases were seen in females. The majority of cases were seen in the 41 to 60 years of age group. Alcohol was the main causative factor for the development of cirrhosis.

In the present study, 1.25% of cases had tuberculous granuloma which correlates with Porwal et al⁷ and other studies. 4 cases were seen in males and one case was seen in female. Liver is the commonest site for granuloma formation due to its rich blood supply. Granulomas are frequently found in liver biopsies.^{15,16,17} In all five cases of hepatic granuloma pulmonary tuberculosis was present.

In the present study, 1.25% of cases show tumors which correlates with Thamils et al⁵ and Patel et al⁴ studies. A total of 5 cases of liver metastasis were recorded, 3 cases in females and 2 cases in males.

We found sickle cells in 3 cases, 2 cases were in females and one case in male. The histological findings were marked congestion in sinusoids with sickled RBCs. Sickled RBCs were seen in blood vessels of all major organs like the heart, lung, kidney, spleen, and cerebrum. Sickle cell crisis is one of the most common causes of sudden death if no other apparent cause is identified.¹⁸

10% of cases showed normal histopathology which was low as compared to the studies of Smita et al¹² and Thamil et al⁵ and Behera et al¹⁴ (Table 5).

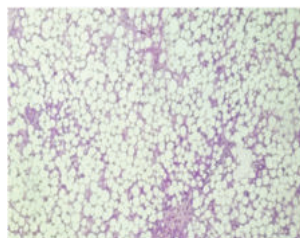


Fig 1. Photomicrograph showing diffuse macrovesicular steatosis. (H&E,10x)

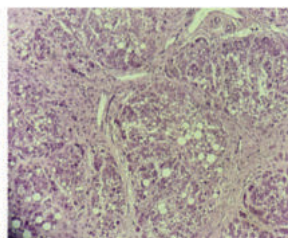


Fig 2. Photomicrograph showing active cirrhosis. (H&E,10x)

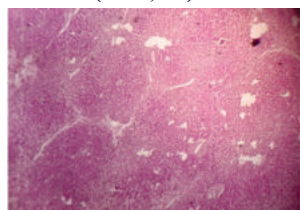


Fig 3. Photomicrograph showing chronic venous congestion. (H&E,10x)

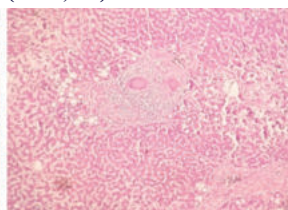


Fig 4. Photomicrograph showing liver granuloma. (H&E,10x)

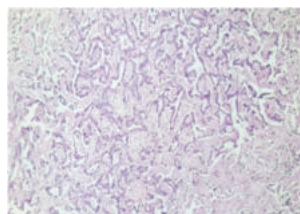


Fig 5. Photomicrograph showing Metastatic Adenocarcinoma. (H&E,10x)

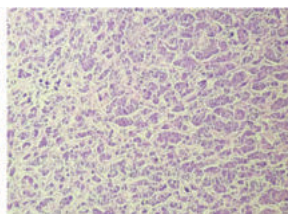


Fig 6. Photomicrograph showing Metastatic Invasive ductal carcinoma. (H&E,10x)

CONCLUSION:

From the present study, we conclude that liver pathology is more common in males, the most common age group involved is the 4th decade, congestion and steatosis comprise a significant finding in our study. Hence autopsy study of the liver is a useful learning tool to study the various diseases of liver and helps us to confirm an uncertain antemortem diagnosis. Thus, the use of autopsy findings remains as valuable today as it was centuries ago.

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