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A STUDY OF QUALITATIVE AND QUANTITATIVE ANALYSIS OF SEMEN IN SMOKERS AND NON-SMOKERS

Pathology

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ABSTRACT

Background: The liver is one of the most metabolically active organs and is frequently affected by a wide range of pathological conditions. Many hepatic lesions remain clinically silent and are detected only during autopsy. Histopathological examination of medicolegal autopsy specimens provides valuable information regarding the prevalence and spectrum of liver diseases and contributes to a better understanding of silent hepatic pathology in the community. **Materials and Methods:** A prospective observational study was conducted over a period of two years in the Department of Pathology, Jhalawar Medical College, Rajasthan. A total of 238 liver specimens obtained from autopsies were included. Extensively autolysed specimens and specimens unsuitable for histopathological evaluation were excluded. Tissue samples were fixed in 10% neutral buffered formalin, processed routinely, embedded in paraffin, sectioned at 3–5 µm, and stained with Hematoxylin and Eosin. Masson's trichrome stain was used whenever required for assessment of fibrosis. Histopathological findings were analyzed using descriptive statistics and appropriate statistical tests. **Results:** Among the 238 autopsy cases, males constituted 79.83% and females 20.17%. The highest number of cases belonged to the 31–40-year age group, followed by the 41–50-year age group. Fatty change was the commonest histopathological lesion (59.66%), followed by portal triaditis (14.29%), hepatitis (7.56%), cholestasis (7.56%), hepatic necrosis (3.36%), chronic venous congestion (2.52%), cirrhosis (1.68%), granulomatous lesions (0.84%), and hepatocellular carcinoma (0.42%). Normal liver histology was observed in 11.34% of cases. Most fatty liver cases occurred in individuals aged 21–40 years. **Conclusion:** Fatty liver was the predominant histopathological lesion observed in medicolegal autopsies, indicating the increasing burden of lifestyle-related liver disease. Histopathological examination of autopsy specimens remains an important tool for detecting clinically silent hepatic lesions and provides valuable epidemiological information regarding liver disease patterns.

KEYWORDS

Histopathology, Liver, Medicolegal Autopsy, Fatty Liver, Steatosis, Hepatic Lesions.

INTRODUCTION

The liver is the largest gland in the human body and plays a vital role in metabolism, detoxification, protein synthesis, bile production, and maintenance of homeostasis. Because of its strategic location and dual blood supply, it is continuously exposed to toxins, infectious agents, alcohol, drugs, and metabolic disturbances, making it susceptible to a wide range of pathological changes.

Many liver diseases remain clinically silent and are detected only during autopsy. Histopathological examination of liver tissue obtained during medicolegal autopsies provides valuable information regarding the prevalence and spectrum of occult hepatic lesions and contributes to understanding the burden of liver disease in the community. Common histopathological findings include fatty change, congestion, hepatitis, cholestasis, cirrhosis, and, less frequently, hepatic malignancies.

The increasing prevalence of lifestyle-related disorders, alcohol consumption, obesity, and metabolic syndrome has led to a rise in fatty liver disease worldwide. Autopsy studies help identify these incidental lesions and provide useful epidemiological data that may not be evident during life.

The present study was undertaken to evaluate the histopathological spectrum of liver lesions in medicolegal autopsy cases received at a tertiary care centre and to analyze the frequency and distribution of various hepatic lesions according to age and sex.

AIMS AND OBJECTIVES

1) To study the incidence of liver disease according to age and sex distribution.
2) To study the various Histopathological patterns of liver cell injury.
3) To study the incidence of liver disease in autopsy cases

MATERIALS AND METHODS

Study Design: Prospective observational study.

Study Area: Department of Pathology, Jhalawar Medical College, Jhalawar, Rajasthan.

Study Period: Two years.

Source of Data: Liver specimens obtained from medicolegal autopsies performed at Jhalawar Medical College.

Sample Size: 180 liver specimens.

Inclusion Criteria

- All liver specimens obtained from medicolegal autopsies irrespective of cause of death.
- Adequately preserved specimens suitable for histopathological examination.

Exclusion Criteria

- Extensively autolysed specimens.
- Specimens unsuitable for histopathological interpretation.

Histopathological Technique

All specimens were fixed in 10% neutral buffered formalin for 24–48 hours. Representative tissue sections were processed routinely, embedded in paraffin wax, sectioned at 3–5 µm using a rotary microtome, and stained with Hematoxylin and Eosin.

Each slide was examined independently under light microscopy. Histopathological lesions were categorized into non-neoplastic and neoplastic lesions based on established morphological criteria.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using appropriate statistical methods. Categorical variables were expressed as frequencies and percentages. Chi-square test was applied wherever appropriate, and a p-value <0.05 was considered statistically significant.

RESULTS &OBSERVATION

RESULTS AND OBSERVATIONS

A total of **180 medicolegal autopsy liver specimens** were included in the present study. Histopathological examination revealed a wide spectrum of hepatic lesions, ranging from reversible fatty changes to chronic inflammatory and cirrhotic changes. Male accounted for 77.22% and female 22.88%

Fatty change (steatosis) was the most common histopathological finding, observed in **102 cases (68%)**. Both macrovesicular and microvesicular steatosis were encountered, with varying degrees of severity. Fatty liver was frequently associated with alcohol-related deaths and poisoning cases.

The second most common finding was **hepatic congestion**, present in

87 cases (48.3%). Congestion was observed either as an isolated lesion or in association with fatty change and was common in traumatic deaths, poisoning, and cardiovascular causes.

Portal triaditis was identified in **20 cases (11.1%)**, while **hepatitis** was observed in **10 cases (5.6%)**. **Cholestasis** was present in **10 cases (5.6%)**, and **hepatic necrosis** was noted in **9 cases (5.0%)**.

Less frequent lesions included **cirrhosis** in **4 cases (2.2%)** and **granulomatous inflammation** in **1 case (0.6%)**. No definite hepatocellular carcinoma was identified among the first 180 cases analyzed.

The majority of specimens showed non-neoplastic liver pathology, with fatty change and congestion accounting for the predominant microscopic abnormalities.

Table 1 cases distribution based on Histopathological lesion

Histopathological lesion	No of cases	Percentage
Fatty change	102	56.67%
Hepatic congestion	87	48.3%
Portal triaditis	20	11.1%
Hepatitis	10	5.6%
Cholestasis	10	5.6%
Hepatic necrosis	9	5.0%
Cirrhosis	4	2.2%
Granulomatous inflammation	1	0.6%
Hepatocellular carcinoma	1	0.6%

Table 2 age wise distribution of cases

Pathology observed	Age group (in years)				
	0-20	21-40	41-60	>61	Total
Fatty change	12	68	20	2	102
Portal triaditis	2	4	10	4	20
Cirrhosis	0	2	1	1	4
Hepatitis	3	4	1	2	10
Cholestasis	0	6	1	3	10
Chronic venous congestion	1	33	40	13	87
Hepatocellular carcinoma	0	0	1	0	1
Hepatic necrosis	1	5	1	2	9
Total cases (age wise)	19	122	75	27	

DISCUSSION

The present study evaluated the histopathological spectrum of liver lesions in 180 medicolegal autopsy cases. Fatty change (steatosis) was the most common lesion (56.67%), followed by hepatic congestion (48.3%), portal triaditis (11.1%), hepatitis (5.6%), cholestasis (5.0%), hepatic necrosis (2.2%), cirrhosis (0.6%), and granulomatous inflammation (0.6%).

Fatty change was the predominant lesion in our study, which is comparable with the observations of **Thamil Selvi et al.1**, who reported fatty liver as the most common incidental hepatic lesion in autopsy specimens. Similar findings were reported by **Behera et al.2**, who observed steatosis as the leading histopathological abnormality in autopsies.

Borkar et al3. evaluated 262 autopsies and also found steatosis to be the commonest liver lesion, followed by congestion, hepatitis, steatohepatitis, and cirrhosis, supporting the findings of the present study.

The frequency of hepatic congestion in the present study (48.3%) is comparable to reports by **Kaushal et al.4,** who documented congestion as one of the commonest microscopic findings in autopsy liver specimens, particularly in deaths due to trauma, poisoning, and terminal circulatory failure.

Our findings are also consistent with those of **Nigam et al.5,** who demonstrated that steatosis and cirrhosis were among the most frequent pathological lesions encountered in liver autopsies.

Kulkarni et al.6 reported that fatty change, congestion, hepatitis, and cirrhosis constituted the major histopathological lesions in medicolegal autopsy livers, which closely resembles the pattern observed in the present study.

Similarly, **Umesh et al.7** observed that fatty liver and chronic venous congestion accounted for the majority of hepatic lesions detected during autopsy examinations.

Patel et al.8 reported that fatty liver and congestion were the two most frequent incidental findings in liver autopsy specimens, while hepatitis and cirrhosis were relatively less common, findings that agree with the present study.

Porwal et al9. also documented steatosis as the predominant lesion, followed by inflammatory and cirrhotic changes, indicating that silent fatty liver disease remains highly prevalent in the Indian population.

Singal et al.10 demonstrated that most medicolegal autopsies showed incidental non-neoplastic liver lesions, with fatty change being the commonest finding, followed by congestion and chronic inflammatory lesions.

Devi et al11. from Imphal reported similar age and sex distribution, with a predominance of male patients and fatty liver as the leading histopathological diagnosis in autopsy specimens.

Overall, the findings of the present study are in agreement with previous Indian autopsy studies and confirm that fatty liver continues to be the most frequent incidental hepatic lesion. Routine histopathological examination of liver tissue obtained during autopsies remains valuable for detecting occult liver diseases and understanding their epidemiological distribution.

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CONCLUSION

The present study demonstrates that **fatty change (steatosis)** is the most common histopathological lesion encountered in medicolegal autopsy liver specimens, followed by **hepatic congestion** and **portal triaditis**. Most lesions were non-neoplastic and clinically unsuspected during life, highlighting the diagnostic value of routine histopathological examination in medicolegal autopsies.

Autopsy-based histopathological evaluation provides important insights into the burden and pattern of liver diseases within the community. Early identification of common hepatic lesions, particularly fatty liver, underscores the need for preventive measures aimed at reducing modifiable risk factors such as alcohol consumption, obesity, and metabolic disorders.

Routine microscopic examination of liver tissue during medicolegal autopsies should be encouraged, as it contributes to disease surveillance, medical education, and a better understanding of the epidemiology of hepatic disorders.

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