

## AUTOPSY-BASED STUDY OF SILENT LIVER DISEASES IN MEDICOLEGAL CASES IN A TERTIARY CARE CENTRE OF EASTERN ODISHA

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### ABSTRACT

#### BACKGROUND

An autopsy is a medical procedure that consists of a thorough examination of corpse to determine the cause of death and to evaluate any diseases that maybe present. Most of the chronic liver diseases even in advanced stages may cause no signs and symptoms and may go undiagnosed or are found coincidentally during general health checkup, investigation being done for some other disease, surgery or autopsy. The underlying cause of chronic liver diseases vary in different geographic areas and are based on various factors such as socioeconomic status, lifestyle, diet, local and other endemic diseases. Hence, we have conducted this study to unearth the silent liver diseases in medicolegal cases.

#### MATERIALS AND METHODS

The study was carried out in Department of Pathology and Forensic Medicine and Toxicology of SCB Medical College, Cuttack, during 2012 to 2015. All medicolegal cases received for autopsy are included in the study. Routine HE stain and special stain like reticulin, Masson trichrome stain was used wherever necessary and results were analysed.

#### RESULTS

Autopsy was done in 139 cases. Portal inflammation and fibrosis was found in 35 (25.18%) cases. Sinusoidal dilatation and congestion in 29 cases (20.86%), cirrhosis and bridging fibrosis was found in 16 cases (11.5%), steatohepatitis in 27 cases (19.42%), cholestasis in 3 cases (2.16%), hepatitis 1 case (0.72%) and hepatocellular carcinoma in 1 case (0.72%). The others include autolytic changes and normal liver.

#### CONCLUSION

Autopsy and histopathological study of liver is the best method to determine the clinically latent liver diseases.

#### KEYWORDS

Autopsy, Silent Liver Disease and HCC- Hepatocellular Carcinoma.

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#### BACKGROUND

Liver is vulnerable to a variety of metabolic, toxic, microbial and circulatory insults. In some cases, the disease is primary, while in others, the hepatic involvement is secondary, which can be due to cardiac decompensation, alcoholism or extrahepatic infections. Alcohol is implicated in more than 50% of liver-related deaths in the United States and complications of alcoholism contribute to a quarter of million deaths annually.<sup>1</sup>

Alcohol abuse generally leads to three pathologically distinct liver diseases, viz. fatty liver, hepatitis and alcoholic cirrhosis. One or all of the three can occur at the same time and in the same patient.<sup>2</sup> Fatty change (steatosis) is a very

common finding both in biopsies and at postmortem examination. Liver cell involvement maybe focal, diffuse or zonal.<sup>3</sup>

#### Aims and Objectives

Autopsy is an important audit tool that often discloses new information about the cause of death. Medicolegal autopsy or forensic autopsies seek to find the cause of death and to identify the descendants. They are generally preferred as prescribed applicable laws in case of violent, suspicious or sudden deaths without medical assistance or during surgical procedure. Here, we have analysed the liver pathology in all the medicolegal cases coming to FMT Department. Abnormal findings in liver autopsy can be fatty changes, hepar lobatum, glycogen storage disease, acute phosphorus poisoning, hemosiderosis, syphilis, actinomycosis, infarct, cloudy swelling, tuberculosis, acute and passive hyperaemia, amyloidosis, abscess, hydatid cyst, malignancy, cirrhosis and acute yellow atrophy of liver. Alcohol abuse generally leads to three pathological distinct liver diseases like fatty liver, hepatitis and alcoholic cirrhosis. In seropositive immunocompromised patients, liver biopsy shows tubercular

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granuloma, extensive fatty changes, sinusoidal congestion, focal necrosis, portal inflammation resembling chronic hepatitis and Kupffer cell hyperplasia.<sup>4,5,6</sup>

In injectable heroin addicts, the autopsy sample shows degenerative vesicular and fatty changes, chronic active and persistent hepatitis, cirrhosis, reduction in the amount of glycogen in hepatocytes as well as Kupffer cell hyperplasia. This study will show the long-term effect of various toxins, infection, enzymatic alteration and metabolic storage diseases of liver. Correlation of the autopsy finding with histopathology gives information regarding prevention and management of silent liver diseases to the clinicians. The present study has been undertaken to establish presence of liver diseases and also to find out the types of liver diseases in autopsy cases from the local populace.

**MATERIALS AND METHODS**

The study was carried out in the Department of Pathology S.C.B. Medical College, Cuttack, from 2012 to 2015. The study includes all the medicolegal cases coming to FMT Department. In all cases, consent was taken from the patients relatives. In each case, age, sex, clinical history, anthropometry in height and weight of deceased, gross findings of liver and microscopic finding of liver were recorded. After opening up the abdomen, abnormal gross finding were noted like focal changes of infection, fibrosis, tumour, fatty changes, abscess, haemorrhagic areas and

cholestasis. Wedge biopsy of liver was taken and fixed in 10% formalin in a small container and sent to Department of Pathology with date, time and name of the deceased. Liver tissue was first subjected to H/E stain like reticulin and Masson trichrome stain was done to identify the fibrosis.

**RESULTS**

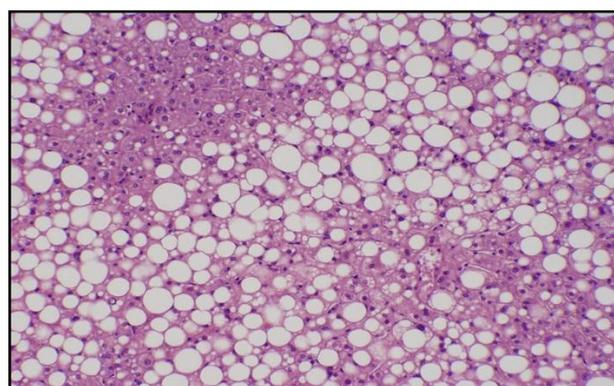
A total number of 139 cases were studied out of which 33 cases were found to be alcoholic (23.74%) and 106 cases were nonalcoholic (76.26%) according to the history collected from relatives. Alcohol is the major contributor for various liver changes and damages. The gross findings were analysed. At least, 25 cases have greasy cut surface and soft in consistency (fatty changes of liver) (17.98%), 18 cases (12.95%) have nodular surface and firm consistency, one case shows surface nodularity indicating fibrotic changes, 70 cases out of 139 show normal gross findings. In all cases, histopathological interpretation was carried out. It showed portal fibrosis and inflammation in majority of cases (25.18%), fatty changes/steatosis in 27 cases 19.42, one case of HCC (0.72%) and cholestasis in 3 cases (2.16%). Cirrhosis and bridging fibrosis is more common in age group 31-40. 7 cases out of 16 cases (43.75%), which is compatible with study of SS Oberi and SP Singh et al (42.85%). Cholestasis is more common in females, i.e. 2 out of 3 cases (66.66%).

Size	Colour	Consistency	Cut Surface	Number of Cases	Percentage
Increased	Yellow brown	Soft	Greasy	25	17.98
Increased	Greenish	Soft	Greenish	4	2.87
Slightly increased	Normal	Soft to firm	Normal	22	15.83
Increased	Yellow green	Firm	Nodular	18	12.95
Normal	Normal	Soft to firm	Normal	70	50.36

**Table 1. Showing Gross Findings of Liver Autopsy Cases**

Findings	No. of Cases	%
Portal fibrosis and inflammation	35	25.18
Fatty change/steatosis	27	19.42
Steatohepatitis	7	5.03
Sinusoidal dilatation and congestion	29	20.86
Hepatitis	1	0.72
Cirrhosis/bridging fibrosis	16	11.51
Cholestasis	3	2.16
Focal nodular hyperplasia	1	0.72
Hepatic adenoma	1	0.72
Hepatocellular CA	1	0.72
Autolytic change	5	3.59
Normal	13	9.35

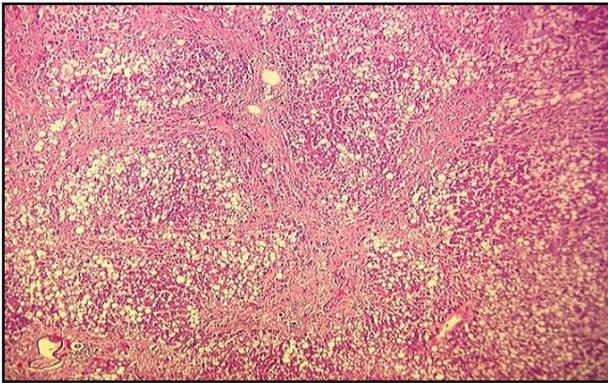
**Table 2. Showing Histopathological Findings of Liver Autopsy Cases**



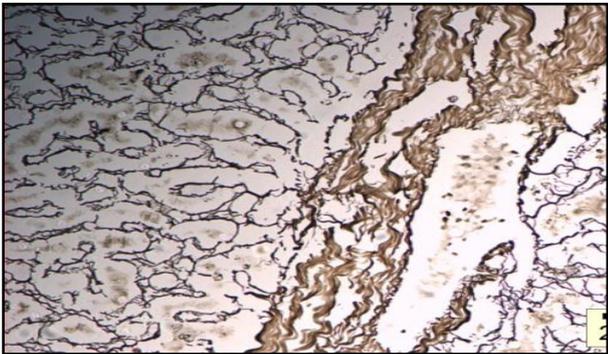
**Figure 1. Microvesicular Steatosis**

History of Alcoholism	No. of Cases	%
Alcoholics	33	23.74
Nonalcoholics	106	76.26
<b>Total</b>	<b>139</b>	<b>100</b>

**Table 3. Showing History of Alcoholism and Positive Cases**



**Figure 2. Cirrhosis/Bridging Fibrosis**



**Figure 3. Reticulin Stain Showing Fibrosis of Liver Architecture**

## DISCUSSION

The importance of silent liver disease in the overall perspective of pathology and clinical medicine cannot be overemphasised. Histopathology is the most important and useful way of diagnosing liver diseases as some may remain silent and diagnosed only at autopsy in studies conducted by Bal MS et al<sup>2</sup> and Fubara S et al.<sup>7</sup> In this autopsy-based study of silent liver diseases in medicolegal cases, steatosis was observed to be the most common histopathological finding followed by portal inflammation and fibrosis, which is at par with the findings of Devi et al 2013.<sup>8</sup> Regular intake of alcohol between 40-80 grams increases the liver weight, frequency of fatty change and cirrhosis. Most of the cases in this study were collected from the mortuary with maximum cases being RTA and the details of the personal history were not fully available. Inflammatory disorder including NASH comprises a majority of cases.<sup>8</sup>

The true incidence and prevalence of NASH and steatosis, periportal fibrosis, precirrhotic changes are not well known in different population of Odisha. This is partly because liver biopsy is reserved as gold standard for diagnosis in these conditions, but liver biopsy is an invasive procedure and has high risk of complication. Clinicians avoid it for management of these silent liver disorders and most of the report about prevalence of this disorder is based on ultrasonographic study and elevated liver enzymes. The prevalence of NAFLD in patient undergoing liver biopsy for any reason ranges between 15% to 39%. This wide range is due to difference in the population studied. In our autopsy study, this ranges in between 1.8% to 5.07%. In clinical practice, diagnostic liver biopsy is only performed for highly

selected patients who cannot reflect the true incidents of NAFLD/NASH in general population. Hence, in random autopsy study of medicolegal cases coming to the FMT Department who died for some other reason than liver disease is a better source of determination of prevalence of NAFLD. Moreover, the most common toxic substance affecting the liver architecture is alcohol.

## CONCLUSION

Autopsy and histopathological study is the best method to determine undiagnosed liver diseases, but unfortunately, there has been a decline in autopsy rate recently. From an autopsy report, pathologists can convey their message to the clinicians regarding the liver damage by various exogenous agents, which remain undiagnosed, but could be prevented. Regarding community awareness about value of liver autopsies, this study of silent liver diseases in medicolegal cases gives us information regarding incidence and prevalence of liver diseases in general population of Odisha by knowing aetiopathogenesis, community awareness could be done to prevent the disease process and clinicians could inform patients regarding the hazards of alcohol intake, injudicious use of drugs and advise them for dietary modifications.

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