Original Research Paper

Pathological Findings of Liver in Autopsy Cases A Study at Imphal

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Abstract

It is a known fact that silent liver diseases are common amongst apparently healthy individuals and are sometimes diagnosed only at autopsy. The present study was conducted in the Department of Pathology and Forensic Medicine during the period from September 2010 to August 2012 on 100 medico-legal autopsy cases brought to the mortuary of Regional Institute of Medical Sciences, Imphal. The liver specimens from these cases were examined grossly as well as microscopically to establish presence of liver diseases and also to find out the types of liver diseases in relation to the age and sex of the studied cases. Maximum number of cases was in the 41-50 years age group (29%). Males predominated the study with a male: female ratio of 6: 1. Cirrhosis was the commonest finding comprising 25% of the cases, followed by chronic hepatitis 22%. Hepatomegaly was seen in 19% of the cases. Hepatic steatosis was the commonest cause of hepatomegaly followed by chronic hepatitis. The study was conducted only on specimens collected from the mortuary and may not reflect the actual pattern of liver diseases in the local population.

Key Words: Autopsy, Histopathology, Liver Disease, Cirrhosis, Chronic Hepatitis, Portal Triaditis

Introduction:

Liver is vulnerable to a variety of metabolic, toxic, microbial and circulatory insults. In some instances, the disease is primary while in others the hepatic involvement is secondary, which can be due to cardiac de-compensation, alcoholism or extra hepatic 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. [1]

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. [2]Fatty change (steatosis) is a very common finding both in biopsies and at post mortem examination. Liver cell involvement may be focal, diffuse, or zonal. [3]

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Fatty liver develops within a short period (days) of alcohol abuse whereas more severe liver injury requires prolong alcohol abuse for a period of years.Nonalcoholic fatty liver disease (NAFLD) includes a spectrum of liver diseases, ranging from simple steatosis to steatohepatitis, advanced fibrosis and cirrhosis. [3]

Chronic hepatitis is usually due to hepatotropic viruses, or conditions like auto immune chronic hepatitis or chronic idiosyncratic drug-induced hepatitis. Similar features (like presence of piece meal necrosis) are also found in Wilson's disease, primary biliary cirrhosis and primary sclerosing cholangitis.

It varies in different geographic areas and is based on various factors such as socio-economic status, life style, diet, local or regional infections, and other endemic disease. Most of the chronic liver diseases even in advance stages may cause no prominent clinical signs or symptoms and are undiagnosed or found incidentally during general checkups, investigations for other diseases or during autopsy. [3] Hepatocellular carcinoma and tumors arising from the bile duct epithelium are common tumors of the liver. [4]

Extra hepatic bacterial infections, particularly sepsis can induce mild hepatic inflammation and varying degrees of hepatocellular cholestasis.

Parasitic and helminthic infections like malaria, Schistosomiasis, Leishmaniasis,

Cryptosporidiosis also involve the liver frequently. [5]Tuberculosis was declining in the West but has now shown a reverse trend after the appearance of the AIDS epidemic, making it a global health problem once again. Liver involvement in tuberculosis, though common both in pulmonary and extra-pulmonary tuberculosis, it is usually clinically silent. Liver involvement in AIDS usually reflects disseminated rather than primary disease. [6]

Many chemicals including drugs and toxins can produce liver damage. Acute injury may produce parenchymal damage, arrested blood flow and jaundice. Drugs can also produce chronic active hepatitis, fatty liver, cirrhosis, several vascular lesions and rarely neoplasm lesions of the liver. Metabolic disorders like Galactosaemia, hereditary fructose intolerance, tyrosinaemia, Zell weger's syndrome, glycogen storage diseases, lipid storage diseases (Gaucher disease, Niemann Pick disease, Fabry's disease) and disorders of copper metabolism such as Wilson's disease and Indian childhood cirrhosis also affect the liver. [4]

Hence, determination of the prevalence of silent liver diseases and its correlation with age, sex, life style and other risk factors has become an important ongoing study.

The present study has been undertaken to establish presence of liver diseases and also to find out the types of liver diseases in relation to the age and sex of the studied autopsy cases from the local populace.

Materials and Methods:

A cross sectional study was carried out in the Department of Pathology and Forensic Medicine, Regional Institute of Medical Sciences (RIMS), Imphal on 100 cases brought for medico-legal autopsy to the mortuary of Regional Institute of Medical Sciences, Imphal during the period of September 2010 to August 2012. Following recording of history and a thorough postmortem examination, gross examination of the liver specimen was done as regards the weight, surface, capsule, colour, consistency, etc. Formalin fixed liver tissues stained with Hematoxylin and Eosin (H &E) along with some special stains like Reticulin, van Gieson, Periodic acid Schiff (PAS) and Congo red in selected cases, were examined under the microscope. The findings of the examination were recorded and analysed.

Results and Observations:

- **Sex and Age Incidence:**

In this study, it was observed that out of 100 cases, 85% were males and 15% were females; the male: female ratio being 6:1. (Fig.1)

The age group of 41-50 years recorded the maximum number of cases for males with 28 cases and the 21-30 years age group for females with 7 cases. (Fig. 2)

- **Frequency of Liver Diseases (Histopathological Diagnosis):**

Cirrhosis was the commonest liver disease (25%) followed by chronic hepatitis (22%). Hepatic steatosis accounted for 17% of the cases, portal triaditis for 15%, congestive liver and miscellaneous cases accounted for 5% each. (Table 1)

- **Distribution of Weight of Liver:**

Majority (74%) of the livers were of normal weight between 1000-1500 grams, followed by 19 cases of hepatomegaly i.e.14 cases weighing between 1501-2000 grams and 5 cases weighing between 2001-2500 grams. Only 7 cases weighed less than 999 grams. (Fig. 3)

- **Distribution of Cases in Hepatomegaly:**

Out of the 19 cases of hepatomegaly (livers weighing more than 1500 grams) the most common liver disease was hepatic steatosis (31.6%) followed by chronic hepatitis (26.3%), portal triaditis (21.1%) and cirrhosis (21.1%). Out of the 4 cases of cirrhosis 1 was a case of early cirrhosis and 3 were cases of chronic hepatitis associated with cirrhosis. (Fig.4)

- **Age and Sex Distribution of Cases of Cirrhosis:**

Cirrhosis was the most predominant liver disease which accounted for 25% of the total cases and maximum of these cases occurred in the age group of 41-50 years in males whereas in females there was one case each in the age group of 31-40 years, 41-50 years and 51-60 years. (Table 3)

- **Age and Sex Wise Distribution of Chronic Hepatitis:**

The disease was common in the 21- 30 years age group with 7 cases (32%) followed by the age group 41-50 years with 23%. 61-70 years age group 2 cases and 71- 80 years age group with only one case (5%). (Fig. 5)

- **Age and Sex Wise Distribution of Hepatic Steatosis:**

In this study, hepatic steatosis was observed in 17 cases and the highest number of cases was in the age group of 21-30 years (41%) with a male: female ratio of 3:1.

In females most of the cases were seen in the age group of 21-30 years. (Table 4) Out of the 17 cases, 11 showed micro vesicular and macro vesicular steatosis, 5 with micro

vesicular steatosis and 1 with macro vesicular steatosis.

- **Frequency and Distribution of Portal Triaditis by Age and Sex:**

The occurrence of portal triaditis in this study was found to be highest in the age group of 41-50 years with 6 cases followed by 21-30 years age group with 4 cases (27%). (Fig 6)

- **Miscellaneous Cases:**

There were 5 miscellaneous cases. Submissive necrosis accounted for 3 cases and Hepatic granulomatous lesion accounted for 2 cases. (Fig 7)

Discussion:

The importance of silent liver disease in the overall perspective of pathology and clinical medicine cannot be overemphasized. 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 [2] and Fubara S et al [7], it was observed that the commonest affected age group was 41-50 years (53.85%) and 41-49 years (28%) respectively which is comparable to the findings of the present study. In concurrence with the findings of several workers [2, 3, 7-9] liver diseases predominated in males in the present study and this may be attributed to the fact that men indulge themselves more to alcohol and smoking as compared to women.

In a study conducted by Ghosh CK et al [10] it was observed that liver abscess was the commonest cause of hepatomegaly and it was due to amoebiasis, followed by congestive cardiac failure and viral hepatitis, fatty liver and hepatocellular carcinoma were seen only in a few cases. In contrast to this, we found that out of the 19 cases of hepatomegaly, the most common disease was hepatic steatosis, followed by chronic hepatitis, portal triaditis and cirrhosis. As regards the pattern of liver diseases, in a study conducted by Tsokas M and Tusk EE [11], where 45 cases of sudden death were autopsied, cirrhosis was observed in all cases (100%) with a male: female ratio of 1.6:1. Hence, cirrhosis was found to be much higher compared to the present study and the probable cause of cirrhosis was alcohol as the toxicological analysis in these patients showed high alcohol content in the venous blood.

The present study also observed cirrhosis to be the commonest liver disease but with a higher M: F ratio of 7:1. Sobaniec-Lotonska M et al. [12] also found that out of 19,094 autopsies carried out between 1976-1990, cirrhosis was the commonest liver disease with males (64%) affected more than females, which is in agreement with our findings. Liver cirrhosis was coincidentally diagnosed in 13.5-40% of patients at autopsy by Iwamura K and Inaba R. [13]

This could be due to the fact that the morphologic changes in the liver do not occur suddenly in a short span of time and that the morphogenesis goes on insidiously. Voinova LV [14] observed that steatosis was the most common alcohol related damage in the liver and cirrhosis in case of viral diseases. Hence detailed examination and periodic follow-ups are necessary for early diagnosis of cirrhosis.

Kringsholm B et al [15] and Passarino G et al [16] found chronic hepatitis to be the second most common liver disease in their study which is comparable to our study. Out of the 22 cases of chronic hepatitis, 5 were associated with steatosis and one case showed features suggestive of hepatitis B infection and one with features suggestive of hepatitis C infection even though the serological markers were not available for confirmation.

Saha MK et al [17], observed that a high prevalence of hepatitis C virus infection (HCV=92%) and hepatitis B virus infection (HBV=100%) among Manipuri couples whose husbands were intravenous drug users and HIV positive. Similarly Ray G et al [18] also found HBV to be the commonest cause of chronic liver disease in eastern India. Burke KP and Cox AL [19] also observed that acute HCV infection results in chronic carriage in 70-80% of cases which ultimately develop cirrhosis, liver failure or hepatocellular carcinoma and hence this could be the reason for the high incidence of cirrhosis in this present study.

Many workers [2, 8, 9, 15, 20] have observed that hepatic steatosis was the commonest finding with a male predominance whereas the present study found hepatic steatosis to be the third commonest liver disease with the maximum cases in the 21-30 years age group and a male: female ratio of 3: 1. Rakha EA et al. [21] in their study observed that portal inflammation was a common component of histologic spectrum of both alcoholic fatty liver disease and non alcoholic fatty liver disease which could also be the probable cause in this present study.

Kringsholm B et al [20] in their study of liver pathology in drug addicts found that non-specific portal inflammation was the commonest finding accounting for 65% of the cases which was much higher than our present study. As details about the history of drug intake could not be obtained from the cases in the present

study, there is a possibility that the portal inflammation could be the result of intake of certain drugs like anti-tubercular drugs especially Rifampicin and Ionized as was also found by Tassaduq I et al. [22]

There were 2% cases of hepatic granulomatous lesions and 3% of sub massive necrosis. Soutoudehmanesh R et al [3] observed granulomatous hepatitis in only 0.2%, which was lower as compared to our study, whereas much higher incidence was observed by Amarapurkar A and Agarwal V (42%). [23]

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 RTAand the details of the personal history were not fully available.

Conclusion:

It may be concluded from the present study that cirrhosis, chronic hepatitis and steatosis are the common liver diseases in India. silent liver diseases are very common amongst the apparently healthy individuals and if not detected early some of these conditions may lead to serious outcomes. Hence, steps should be taken up for the early detection and treatment of such ailments. The study was conducted only on specimens collected from the mortuary and may not reflect the actual pattern of liver diseases and emphasizes the need for further studies for early detection and treatment of the vulnerable group of people in the local populace.

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Table 4: Frequency of Hepatic Steatosis by Age And Sex

Age (Yrs)	Male	Female	Total Cases	Percentage
10 - 20	0	0	0	0%
21 - 30	4	3	7	41%
31 - 40	4	1	5	29%
41 - 50	3	0	3	18%
51 - 60	2	0	2	12%
61 - 70	0	0	0	0%
71 - 80	0	0	0	0%
Total	13	4	17	100%

Fig 1: Sex Distribution of Cases

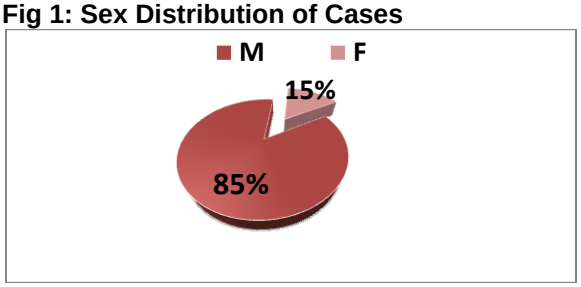

Fig 2: Age Distribution of Cases

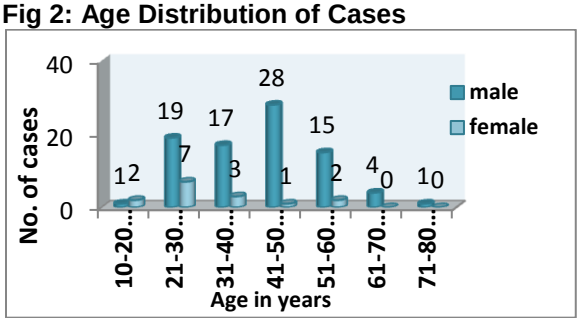

Fig 3: Sex Wise Distribution of Liver Weight

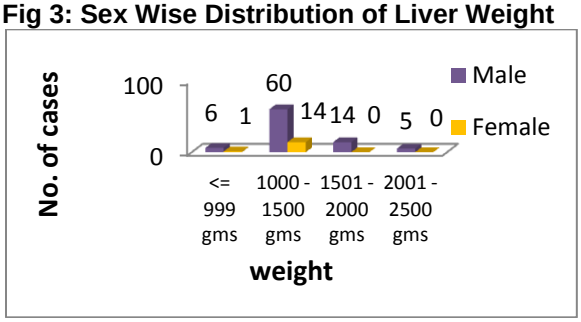

Fig 4: Distribution of Cases in Hepatomegaly

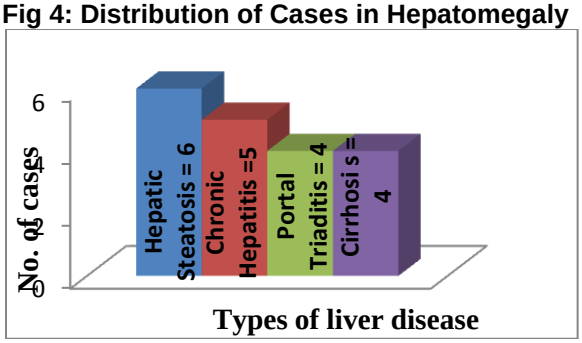

Fig 5 : Age And Sex Wise Distribution of Chronic Hepatitis

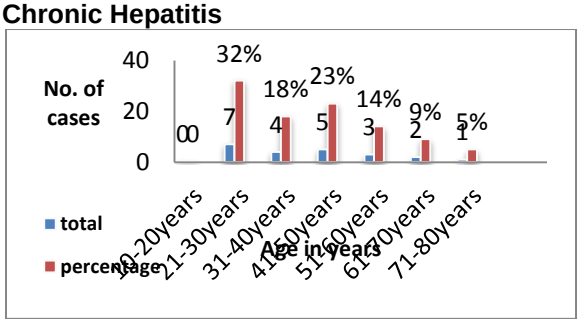

Fig 6: Percentage of Portal Triaditis by Age

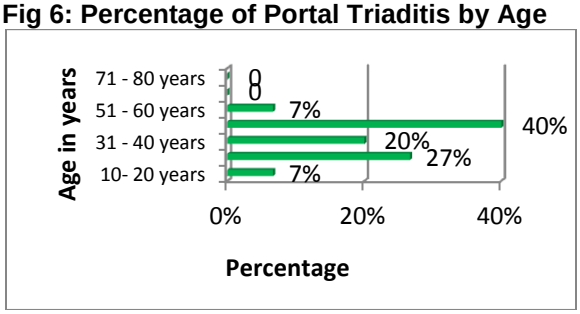

Fig 7 : Distribution of Miscellaneous Cases

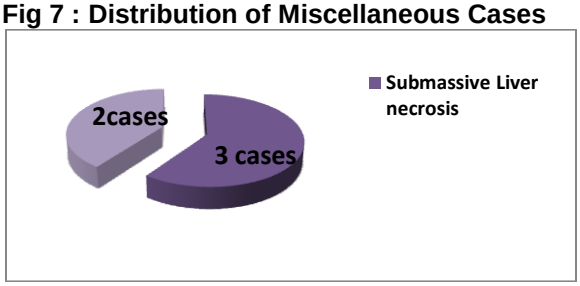

Table 1: Histopathological Diagnosis

Histopathological Diagnosis	Cases (%)
Cirrhosis	25(25)
Chronic Hepatitis	22(22)
Hepatic Steatosis	17(17)
Portal Triaditis	15(15)
Normal Liver	11(11)
Congestive liver	5(5)
Miscellaneous	5(5)
Grand Total	100(100)

Table 2: Frequency Distribution of Cirrhosis by Age and Sex

Age (yrs)	M	F	Total	%
10 - 20	0	0	0	0%
21 - 30	3	0	3	12%
31 - 40	2	1	3	12%
41 - 50	9	1	10	40%
51 - 60	6	1	7	28%
61 - 70	2	0	2	8%
71 - 80	0	0	0	0%
Total	22	3	25	100%

Table 3: Staging and Grading of Cases of Chronic Hepatitis

Total Scores	Staging and Grading (Modified Scheuer method)	Cases (%)
1	0	0(0)
2	a.(1+1+0) b.(1+1+0) c.(1+1+0) d.(1+1+0)	4(18)
3	a.(1+1+1) b.(1+1+1) c.(1+2+0)	3(14)
4	a.(1+2+1) b.(1+2+1) c.(1+2+1) d.(1+2+1) e.(2+1+1) f.(2+1+1)	6(27)
5	a.(1+2+2) b.(2+1+2) c.(2+1+2) d.(0+4+1) e.(2+1+2)	5 (23)
6	a.(2+2+2) b.(1+3+2) c.(3+2+1)	3(14)
7	a.(3+2+2)	1(5)
		22(100)

Column 1: indicates portal/periportal inflammation; Column 2: lobule inflammation; Column 3: degree of fibrosis