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Original Research Article

Comparative study of pathological lesions of liver in autopsy cases

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ABSTRACT

Background: Liver is a site for plethora of diseases among which many become symptomatic while others usually either go undiagnosed or are concealed by other prominent diseases. As said about liver to be the custodian of milieu interior most of the silent liver diseases are diagnosed only on autopsy examination. Aims and objectives was to study various pathological lesions of liver in medicolegal and clinical autopsy cases and to corelate liver diseases with age and sex. Retrospective cross-sectional observational study of 649 medicolegal and clinical autopsies conducted within 2 years of duration (January 2017 to December 2018).
Methods: Out of all 649 autopsies conducted in our hospital all liver specimens along with other organs viscera were collected and formalin fixed. After gross examination sections from the liver were submitted for tissue processing and then stained with haematoxylin and eosin stain.
Results: The most common pathology found in our study was fatty change (11.1%) followed by venous congestion (4.3%), hepatitis (3.5%), cirrhosis (2.2%), tuberculosis/ granulomatous hepatitis (0.6%), chronic hepatitis (0.3%), malignancy (1%), miscellaneous (2%) and normal (72.4%). Maximum cases were in 21-30 years of age group with male preponderance.
Conclusions: Autopsy examination of liver is an effective tool to identify silent liver diseases. Use of autopsy findings along with other investigative techniques.

Keywords: Autopsy, Cirrhosis, Fatty change, Hepatitis, Liver diseases

INTRODUCTION

Liver is the site of many diseases many of which become symptomatic while some are diagnosed only on autopsy examination.[1]

Liver is vulnerable to a variety of metabolic, toxic, microbial and circulatory insults.[2] Sometimes the disease is primary while in others the hepatic involvement is secondary to cardiac decompensation , alcoholism or extrahepatic infections .most of the chronic liver diseases even in advanced stages may cause no prominent clinical signs and symptoms. Autopsy is a magnificent learning tool in the hands of pathologist to study the histopathological spectrum of diseases.[3]

METHODS

This study is a retrospective cross sectional study for two years period from January 2017 to December 2018. All the autopsy cases performed during the study period were include. Partial autopsies restricted only to thorax, cranium or kidneys were excluded from the study A total of 649 medicolegal and clinical autopsies were carried out during this duration. Liver specimens were received as a part of examination of multiple viscera. Gross examination of liver specimens was done as regards to weight, colour, consistency etc. formalin fixed liver tissues stained with Haematoxylin and Eosin were examined under microscope. special stains Reticulin and Massons Trichrome were done in few cases. The findings

of the macro and microscopic examination were recorded and analysed along with findings of other organs. Few liver specimens showed autolytic changes.

The present study has been undertaken to determine the various pathological lesions of liver in medicolegal and clinical autopsy cases performed in our institute and to corelate these liver diseases with age and sex and their final histopathological diagnosis.

RESULTS

Out of 649 cases studied 162 liver specimens showed pathological lesions, 16 liver specimens due to delayed autopsy showed autolytic changes. 471 liver specimens showed normal histology. The study group comprised of all the cases from all ages and both sexes of which most of the deaths occurred in 3rd decades of their lives (Table 1) In this study males were commonly affected 59.26%(96) followed by females 40.8%(66) (Table 2) making male: female ratio as 1.5:1. (Table 3) shows the liver pathologies in the following decreasing order of occurrence . Steatosis or fatty change was present in 11.1%(72) while circulatory disorders as venous congestion was seen in 4.3%(28). Hepatitis of various morphology were acute hepatitis 3.5%(23) and chronic hepatitis 0.3%(2), tuberculosis/ granulomatous hepatitis 0.6%(4) followed by cirrhosis in 2.2%(14) of cases. Neoplastic lesions were seen in 1%(6) cases of which primary malignancy was seen only as one case of hepatocellular carcinoma (1). the rest of neoplastic lesions comprised of secondaries from haematological malignancies were 5 case. Several other cases noted were categorised as miscellaneous pathological lesions 2% (13). The liver was histologically normal in 467 cases (72.4%)

Table 1: Age wise distribution of all cases.

Age groups (years)	No. of cases	Percentage
<1-10	24	14.9
11-20	17	10.5
21-30	37	22.8
31-40	26	16.1
41-50	28	17.3
51-60	12	7.4
>61	18	11.1

DISCUSSION

Histopathology is the most important and useful way of diagnosing liver diseases as some may remain silent and diagnosed only at autopsy.[4] Also histopathological study is an important value in improving the knowledge and diagnostic setup for clinical assessment. In present study maximum number of cases were seen in the age group of 21- 30 years (Table 1) which is different from the other researcher's study. Single P et al, Bal MS et al, and Fubara DS et al, studies had peak incidence of liver diseases during 5th decade This difference in age population is attributed to low socioeconomic status of study population and early exposure to alcohol abuse.[3,5,6] Likewise, similar studies done by various scholars found that men were more prone to death by liver diseases (59.26%). As compared to women (40.8%) (Table 2). The male to female ratio affected by liver diseases in our study was 1.5:1 which is almost comparable to study done by Ritu Bhagat et al, where they found male: female 3:2. The reason being that as men are bread earners and women usually doing household work are less exposed to risk factor.[7,8] Alcohol was the most common cause for liver diseases in males while drug induced toxicity and pregnancy associated fatty liver changes were the more common in females. Women in this study population suffered mostly from steatosis (3.54%) followed by hepatitis (2.5%) and venous congestion (2.5%) rest liver pathologies comprised of miscellaneous reasons. While in men after steatosis (7.6%) cirrhosis was the main liver pathology observed (2%).

Table 2: Sex wise distribution of all cases.

Histopathological findings	Male	Female	Total
Fatty change	49(7.6)	23(3.5)	72(11.1)
Tuberculosis / Granulomatous hepatitis	4(0.6)	0(0)	4(0.6)
Chronic hepatitis	1(0.15)	1(0.15)	2(0.3)
Cirrhosis	13(2.0)	1(0.15)	14(2.2)
Congestion	12(1.85)	16(2.5)	28(4.35)
Acute hepatitis	7(1.1)	16(2.5)	23(3.6)
Malignancy	4(0.62)	2(0.3)	6(0.92)
Miscellaneous	6(0.92)	7(1.1)	13(2.0)
Total	96(14.84)	66(10.16)	162(25)

The panorama of pathological lesions found in liver extends to wide range of histological patterns. The morphological changes in liver do not occur suddenly in a short span of time and that the morphogenesis goes on insidiously.[9] Steatosis is very first histopathological change occurring in liver before progressing to any other advanced form of disease. Present study showed that steatosis 11.1%(72) was the most common liver disease. Similarly, other authors (Table 3) have made alike observations stating steatosis as the most common pathology encountered during microscopic liver examination. This study cases were almost comparable in number with Umesh Babu et al, (61).[10]

Venous congestion of liver is terminal end stage of death seen in most of the liver autopsies. Copeland et al, reported congestion with fatty change in 3.4% of liver autopsies of alcoholics who died suddenly and M.S Bal reported congestion with fatty change in 9% of cases.[5,11] The present study revealed congestion in 4.3% cases which is almost comparable to that of Copeland et al, study.[11]

Table 3: Comparative table of histopathological findings in autopsy cases by different authors with the present study.

Histopathological findings in %	Bal et al 2004 (n=100) (%)	Jamila et al 2012 (n=50) (%)	Madhubala Devi et al 2013 (n=100) (%)	Umesh Babu H et al 2015 (n=105) (%)	Venuanand Selvi 2017 (n=109) (%)	Poonam singal et al 2017 (n=70) (%)	Present study (n=649) (%)
Fatty change	39(39)	10(20)	17(17)	61(58)	43(39.5)	24(34)	72(11.1)
Chronic hepatitis	3(3)	5(10)	22(22)	22(20.9)	5(4.6)	6(9)	2(0.3)
Congestion	9(9)	13(26)	5(5)	9.52	17(15.6)	19(27)	28(4.3)
Cirrhosis	14(14)	8(16)	25(25)	2(1.90)	3(2.8)	8(11)	14(2.2)
Acute hepatitis	0	0	0	0	0	1(1.5)	23(3.5)
Malignancy Primary Secondary	3(3)	3(6)	0	0	2(1.8)	0	6(1)(Hepatocellular carcinoma cholangiocarcinoma, Secondaries of leukemia)
Miscellaneous	2(2)	0	5(5)	5(4.75)	10(9.1)	3(4.5)	13(2) (biliary atresia, Wilson's disease)
Granulomatous hepatitis (tuberculosis)	0	0	0	0	0	1(1.5)	4(0.6)
Autolysed	0	0	0	0	10(9.1)	2(2.8)	16(2.5)
Normal	30(30)	11(22)	26(26)	5(4.76)	29(26.6)	9(13)	467(72.4)

n= number of study cases in each study.

In 29 cases mildest to severe forms of hepatitis were seen. These cases were further categorized as acute, chronic and granulomatous hepatitis. fulminant hepatitis was grouped with acute hepatitis. Mildest forms included infiltrate confined only to portal tracts and margins of the tracts remaining regular. Acute hepatic changes (3.5%) were seen in 20 cases and 3 cases showed severe fulminant hepatic changes comprising of confluent necrosis of hepatocytes, collapse of reticulin framework, haemorrhage and variable inflammation. Singal P et al, mentions 9% cases as hepatitis and 1% case as fulminant case.[3] Thamil SR et al, reported 13.9% cases having hepatitis.[4] 0.3% cases in this study were reported as chronic hepatitis.

There was no affirmed history of infection provided for these cases but, histology showed extensive liver damage with heavy portal mononuclear cell infiltrates and areas of sparse fibrosis and spotty necrosis. Bal et al, and Soutoudehmanesh et al, reported similar incidences of 3% and 2.6% respectively while, Jamila et al, Madhubala Devi et al, and Umesh Babu et al, have reported chronic hepatitis in 10%, 22% and 20.9% of cases.[5,8-10,12]

Third most common finding was liver cirrhosis comprising of 2.2% of all autopsies conducted during our study which is comparable to Umesh Babu et al, (1.9%) and Venuanand and Selvi et al, (2.5%).[10,13] The present study also observed cirrhosis to be the commonest liver disease amongst males (13) cases as compared to females only 1 case were recorded. Alcohol was the main causative factor in all cases of cirrhosis. Sobanaiec Lotonska M et al, also found that out of 19094 autopsies carried out between 1976-1990 cirrhosis was the commonest liver disease with males (64%) affected more than females.[14] Liver cirrhosis was coincidently diagnosed in 13.5-40% of patients at autopsy by Iwarmiral and Inaba R.[15]

Liver is a common site of granuloma formation owing to its rich blood supply.[3] In present study only 3 cases were recorded under inflammatory lesions in liver. Predominant cause was tuberculosis. Liver was a part of generalized military tuberculosis and deceased had evidence of tuberculosis in liver and other organs. As compared to Sotoudehamanesh R et al, (0.2%).[12] And Devi Ph. M et al, (2%) studies, rate of granulomatous hepatitis was (0.6%).[9] In the study by Cunnigham D et al, they have detected granuloma in 2-10% of liver biopsies in large series. Similarly, higher incidence of granulomas (42%) was observed by Amarapurkar A and Agarwal V.[16]

Only 1% cases of malignancy were seen, out of which only one case of hepatocellular carcinoma was primary malignancy. Other 5 cases were metastatic deposits from CML, ALL, AML and multiple myeloma. In all cases liver was grossly enlarged with necrosis and portal damage because of metastatic deposits. (Figure 4). Bal MS et al, found the metastasis in 3% of cases in their study of 100 autopsy cases.[5]

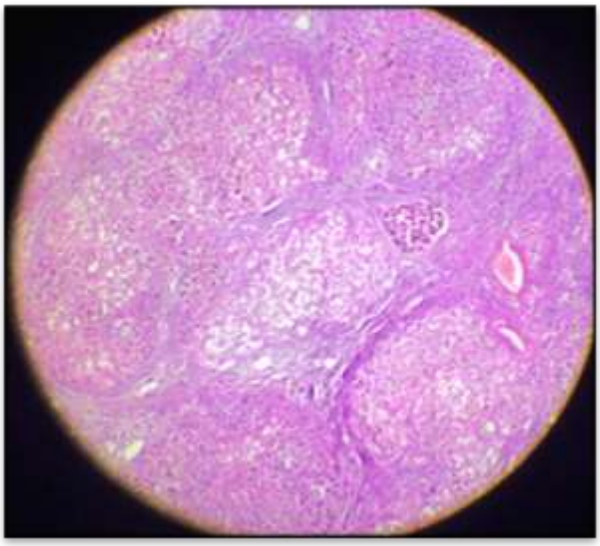

Figure 1: Nodules separated from each other by bridging fibrosis. Macro and micro vesicular steatosis with focal areas of necrosis.

Figure 2: Gross of Wilsons disease liver specimen showing shrunken nodular capsule with yellowish discolouration and varying sizes of macro and micro nodules over surface.

Miscellaneous cases (2%) comprised of Wilsons disease (Figure 1 and 2), intrahepatic biliary atresia, congenital infantile hemangioendothelioma (Figure 3) etc. Massons trichome stain was used to differentiate congenital hepatic infantile hemangioendothelioma from hepatoblastoma since gross presentation of both the entities is same. Most of these cases were incidental findings at the time of autopsy.

In summary the use of autopsy findings in conjunction with other scientific methods and investigative techniques remain as valuable today as it was centuries ago. Autopsy examination of liver is very helpful to identify the insidious liver disease occurring inside the body which could either be direct cause of death in some patients while could only be one of the contributing morbidity factors causing patients death.

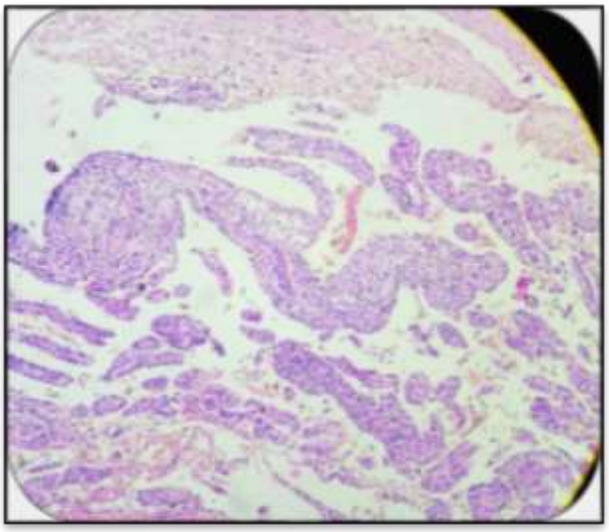

Figure 3: [H and E] X400. Microscopy of congenital infantile hepatic hemangioendothelioma showing unencapsulated section with opened up vascular channels with plump endothelial cells. At places showing areas of necrosis and few atypical cells occasional mitotic figures seen.

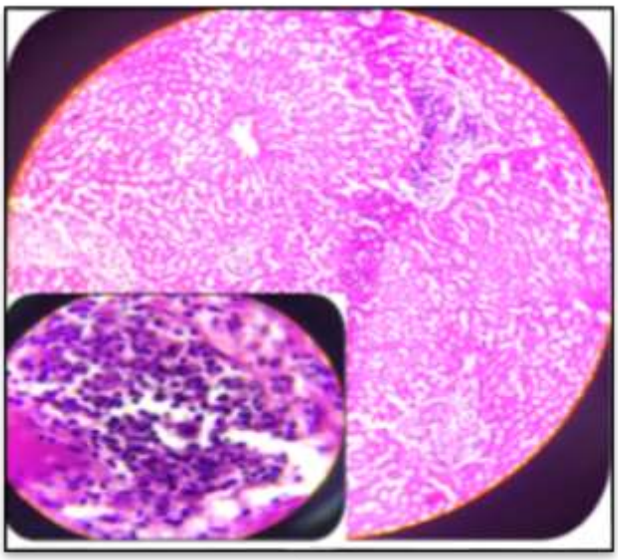

Figure 4: [H and E] X400. Secondary metastatic deposits of hematological malignancy in hepatic sinusoids. Inset shows leukemic spillage with a blast having high n:c ratio and eccentric nuclei.

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REFERENCES

1. Behera A, Sahu A, Nayak SK, Agrawal KC. Liver autopsy study - incidental pathological findings. Pathology Update: Pathology Update: Trop J Path Micro. 2017;3(4):390-5.
2. Puri A, Garg P, Tayal I, Singh N. analysis of various hepatic pathologies in autopsy cases: a retrospective study. J Advan Med Dent Sci Res. 2017 Apr 1;5(4):103.
3. Singal P, Kaur M, Deepika. Incidental Findings in Autopsy Examination of Liver: A Study of 70 cases. Ann Int Med Den Res. 2017;3(3):30-2.
4. Selvi RT, Selvam V, Subramaniam PM. Silent liver disease in and around of Salem Population: An autopsy study. J Clin Diagnos Res. 2012;6(2):207-10.
5. Bal MS, Singh SP, Bodal VK, Oberoi SS, Surinder K. Pathological findings I liver autopsy. J Ind Acad Forensic Med. 2004;26(2):971-3.
6. Seleye-Fubara D, Jebbin NJ. Hepatocellular carcinoma in Port Harcourt, Nigeria: clinicopathologic study of 75 cases. Annals Afric Med. 2007;6(2):54.
7. Bhagat R, Singh S, Kumar V. Histopathological Spectrum of Liver Diseases in Autopsy Cases. J Med Sci Clin Res. 2019;7(7).
8. Alagarsamy J, Muthureddy Y, Yadav NS. Incidentally discovered liver diseases-An autopsy study of fifty cases. Intern J Sci Res. 2014;3(5):1330-2.
9. Devi M, Myrthong BG, Meera Th NH. Pathological Findings of Liver in Autopsy Cases: A Study at Imphal. Ind Acad Forensic Med. 2013;35(3):0971-3.
10. Umesh BR, Gayathri BN, Harendra Kumar ML. Spectrum of liver pathology at autopsy. Int J Res Rev. 2015;2(3):79-86.
11. Copeland AR. Sudden death in the alcoholic. Forensic Sci Intern. 1985;29(3-4):159-69.
12. Sotoudehmanesh R, Sotoudeh M, Ali-Asgari A, Abedi-Ardakani B, Tavangar SM, Khakinejad A, et al. Silent liver diseases in autopsies from forensic medicine of Tehran. Arch Iran Med. 2006;9(4):324-8.
13. Anand V, Selvi S. Study of Pathological Lesions in Liver Autopsy. IOSR J Dent Med Sci (IOSR-JDMS). 2017;16(11):45-8.
14. Sobaniec-Lotowska M, Barwijuk M, Baltaziak J, Dzieciol J, Sulkowski S, Debek W, et al. Coexistence of some Diseases and Analysis of Death Causes Based on Autopsy Examinations carried out in Liver Cirrhosis patients based on Autopsy. Pol Merkur Lekarski. 1996;1(3):187-9.
15. Iwamura K, Inaba R. Clinical study on latent cirrhosis of the liver. Tokai J Exp Clin Med. 1983;8(3):281-91.
16. Amarapurkar A, Agrawal V. Liver involvement in tuberculosis--an autopsy study. Trop Gastroenterol. 2006;27:69-74.

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