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Original Research Article

An Autopsy Study of Liver Pathology in Cases of Maternal Deaths

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Abstract

Background: Liver diseases cause significant morbidity and mortality in both pregnant women and infant. Early diagnosis and timely intervention will help us to achieve reduction in maternal and infant mortality.

Aim: To study histopathological changes in liver in cases of maternal deaths and to correlate with biochemical profiles.

Material and Methods: A retrospective analysis of 101 cases of maternal deaths received in the year 2016 were studied. The histopathological changes in liver were reviewed and were correlated with liver function test if available. A total of 99 cases were available for study.

A Result: Liver disease related to pregnancy was seen in 31% of cases, with pre eclampsia/ eclampsia leading the list. In 3% of cases liver disease developed concurrently with pregnancy, while in single case pregnancy was seen in pre existing liver disease. Incidental findings were seen in 35% of cases, while in 29% of cases no changes were seen.

Conclusion : Autopsy helps us to understand the pathogenesis and presentation of liver pathology in maternal deaths. The study helps us to diagnose liver diseases in pregnancy with varied presentation in early stage. This will help in achieving our national goal of reducing maternal and foetal

Keywords: Pre eclampsia/Eclampsia.

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Introduction

Pregnancy is a clinical state, which causes physiological changes in the organs of the body. However the liver appears normal or near normal on light microscopy as well as the biochemical profiles are also normal [1]. Alteration in biochemical profiles and histopathological changes in liver will help us to identify liver disease in pregnancy. Timely management of liver diseases in pregnancy is essential to reduce the maternal and foetal mortality [2].

The present study was undertaken to study the histopathological changes in liver from the autopsies performed in case of maternal death and to correlate these findings with the antemortem biochemical profiles.

Material and Method

The present study is a retrospective study performed in department of pathology over a period of a year from January to December 2016. Our medical college being

the only tertiary centre in North Maharashtra region, the department of pathology receives the viscera for histopathological examination from the autopsies performed in civil hospitals and health centres in north Maharashtra. Each viscera is accompanied with history, clinical findings and investigations along with post mortem report.

Total 555 viscera (cases) were received in the 2016, for histopathological examination. Out of these 555 cases 101 (18.19%) cases were of maternal death.

The age of mother, trimester and method of delivery were noted in all the maternal deaths. The received visceral organs were examined grossly and sections were taken for histopathological examination. Special stains were performed where ever needed. Out of these 101 cases two viscera were completely autolysed. Thus 99 cases of maternal deaths were reviewed. Sections from liver were reviewed along with their special stains by two pathologists. The findings were correlated with the trimester of death, laboratory investigations and changes seen in other organs.

Result

The histopathological findings in liver were classified into (Table 1).

Liver diseases related to pregnancy.	Total No of cases – 31 (31%)
Pre eclampsia/ eclampsia	17
Acute Fatty Liver	5
HELLP syndrome	4
Intrahepatic cholestasis	2
Hepatic rupture	1
Jaundice with no injury	1
Submassive hepatic necrosis	1
Liver disease developing concurrently with pregnancy	3
Acute hepatitis	3
Pregnancy in pre-existing liver disease	1
Cirrhosis	1
Incidental findings in liver	Total No of cases – 35 (35%)
Anaemia	20
Sickle cell anaemia	6
Tuberculosis	2
Poisoning	2
Puerperal Sepsis	2
Dengue	1
Typhoid	1
Malaria	1
No Abnormality seen in Liver:	29 cases

1. Liver diseases related to Pregnancy.

A) Pre eclampsia/ Eclampsia (17 cases)

Presented – Second and Third Trimester

Liver Function Tests-	Median value
S Bilirubin (0-1.2 mg/dl)	1.6 mg/dl
S AST (8-33 U/L)	94 U/L
S ALT (4-36 U/L)	190 U/L
S ALT (4-36 U/L)	242 U/L

HPE-(Figure 1 and Figure 2)-Peri- portal hepatocytic necrosis, flame shaped necrosis, subcapsular haemorrhage, cavernous haemangioma, fibrin thrombi in space of Disse.

B. Acute Fatty Liver- 5 cases

Presented- Third Trimester.

Liver Function Tests-	Median value
S Bilirubin (0-1.2 mg/dl)	8 mg/dl
S AST (8-33 U/L)	160 U/L
S ALT (4-36 U/L)	130 U/L
S ALT (4-36 U/L)	370 U/L

HPE-Micro and Macro fatty change, portal triadits, focal areas of necrosis.

C. HELLP-4 cases

Presented- Third Trimester.

Liver Function Tests-	Median value
S Bilirubin (0-1.2 mg/dl)	5.8 mg/dl
S AST (8-33 U/L)	832 U/L
S ALT (4-36 U/L)	394 U/L
S ALT (4-36 U/L)	530 U/L

Platelet count-45000/cmm.

HPE-Sub massive to massive hepatic necrosis, Deposition of fibrin in space of Disse (Figure 3).

D. Intra hepatic Cholestasis -2 cases.

Presented- Second Trimester.

Liver Function Tests-	Median value
S Bilirubin (0-1.2 mg/dl)	3 mg/dl
S AST (8-33 U/L)	180 U/L
S ALT (4-36 U/L)	310 U/L
S ALT (4-36 U/L)	200 U/L

HPE- Hepatocytes Normal, Hepatocytes and bile canaliculi shows bile thrombi.

E. Submassive hepatic necrosis.

Clinically presented has post partum haemorrhage.

LFT- Not available.

F) Hepatic Rupture.

Presented- second trimester, pain in abdomen, vomiting.

LFT-not done.

Suspected poisoning

HPE- Cavernous haemangioma.

G. Jaundice with no distinct clinical injury.

Presented- Third trimester.

Liver Function Tests-	Median value
S Bilirubin (0-1.2 mg/dl)	3 mg/dl
S AST (8-33 U/L)	28 U/L
S ALT (4-36 U/L)	34 U/L
S ALT (4-36 U/L)	122 U/L

HPE- Liver normal.

1. Liver disease developing concurrently with pregnancy

Acute hepatitis Presented in –Third trimester (1 case), post partum haemorrhage (2 cases). Clinically presented with altered sensorial and jaundice.

Liver Function Tests-	Median value
S Bilirubin (0-1.2 mg/dl)	5 mg/dl
S AST (8-33 U/L)	432 U/L
S ALT (4-36 U/L)	348 U/L
S ALT (4-36 U/L)	262 U/L

HPE-Focal areas of Hepatocytes necrosis, portal triaditis, and sinusoids infiltrated with inflammatory cells, Kupfer cell hyperplasia.

1. Pregnancy in pre-existing liver disease-Cirrhosis

Presented with worsening of portal hypertension in post partum period.

4. Incidental findings in liver-

A. Anaemia – Liver shows changes of chronic passive venous congestion.

B. Sickle cell anaemia-HPE-Liver, sinusoids filled with sickle shaped RBC's. Focal areas of necrosis seen.

C. Tuberculosis- HPE-Liver shows tubercular granuloma.

D. Poisoning- HPE- Marked congestion seen.

E. Puerperal Sepsis-HPE- Liver- Sinusoids show inflammatory infiltrate, focal abscess seen.

F. Dengue- HPE- Liver- Sinusoids show dilatation with marked congestion.

G. Typhoid- HPE- Liver-Focal collection of lymphocytes seen in liver parenchyma (Typhoid nodule).

H. Malaria-HPE-Liver, sinusoids filled with parasitized RBCs and kupfer cells contain hemazoin pigment.

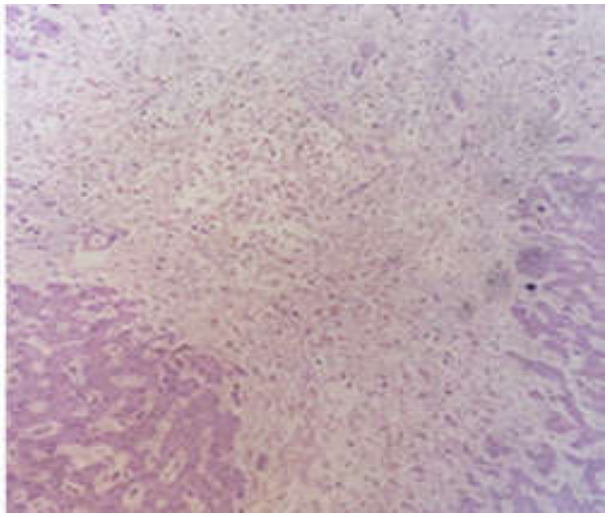

Fig. 1: Periportal hepatic necrosis seen in eclampsia

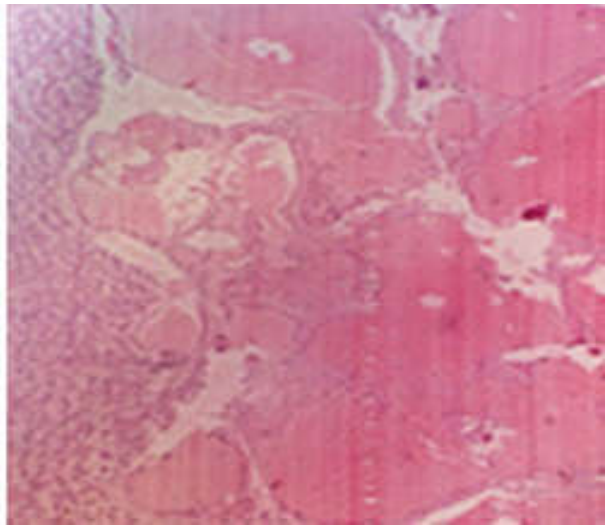

Fig. 2: Cavernous hemangioma

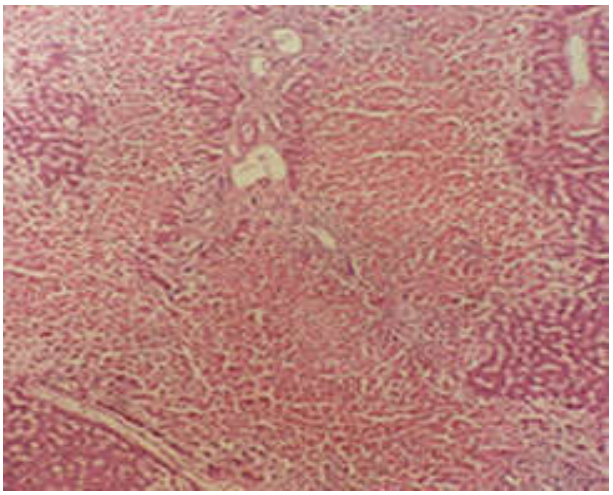

Fig. 3: Submassive hepatic necrosis

Discussion

Liver is called as "The Custodian of milieu interior". It is vulnerable to metabolic, toxic, microbial and circulatory insult.

In 31% of our cases the cause of maternal death was due to liver diseases related to pregnancy, with maximum cases being preeclampsia/ eclampsia (17 cases). Our findings correlated with a study by Kavita Khedkar et al (3), where 31% of maternal deaths were due to liver diseases related to pregnancy with maximum cases being pre eclampsia/ eclampsia.

Pre eclampsia/ eclampsia are seen in second or third trimester, it is associated with normal serum Bilirubin with moderately increased serum aminotransferase activity, along with deposition of fibrin in sinusoids. The deposition caused hepatic ischemia, haemorrhage and rupture due to vasoconstriction of hepatic vascular bed which was due to dysfunction of endothelium [4]. We too had similar findings.

Acute Fatty liver presents with medical and obstetric emergency. It presents in third trimester. To begin with the symptoms are non specific like abdominal pain, nausea, vomiting and may worsen to those of acute liver failure or jaundice [5]. Our cases of acute fatty liver succumbed to liver failure and jaundice with characteristic changes of fatty degeneration accompanied with focal areas of necrosis and minimal inflammation around portal triad.

HELLP is a severe variant of pre-eclampsia, but it can develop in women who do not have pre-eclampsia [6]. Three of our cases were hypertensive. Raised Bilirubin and Jaundice were seen in all cases. 5% of cases show evidence of jaundice [7].

Intrahepatic cholestasis is a diagnosis of exclusion. Our case presented in second trimester. On histopathological examination there was no evidence of viral hepatitis. There was marked elevation of serum alkaline phosphatase which is unique to intrahepatic cholestasis [8].

There was a single case of hepatic rupture and submassive hepatic necrosis; there was no other relevant clinical history or investigations available in these cases.

The course of most viral hepatitis infection is unaffected by pregnancy, however severe course of viral hepatitis in pregnancy has been observed in patient with Hepatitis E virus infection. The severe outcome in pregnant women is due to increased concentration of Th2 cytokines present in pregnancy [9].

There was a single case of cirrhosis, which succumbed to death due to worsening of portal hypertension. In pregnancy 40-50% increase in circulatory volume and systemic vasodilatation causes worsening of portal hypertension and increased risk of variceal bleeding [10]. This leads to worsening of liver failure, with mortality rate of 10-18% [11].

Incidental findings in liver were also seen in cases where the cause of death was not due to liver aetiology.

India accounts for 15% of world's maternal death as of 2015 [12]. Liver diseases in pregnancy have serious consequences. The overall maternal mortality of liver disease is 19.7% [13]. The clinical presentation is varied and clinical jaundice is seen in few cases. It is essential to be aware of the liver diseases in pregnancy. So prompt diagnosis and early management will help us in reducing foetal as well as maternal mortality. Hence in this review we have focussed on changes seen in liver in cases of maternal deaths.

Thus it once again proves Autopsy remains the Gold standard in understanding the diseases, there are very few studies of liver pathology in pregnancy; hence the present study was undertaken.

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