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Foetal Outcomes in Pregnancies with Hepatic Dysfunction

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ABSTRACT
Hepatic dysfunction occurring in pregnancy is a potential cause for adverse foetal outcomes.
Aim: *To assess the foetal outcomes in pregnancies with hepatic dysfunction.*
Material and Methods: *100 antenatal patients admitted with abnormal liver function tests were studied in antenatal period, during delivery till the post partum period in tertiary care referral centre.*
Results: *Most of the patients were primigravida (56%) and the mean age was 23.4 years (21-25 years). The common symptoms were nausea and vomiting (43%) and jaundice at presentation (19%). Pregnancy specific liver diseases accounted for hepatic dysfunction in 66% of cases. The other frequent cause for altered liver function was Viral hepatitis (34%). Post partum haemorrhage (15%), disseminated intravascular coagulation (13%) and abruptio placentae (12%) were the most frequent maternal complications. Maternal mortality was 4% in this study. Delivery occurred preterm in 28%. Low birth weight (< 2.4 kg) and very low birth weight (<1.5 kg) occurred in 19 %and 11% respectively. The perinatal mortality was 24%. Perinatal mortality was more in HELLP[haemolysis (H), elevated liver tests (EL), and low platelet count (LP)] (54.2%), followed by preeclampsia (20.8%) , Hepatitis (16.7%).Acute fatty liver of pregnancy(4.2%) and ICP (Intrahepatic cholestasis) (4.2%).*
Conclusion: *Liver disease in pregnancy carries a bad prognosis and leads to higher maternal (30%) and foetal complications. Pregnancy specific liver diseases were the most common cause for hepatic dysfunction in this study. Maternal mortality was 4% and perinatal mortality was 24% with worst perinatal outcome noted in HELLP syndrome.*
Keywords- *Hepatic dysfunction, HELLP syndrome, acute fatty liver of pregnancy, intrahepatic cholestasis of pregnancy.*

Introduction

Hepatic dysfunction during pregnancy occurs due a multitude of causes which may be pregnancy related or unrelated to pregnancy but coincident. However whatever be the cause the occurrence of hepatic dysfunction, it results in increase threat to maternal and foetal wellbeing. Early diagnosis and management contribute significantly to maternal and foetal well being.

Hepatic dysfunction contributes 3- 10% of all pregnancies and jaundice is observed in 0.1% [1]. It is evident that hepatic dysfunction has a significant

impact on maternal as well as foetal outcome in pregnancy[2]. The first group are the disorders unique to pregnancy and include Intrahepatic cholestasis of pregnancy (ICP), acute fatty liver of pregnancy (AFLP) and liver dysfunction associated with hyperemesis gravidarum, preeclampsia and HELLP. These conditions remit spontaneously in puerperium. Second group of disorders are pre-existent liver disease (such as chronic viral hepatitis, autoimmune hepatitis, Wilson's disease and cirrhosis liver) with incident pregnancy. Third group are acute viral hepatitis occurring in pregnancy, drug induced hepatitis. Fourth group consists of disorders which may have a bearing with pregnancy such as Budd Chiari syndrome, hepatic adenomas and or biliary tract disease[3,4].

Hyperemesis gravidarum is with severe vomiting with dehydration in first trimester of pregnancy and 50% have hepatic dysfunction. Intrahepatic cholestasis of pregnancy is characterized by pruritus and elevated bile acids in the second half of pregnancy, accompanied by high levels of aminotransferases and mild jaundice.

Severe preeclampsia causes significant degree of hepatic dysfunction and 2-12% of cases are complicated by -the HELLP syndrome. Immediate delivery is the only definitive therapy, but this condition is prone for maternal complications including abruptio placentae, renal failure, sub capsular hematomas, and hepatic rupture.

Acute fatty liver of pregnancy (AFLP) is a sudden catastrophic illness occurring almost exclusively in the third trimester; micro vesicular fatty infiltration of hepatocytes causes acute liver failure with coagulopathy and encephalopathy. Early diagnosis and immediate delivery are essential for maternal and fetal survival.

Only minimal alterations in liver function tests occur in normal pregnancy5. Serum total bilirubin (STB) levels are generally lower in pregnant women during all three trimesters, while low conjugated bilirubin concentration is observed during the second and third trimesters. This phenomenon is often attributed to hemodilution and hypoalbuminemia[5]. The aminotransferases (AST and ALT), γ-glutamyltranspeptidase (GGTP), total bilirubin, and serum bile acid level remain within the normal range. Alkaline phosphatase rises modestly two to four fold in the third trimester[4,6]. The albumin level is lower than in nonpregnant women, and the cholesterol level higher. Serum gamma-glutamyl transferase (GGT) activity levels decrease while serum 5'-nucleotidase activity marginally increases during the second and third trimesters. Thus, elevations in aminotransferases or GGTP signify pathology, and should prompt a search for disease. Hence making correct interpretation of the hepatic function is essential as failure to do so can result in morbidity or mortality for not only the mother, but also for the foetus. We intended to analyse the foetal outcomes in pregnancies complicated by hepatic dysfunction as data in this regard are scanty in our state.

Aim of the Study

This study was carried out to assess the foetal outcomes in pregnancies complicated by hepatic dysfunction.

Material and Methods

This is a prospective study conducted in the department of obstetrics and gynaecology in a tertiary care referral hospital, for one year period. 100 patients with abnormal liver function tests were selected for the study. Exclusion criteria: patients with other coexistent diseases and those unwilling to give consent to the study.

A detailed history was taken and general, systemic and obstetric examinations were carried out. Liver function tests including serum bilirubin, SGOT, SGPT, alkaline phosphatase, Australia antigen, prothrombin time (PT), partial thromboplastin time (PTT), bleeding time (BT), clotting time (CT) and platelet count were done. The maternal outcome was noted in terms of the mode of termination of pregnancy, maternal complications and maternal end result. Foetal outcome was assessed by perinatal morbidity and mortality, neonatal intensive care need.

Statistical analysis: The results were tabulated and data analysed as frequencies, percentages and descriptive statistics.

Results

The baseline data is given in the table 1.

Table 1: Baseline data

Item	Number of cases	Percentage
Age		
<20	13	13
21-25	43	43
26-30	32	32
>30	12	12
ANC(antenatal check Up) status		
Booked	39	39
Booked outside facility	55	55
Unbooked	4	4
Parity		
Primigravida	56	56
Gravida2	34	34
Greavida3	10	10
Detection of hepatic dysfunction		
Third Trimester	55	55
Second trimester	16	16
First trimester	29	29

Table 2: Causes of hepatic dysfunction in pregnancy

Diagnosis	Number	Percentage
Hepatitis	34	34
Hepatitis A	24	24
Hepatitis B	6	6
Hepatitis E	4	4
HELLP	21	21
HELLP(partial)	10	10
HELLP(Complete)	11	11
AFLP	4	4
ICP	7	7
Hyperemesis	12	12
Pre eclampsia	12	12
Obscure	5	5
Presumed Drug Induced	5	5

The hepatic dysfunction was seen most frequently in the age group of 21-25 years (43%) and the mean age was 23.4 ± 3.6 years. Primigravida constituted 56%. Hepatic dysfunction were detected in third trimester (55%) followed by detection in first trimester (29%) contributed by hyper emesis gravidarum.

The aetiology of hepatic dysfunction is given in table 2. Hepatitis was the commonest reason to have abnormal liver function during pregnancy followed by HELLP, Hypermesis gravidarum and severe preeclampsia.

The clinical presentation of the patients is given in table 3.

Table 3: Clinical presentation in hepatic dysfunction associated with pregnancy

Signs and symptoms	Number	Percentage
Yellowish discolouration of the Skin, eye and Urine	19	19
Nausea & vomiting	43	43
Hypertension	30	30
Right upper Abdominal Pain	19	19
Fever	20	20
Pruritis	8	8
History of drug intake	5	5

Maternal complications that occurred are shown in table 4. All patents were kept under close observation during delivery and post partum period in the intensive care unit for detailed monitoring and care.

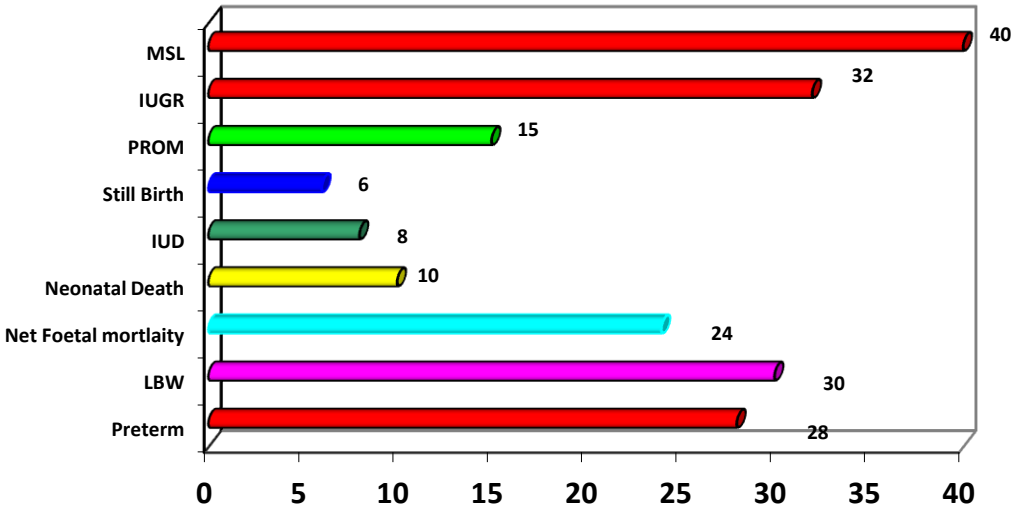
Table 4: Maternal complications in hepatic dysfunction

Complications	Number	Percentage
Post Partum Haemorrhage	15	15
Disseminated Intravascular coagulation	13	13
Abruptio pLacentae	12	12
Renal failure	5	5
Pulmoanry edema	4	4
Gastrointestinal bleed	4	4
Intracranial bleed	4	4
Eclampsia	6	6
Blood transfusion	16	16
Ventilation	10	10
Maternal Mortality	4	4

Most important maternal complications were – post partum haemorrhage 15% often requiring blood transfusion (16%) and DIC in 13% and need for assisted ventilation in 10%. Maternal mortality was high in this study (4%). Serious systemic complications noted were intracranial bleed, acute pulmonary oedema, gastrointestinal bleed and renal shut down.

All pregnancies in this study were single ton and there were 63 male and 27 female babies. The foetal complications were as follows as shown in figure 1.

Figure 1: Foetal complications in hepatic dysfunction



IUD-intrauterine death IUGR intrauterine growth retardation LBW low birth weight PROM premature rupture of membrane MSL Meconium stained liquor

The contribution of various conditions to perinatal mortality is shown in figure 2.

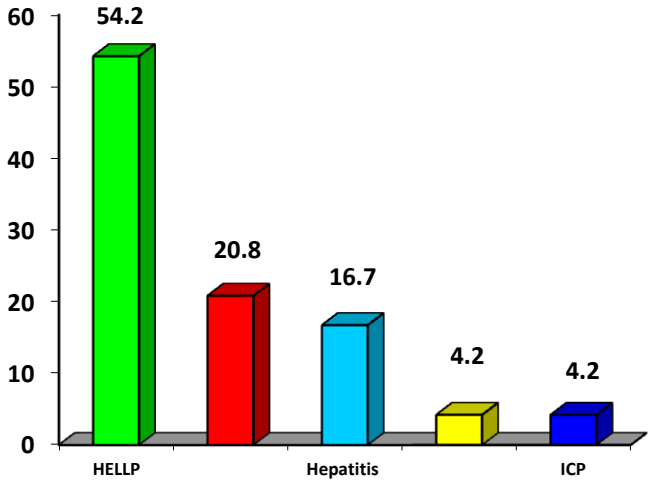


Figure 2. Perinatal mortality in hepatic dysfunction

Discussion

Hepatic dysfunction associated with pregnancy in this study was seen more commonly in primigravida (56%) and was frequent (43%) in younger age group between 21 -25 years of age with mean age 23.4 ± 3.6 years. This is similar to the previous observations where the primigravida constituted 66.7% in study by Sharma et al[7] and 62% Sharma et al8. Maximum incidence of liver disease complicating pregnancy occurred between 21-25 years as in previous reports.[7, 8]

Pregnancy specific hepatic dysfunction was the most frequent cause for liver disease in this study (66%). Among this HELLP contributed mostly to hepatic dysfunction in 21% and hyperemesis gravidarum and preeclampsia 12% each. ICP and AFLP were causative in 7% and 4% respectively. This is similar to the observations made by Rathi et

al[9]. In a study of 107 patients with hepatic dysfunction complicating pregnancy Suresh et al reported very high frequency (93%) of pregnancy related hepatic disorders as the cause for hepatic dysfunction[7]. Previous studies have shown wide varations in the contribution of pregnancy specific liver diseases as a contributory factor in 67% [10] to 89% [11]. In this sudy, as a major single cause for hepatic dysfunction was viral hepatitis and contributed in 34%.

Perinatal mortality was high (24%) in pregnancies complicated by hepatic dysfunction in this study. Previous studies have reported similar elevated perinatal mortality rates[11,12]. Higher perinatal mortality has been reported with very severe hepatic derangement in previous studies (62%)[13].

Perinatal mortality was higher in patients who had severe form of HELLP (54.2%) and preeclampsia (20.8%) . viral hepatitis had a perinatal mortality of 16.7% where as AFLP and ICP had better prognosis in this study. The high perinatal mortality may be attributed to the altered metabolic state associated with hepatic dysfunction and also due to dietary regulations which result in nutrional deficiencies in mothers resulting in low birth weights, the need for premature termination of pregnancies, preterm deliveries all of which have the potential to affect the fetal or neonatal survival. Sudden onset of foetal distress has been reported to be common in these patients[14]. If one considers the maternal complications during pregnancy, they also occur with increased frequency in hepatic disorders. Dreadful complications such as disseminated intravascular coagulation, abruption placentae, the need for ventilator assistance, severe eclampsia, need for blood transfusions are higher in hepatic dysfunction complicating pregnancy which would have affected foetal survival adversely.

Conclusion

Though considered rare, significant hepatic dysfunction complicating pregnancies is a dreadful state with very high incidence of foetal adverse outcomes and increased perinatal mortality. Prompt recognition of conditions which can lead to severe hepatic dysfunction can help in instituting effective precautionary management strategies to avert or reduce the severity of hepatic derangement. Reducing the severity of hepatic derangement can help in reducing the adverse maternal and foetal outcomes associated with hepatic dysfunction complicating pregnancy.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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