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Maternal and fetal outcome in pregnancy specific liver disorders

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Abstract

Background and aim – Normally some hepatic changes occurs in pregnancy, but they needed to be differentiated from pathologies which carry significant risk to the mother and fetus. Liver dysfunction during pregnancy is multifactorial in origin and diagnosis is often challenging. So, we did this study to know the effect of pregnancy specific liver disorder on the maternal and fetal outcome.

Methods - This was a hospital-based prospective observational study done over a period of 12 months from January 2017 to December 2017. All pregnant women booked or unbooked, who presented with pregnancy related liver dysfunction to our antenatal clinic or admitted in the obstetrics ward based on clinical and laboratory parameters were included for the study.

Results - Incidence of pregnancy specific liver disorder was 0.89%. Preeclampsia (74) was the common cause of liver dysfunction in pregnancy followed by ICP (46) and HELLP syndrome (22). There were 2 spontaneous abortions. 25.5% patients delivered vaginally and 74.5% underwent the cesarean section. The most common maternal complication was DIC (9.39%). There were 5 maternal deaths. Among the 152 births (3 twin pregnancies), 131 were live births, 89 had low birth weight. There were 8 intrauterine deaths, 13 stillbirths, and 11 neonatal deaths. Perinatal mortality was 21.05%.

Conclusion - Pregnancy with liver disorder results in very high fetal as well as maternal morbidity and mortality.

Keywords: Preeclampsia, Intrahepatic cholestasis, HELLP, Maternal mortality, Perinatal mortality

Introduction

The incidence of hepatic disorders in pregnancy in India is 1- 4 per 1000 deliveries [1, 2]. Hepatic disorders complicate about 3% of all pregnancies and fall under various categories [3]. There is a heterogeneous group of liver disorders that are unique to pregnancy and occur in patients with a previously healthy liver. These include intrahepatic cholestasis of pregnancy, acute fatty liver of pregnancy and liver dysfunction associated with hyperemesis gravidarum and preeclampsia. Although these conditions remit spontaneously in puerperium they can still cause significant morbidity and mortality during pregnancy if not managed properly [2,4,5].

So we did this study to know the effect of liver disorders specific to pregnancy on the maternal and fetal outcome.

Material And Methods

This study was a hospital-based prospective observational study done over a period of 12 months from January 2017 to December 2017. All pregnant women booked or unbooked, who presented with pregnancy-related liver dysfunction to our antenatal clinic or admitted in the obstetrics ward based on clinical and laboratory parameters were included for the study after written informed consent. A detailed history was taken and general, systemic and obstetric examinations were carried out. Investigations included Liver function tests: serum bilirubin, aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), lactate dehydrogenase (LDH) prothrombin time, partial thromboplastin time, bleeding time, clotting time, platelet counts, and viral markers for hepatitis included Hepatitis A virus, Hepatitis B virus (HBV), Hepatitis C virus and Hepatitis E virus. Other routine investigations and additional investigations were done as and when required to diagnose the cases. Patients were followed in antenatal clinic periodically and treatment was given according to the disease. Maternal outcome was assessed in terms of antenatal complication, time and mode of delivery, obstetric and medical complications. Fetal outcome was assessed by perinatal morbidity and mortality, and neonatal end results. Data was entered in case report form. Socioeconomic status was classified using BG Prasad scale (updated for 2017) [6, 7].

Patients not willing to participate, patients with liver disorders not specific to pregnancy and patients with MODS were excluded from the study. The data was analyzed with the help of frequencies, proportions, measures of central tendency and appropriate statistical tests. This study was approved by the institutional ethical committee.

Results

Out of 16,728 deliveries, 149 women with pregnancy-related abnormal liver dysfunction were studied prospectively. The most common age group was 21-25 years (mean age = 25.72 years). Majority of the cases were unbooked and belonged to the rural area and low socioeconomic status (Table 1). The multiparous women were more and the most common presenting complaint was itching. The mean value of bilirubin was 2.01 mg/dl and the mean values of AST and ALT were 165.87 U/L and 172.39 U/L respectively. The mean value of LDH was 659.94 U/L and the mean value of ALP was 181.28 U/L.

The most common liver disorder was preeclampsia (49.67%) followed by ICP (30.8%) and HELLP (14.77%). 88.59% patients were diagnosed in the third trimester (Table 2).

There were 2 spontaneous abortions. There were 25.5% vaginal deliveries and 74.5% cesarean sections. Out of 74 preeclamptic patients in our study, 44 delivered vaginally and 30 delivered by cesarean section. Amongst the patients of HELLP, 12 delivered vaginally and 10 underwent the cesarean section.

The most common maternal complication was disseminated intravascular coagulation (DIC) (9.39%) and 24 mothers needed MICU admission (Table 3).

There were 3 twin pregnancies. There were 131 live births. The babies of the mother with preeclampsia and eclampsia had the low birth weight. 78.3% babies of the mother with ICP had the birth weight >2.5 kg and our finding was statistically significant. Out of 22 patients of HELLP, 5 had babies of >2.5 kg birth weight, 17 babies were with a birth weight of <2.5 kg.

There were 47.65% NICU admissions (Table 4). Perinatal mortality was 21.05% and maternal mortality was

3.36%. Maternal mortality was seen in HELLP syndrome (4), eclampsia (1). In our study, the worst maternal outcome was noted in patients with HELLP syndrome and the perinatal mortality was worst in preeclampsia.

Discussion

Liver disease in pregnancy can present with subtle changes in liver biochemical profile or with fulminant hepatic failure. The survival rate of the mother and fetus has improved because of the better understanding of the pathogenesis of these disorders and higher standards of clinical care.

The incidence of liver disease in pregnancy in this study was 0.89%. The incidence varied from 0.4% to 3.3% in studies conducted across various parts of India [8, 9]. Preeclampsia, ICP, and HELLP were the most common cause of liver dysfunction in pregnancy. Mishra et al also found comparable findings where preeclampsia was the commonest cause of liver dysfunction in pregnancy followed by HELLP syndrome. Rathi et al, Suresh et al, Sharma et al and Sumangali et al had the comparable findings with this study [10, 11, 12, 13, 14].

In our study, liver dysfunction related to pregnancy in the first trimester was found in patients with hyperemesis gravidarum. They delivered at term spontaneously without any maternal and fetal complications. Preeclampsia and HELLP syndrome were the predominant cases in the second trimester.

Majority of patients delivered preterm, between the period of gestation of 28-36 weeks (45.28%). The number of preterm deliveries in cases of preeclampsia, HELLP, and eclampsia was significantly more as most of them had to be induced and some had spontaneous onset of preterm labor.

In our study, there were 5 maternal mortalities. Four patients were with HELLP syndrome. They had severe hemolysis with elevated LDH values (>20000 IU). Their liver enzymes were raised and one of them had significantly reduced platelet count (17000/mm^3). DIC and acute kidney injury were the complications developed. One patient with eclampsia was presented to us with seizures and hepatic encephalopathy delivered vaginally a baby of 2.2 kg. Her total bilirubin was 20 mg/dl with marked elevation of other liver enzymes. She was shifted to MICU. She succumbed to multi-organ failure in spite of aggressive management.

These patients were referred in critical condition from primary health centers to our hospital and did not respond to treatment. Reddy et al observed 16.66% maternal mortality and causes attributed were HELLP with DIC with renal failure and AFLP [16]. Maternal mortality was 20% in the study by Kondareddy et al. Hepatorenal failure, encephalopathy, and DIC were responsible for the deaths [17]. Maternal mortality in HELLP ranges from 3.5 to 24%. There is a greater risk of complications such as liver rupture, DIC, abruptio placentae and acute renal failure. In this study, patients with HELLP syndrome had the poor prognosis. In cases of severe preeclampsia and HELLP syndrome neonatal morbidity and perinatal deaths are the results of placental insufficiency and hypoxia. Risk of prematurity due to induction of labor is also high.

Perinatal mortality in our study was 21.05%. Studies by Nath et al, Krishnamoorthy et al, Patel et al, and Sunanda et al had perinatal mortality 19%, 35.5%, 34.6%, and 25.8% respectively, which was comparable to our study [1,18,19,20,].

Conclusion

The pregnancy-related liver disorder results in very high fetal as well as maternal morbidity and mortality. Preeclampsia was found to be the predominant cause of liver dysfunction and associated morbidity in pregnancy and HELLP was found to be the predominant cause of maternal mortality related to liver dysfunction during

pregnancy. Liver disorder in pregnancy should be managed as a team with the collaboration of obstetrics, internal medicine, gastroenterology, anesthesia, and critical care so that early diagnosis and aggressive management can prevent and reduce feto-maternal morbidity and mortality.

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