ORIGINAL RESEARCH

Assessment of the Effect of Liver Disease on Maternal and Fetal Outcomes at a Tertiary Care Centre: A Prospective Analytical Study

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ABSTRACT

Background: Pregnancy and liver illness are not commonly associated. Pregnancy and liver illness can have dangerous outcomes. Its incidence and impact on pregnancy outcomes have not been thoroughly studied till now. **Aim and objectives:** The present prospective observational study was conducted to assess effect of liver disease on maternal and foetal outcome. **Materials & Methods:** 65 women with pre-existing liver disease or those suspected to have liver dysfunction were enrolled. Maternal and perinatal outcome were recorded. **Results:** Liver diseases in pregnancy found to be cholestatic jaundice in 28, viral hepatitis in 20 and HELLP syndrome in 17 women. The difference was non- significant (P> 0.05). The study shows that the age in years (mean±SD) found to be 30.79 ± 5.01 in cholestatic jaundice, 31.38±4.13 in viral hepatitis and 31.57±3.94 in HELLP syndrome. The statical difference was non- significant (P> 0.05). It also shows that in primigravida, cholestatic jaundice was found in 11, viral hepatitis in 8 and HELLP syndrome in 10. In multigravida cholestatic jaundice was found in 17, viral hepatitis in 12 and HELLP syndrome in 7 patients. The statical difference was non- significant (P> 0.05). The liver diseases in pregnancy found to be cholestatic jaundice in 28, viral hepatitis in 20 and HELLP syndrome in 17 women. The mode of delivery in cholestatic jaundice, viral hepatitis and HELLP syndrome women was normal vaginal in 16, 10 and 8. It was forceps delivery in 7, 6 and 4 and caesarean delivery in 5, 5 and 4 women. Maternal complications were abortion in 2, 1 and 2, PROM in 1, 0 and 2, preterm labour in 1, 2 and 1, IUGR in 3, 1 and 1, meconium staining in 1, 0 and 3, PPH in 0, 1 and 2, ARF in 1, 0 and 1, DIC in 0, 2 and 1 and maternal deaths was 2, 1 and 0 respectively. Perinatal outcome was neonatal hypoglycemia in 3, 1 and 2, neonatal hepatitis in 1, 4 and 3 cases and neonatal death in 1, 2 and 1 case. The difference was non- significant (P> 0.05). **Conclusion:** Even in a tertiary referral center, liver disease is linked to maternal and perinatal mortality, although being rare in our study. In order to enhance maternal and perinatal outcomes in pregnant women with liver illness, early diagnosis, proper supportive care, and a proactive policy of early delivery are therefore necessary.

Keywords: Liver Disease, Cholestatic Jaundice, Viral Hepatitis, HELLP Syndrome, Maternal complications, Perinatal Outcome.

INTRODUCTION

Pregnancy and liver illness are not commonly associated. However, it could have a significant impact on the course of the pregnancy whenever it happens.[1] Liver disorders that are specific to pregnancy, liver diseases that occur concurrently with pregnancy, and pregnancy in people who already have liver disease are the three forms of involvement in pregnancy. A few of these could result in the death of mothers and newborns.[2] Liver diseases in pregnant women can present unique challenges and require careful management to ensure the health of both the mother and the fetus. These diseases can be classified into three main categories.[3] Liver diseases specific to pregnancy are intrahepatic Cholestasis of Pregnancy (ICP): This condition is characterized by intense

itching, particularly on the hands and feet, and elevated bile acids in the blood.[4] It typically occurs in the third trimester and can increase therisk of preterm birth and fetal distress. HELLP Syndrome: A severe form of preeclampsia, HELLP stands for haemolysis, elevated liver enzymes, and low platelets. It can cause liver damage and necessitates immediate delivery to ensure the safety of the mother and baby.[5] Acute fatty liver of pregnancy (AFLP) is rare but serious condition occurs in the third trimester and can lead to liver failure. Symptoms include nausea, vomiting, abdominal pain, and jaundice. Prompt delivery is essential for maternal and fetal survival.[6,7] The present study was conducted to assess effect of liver disease on maternal and fetal outcome.

AIM AND OBJECTIVES

The present prospective observational study was conducted to assess effect of liver disease on maternal and foetal outcome.

MATERIALS & METHODS

The present prospective observational study was conducted on 65 women attending the outpatient clinics or indoor services with pre-existing liver disease or those suspected to have liver dysfunction after a diagnosis of liver dysfunction during antepartum, intrapartum, or postpartum period through clinical, hematological, or radiological diagnosis. The duration of study was from June 2023 to February 2024. All were confirmed on the basis of clinical and laboratory data. All were informed regarding the study and their written consent was obtained those who met the specified criteria for inclusion and exclusion. The study was conducted at the Department of Obstetrics & Gynaecology, Government Medical College and Hospital, Purnea, Bihar, India. The Institutional Ethics Committee gave the study its approval. Data such as name and age etc. was recorded.

INCLUSION CRITERIA

- Patients to give written informed consent
- All women with pre-existing liver disease or those suspected to have liver dysfunction not related to pregnancy were enrolled.
- Patients with a diagnosis of liver disease during pregnancy.
- Available for follow up.

EXCLUSION CRITERIA

- Patients not willing to participate or give written informed consent
- Pregnant women with liver dysfunction secondary to sepsis and multiorgan failure wereexcluded from the study
- Those unable to attend follow-up.

Clinically, nausea, vomiting, abdominal pain, ascites, palpable hepatomegaly, and edoema were chosen as symptoms and signs that needed further haematological and radiographic investigation. In accordance with the institutional guideline, the following abnormal haematological tests were employed for diagnosis: serum bilirubin ≥25.6 mmol/L (1.5 mg/dL), alanine transaminase ≥40 IU/L, aspartate transaminase ≥40 IU/L, and ALP ≥306 IU/L. For each patient, measurements were made of their serum albumin levels, PT, aPTT, bleeding time, and clotting time.In order to diagnose patients with abnormal LFT, further serological tests and ultrasonography were performed. Maternal problems include postpartum hemorrhage, early rupture of the membranes, intrauterine death, premature labor, abortions, and maternal morbidity and mortality. Fetal outcomes were evaluated based on the following factors: birth weight, route of delivery, and neonatal morbidity and perinatal mortality.

STATISTICAL ANALYSIS

Data thus obtained were subjected to statistical analysis by using SPSS version 22.0 (IBM Corp., 2016) and Microsoft 16. Comparison of categorical variables was carried out with the help of Chi- square test, and ANOVA test to find the effect of liver disease on maternal and foetal outcome. P value < 0.05 was considered significant.

Table 1: Baseline demographic characteristic of the Mother with liver diseases

Baseline characteristicof Mother	Cholestatic jaundice	Viral hepatitis	HELLP syndrome	P value
Age (in years) (mean ± SD)	30.79 ± 5.01	31.38±4.13	31.57±3.94	0.521
Primigravida	11	8	10	1.8831
Multigravida	17	12	7	

Table 1 show that the age in years (mean±SD) found to be 30.79 ± 5.01 in cholestatic jaundice, 31.38±4.13 in viral hepatitis and 31.57±3.94 in HELLP syndrome. The statical difference was non- significant (P> 0.05). It also shows that in primigravida, cholestatic jaundice was found in 11, viral hepatitis in 8 and HELLP syndrome in 10. In multigravida cholestatic jaundice was found in 17, viral hepatitis in 12 and HELLP syndrome in 7 patients. The statical difference was non- significant (P> 0.05).

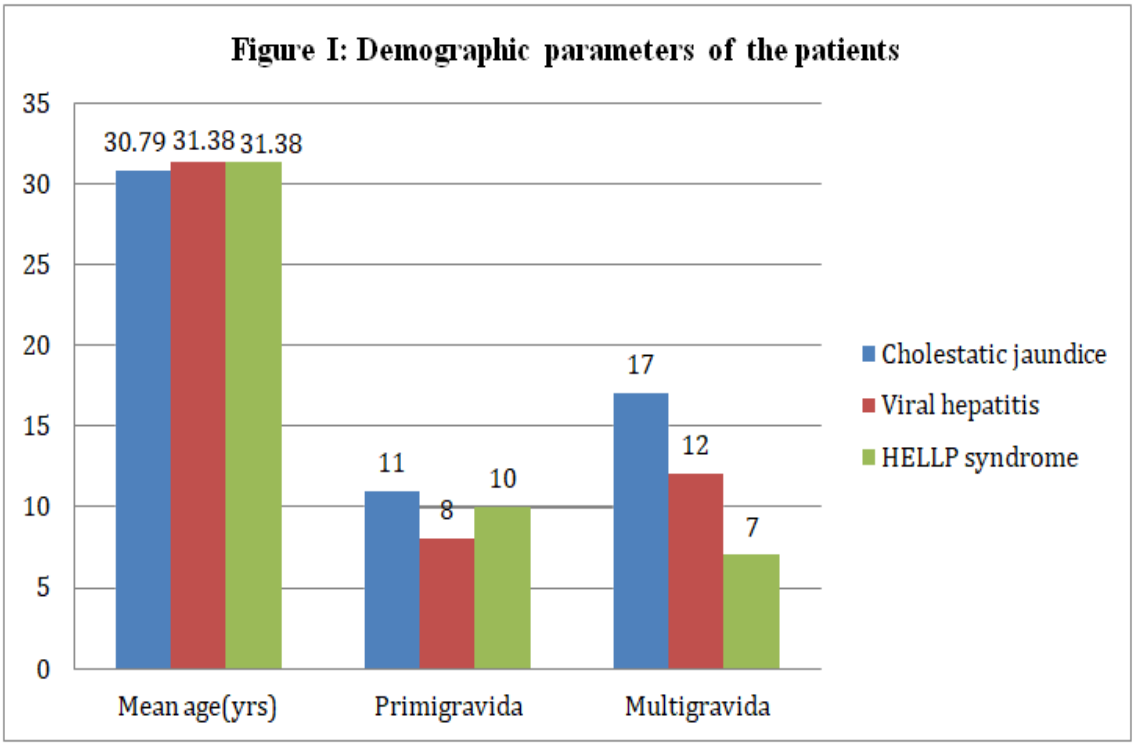

Figure I: Showing demographic Parameters of the patients in the present study

Table 2: Type of liver diseases

Liver diseases	Number	Chi-square test	P value
Cholestatic jaundice	28	2.98	0.225
Viral hepatitis	20		
HELLP syndrome	17		

Table 2 shows that liver diseases in pregnancy found to be cholestatic jaundice in 28, viral hepatitis in20 and HELLP syndrome in 17 women. The difference was non- significant (P> 0.05).

Table 3: Assessment of parameters

Parameters	Variables	Cholestaticjaundice	Viral hepatitis	HELLP syndrome	P value
Mode of delivery	Normal vaginal	16	10	8	0.05
	Forceps	7	6	4	
	Caesarean	5	5	4	
Maternal complications	Abortion	2	1	2	0.08
	PROM	1	0	2	
	Preterm labour	1	2	1	
	IUGR	3	1	1	
	Meconium staining	1	0	3	
	PPH	0	1	2	
	ARF	1	0	1	
	DIC	0	2	1	
	Maternal deaths	2	1	0	
Perinataloutcome	Neonatal hypoglycemia	3	1	2	0.37
	Neonatal hepatitis	1	4	3	
	Neonatal death	1	2	1	

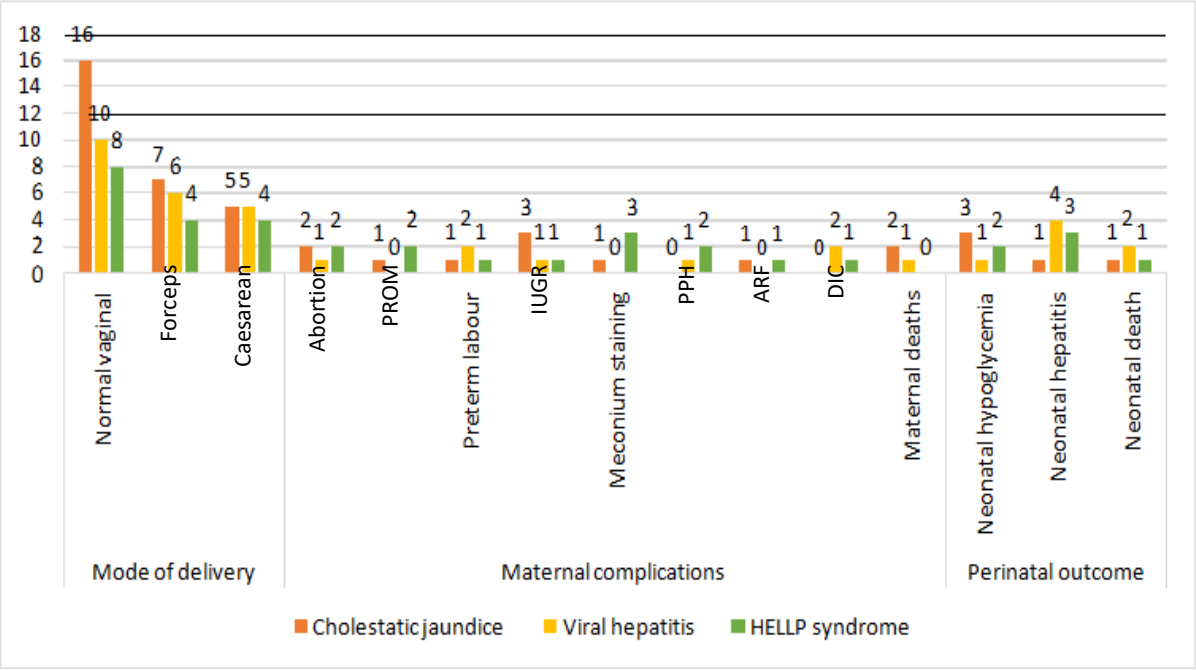

Figure II: Assessment of parameters

Table 3 and figure II, shows that mode of delivery in cholestatic jaundice, viral hepatitis and HELLP syndrome women was normal vaginal in 16, 10 and 8. It was forceps delivery in 7, 6 and 4 and caesarean delivery in 5, 5 and 4 women. Maternal complications were abortion in 2, 1 and 2, PROM in 1, 0 and 2, preterm labour in 1, 2 and 1, IUGR in 3, 1 and 1, meconium staining in 1, 0 and 3, PPH in 0, 1 and 2, ARF in 1, 0 and 1, DIC in 0, 2 and 1 and maternal deaths was 2, 1 and 0 respectively. Perinatal outcome was neonatal hypoglycemia in 3, 1 and 2, neonatal hepatitis in 1, 4 and 3 cases and neonatal death in 1, 2 and 1 case. The difference was non-significant (P> 0.05).

DISCUSSION

Due to advances in our knowledge of the physiological changes that take place during pregnancy, early detection of clinical and laboratory abnormalities that aid in determining the aetiology, and prompt and effective management of liver disorders, the overall mortality rate associated with them has dropped significantly in recent years.[8,9] The present study was conducted to assess effect of liver disease on maternal and fetal outcome.

Our study shows that the mean age was found to be 30.79 ± 5.01years in cholestatic jaundice, 31.38±4.13 years in viral hepatitis and 31.57±3.94 year in HELLP syndrome. The statical difference was non- significant (P> 0.05). It also shows that in primigravida, cholestatic jaundice was found in 11, viral hepatitis in 8 and HELLP syndrome in 10. In multigravida cholestatic jaundice was found in 17, viral hepatitis in 12 and HELLP syndrome in 7 patients. The statically difference was non- significant (P> 0.05). Gao et al[10] also found that there were no differences of the other baseline values between two groups, including the age (30.79 ± 5.01 vs.31.38 ± 4.13, p = 0.322), ratio of primigravida (36.1% vs.40.2%), and multiple pregnancy times (33% vs.48.2%).

We found that liver diseases in pregnancy found to be cholestatic jaundice in 28, viral hepatitis in 20 and HELLP syndrome in 17 women. Sircar et al[11] determined the frequency, causes and outcome of liver disease in pregnant women. The study included 40 patients of Cholestatic jaundice, 38 patients of viral hepatitis, 15 patients of sepsis, 5 patients of HELLP syndrome and 1 patient each of hyperemesis gravidarum, amoebic abscess, enteric hepatitis & acute cholecystitis with pancreatitis. Intra hepatic cholestasis of pregnancy was the most common and least detrimental cause of liver disease in pregnancy. Number of preterm deliveries and incidence of LSCS was highest with HELLP Syndrome. ICU admissions were maximum with diagnosis of Hepatitis E and NICU admissions highest with HELLP Syndrome. Both HELLP Syndrome and Hepatitis E were responsible for maximum maternal and perinatal deaths. Conclusions: Liver disease in a pregnant woman needs to be treated with caution.

We observed that mode of delivery in cholestatic jaundice, viral hepatitis and HELLP syndrome women were normal vaginal in 16, 10 and 8. It was forceps delivery in 7, 6 and 4 and caesarean delivery in 5, 5 and 4 women. Maternal complications were abortion in 2, 1 and 2, PROM in 1, 0 and 2, preterm labour in 1, 2 and 1, IUGR in 3, 1 and 1, meconium staining in 1, 0 and 3, PPH in 0, 1 and 2, ARF in 1, 0 and 1, DIC in 0, 2 and 1 and maternal deaths was 2, 1 and 0 respectively. Perinatal outcome was neonatal hypoglycemia in 3, 1 and 2, neonatal hepatitis in 1, 4 and 3 cases and neonatal death in 1, 2 and 1 case.

Rathi et al[12] investigated the prevalence, etiology, and prognosis of liver disease in expectant mothers. Of 12,061 pregnancies, 107 (0.9%) had liver illness. Of these, fifty-six (52.3%) had liver disorders specific to pregnancy (liver dysfunction associated with pregnancy- induced hypertension [PIH]-36, including pre-eclamptic liver dysfunction 14 and HELLP syndrome 22; intrahepatic cholestasis of pregnancy 10; hyperemesis gravidarum 7; acute fatty liver of pregnancy 3). Hepatitis E (16), hepatitis B, non-A-E hepatitis, chronic liver disease (5 each), and other liver illnesses (14), were among the conditions not specifically related to pregnancy. In six of these patients, there was no apparent etiology. Ninety-six individuals finished their follow-up. The rates of perinatal and maternal mortality were 35.4% and 19.7%, respectively, overall.

Tiwari A et al.[13] included all pregnant patients with abnormal liver profiles who visited the prenatal clinic and labor room of the BRD Medical College's Obstetrics and Gynaecology department between August 2015 and July 2016. Out of 9011 pregnancies, 214 (2.37%) patients had liver illness. The most prevalent type of liver illness (85.98%) was specific to pregnancy. The most prevalent aberration among pregnancy-specific liver diseases was hypertensive disorders (66.35%). The remaining conditions included acute fatty liver of pregnancy, hyperemesis gravidarum, chronic liver disease, and cholestasis. 22 patients dropped out of the total of 214. The relative rates of overall maternal and perinatal mortality were 13.02% and 29.17%.

Limitation of the study

The shortcoming of the study is small sample size and short duration of the study.

CONCLUSION

The authors found that even in a tertiary referral Centre, liver disease is linked to maternal and perinatal mortality, although this was rare in our study. In order to enhance maternal and perinatal outcomes in pregnant women with liver illnesses, early diagnosis, proper supportive care, and a proactive policy of early delivery are therefore necessary. In the present study, pregnancy-specific liver disorders like cholestatic jaundice accounted for the maximum number of cases, followed by HELLP syndrome. The presence of liver disease during pregnancy predisposed the mothers to a higher rate of preterm deliveries and overall NICU admissions for the newborn.

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REFERENCES

1. Reid R, Ivey KJ, Rencoret RH, Storey B. Fetal complications of obstetric cholestasis. BMJ 1976; 1: 870-72.
2. Johnston WG, Baskett TF. Obstetric cholestasis: 14 years review. Am J Obstet Gynecol 1979; 133: 299-301.Kumar A, Beniwal M, Kar P, Sharma JB, Murthy NS. Hepatitis E in pregnancy. Int J Gynecol Obstet India 2004; vol.7 No. 5: 11-15.
3. Dahiya M, Kumar A, Kar P, Gupta RK. Acute viral hepatitis in third trimester of pregnancy. Indian J Gastroenterol 2005; 24: 128-129.
4. Baba M Sibai, Mohammed K Ramadan. Acute Renal Failure in pregnancies complicated by hemolysis, elevated liver enzymes and low platelets. Am J Obstet Gynecol 1993; 168: 1682-90.
5. Tank PD, Nandanwar YS, Mayadeo NM. Outcome of pregnancy with severe liver disease. Int J Gynecol Obstet. 2002;76:27-31.
6. Harish K, Nitha R, Harikumar R. Prospective evaluation of abnormal liver function tests in pregnancy. TropGastroenterol. 2005;26:188-93.
7. Mishra N, Mishra VN, Thakur P. Study of abnormal liver function test during pregnancy in a tertiary care hospital in Chhattisgarh. J Obstetr Gynecol Ind. 2016 ;66(1):129-35.
8. Krishnamoorthy J, Murugesan A: Jaundice during pregnancy: maternal and fetal outcome. International Journal of Reproduction, Contraception, Obstetrics and Gynecology Krishnamoorthy J et al. Int J Reprod Contracept Obstet Gynecol. 2016;5(8):2541-5.
9. Xiang Gao, Yunxia Zhu, Haixia Liu, Hongwei Yu and Ming Wang. Maternal and fetal outcomes of patients with liver cirrhosis: a case-control study. BMC Pregnancy and Childbirth. 2021; 21:280
10. Sircar R, Pawar G. Effect of liver disease on maternal and fetal outcome–experience in a tertiary hospital. Indian Journal of Obstetrics and Gynecology Research. 2015 Apr;2(2):65-8.
11. Rathi U, Bapat M, Rathi P, Abraham P. Effect of liver disease on maternal and fetal outcome-a prospective study. Indian journal of Gastroenterology. 2007 Mar 1;26(2):59.
12. Tiwari A, Aditya V, Srivastava R, Gupta G. A study of spectrum and outcome of liver diseases in pregnant women at BRD medical college. Int J Reprod Contracept Obstet Gynecol 2017;6:3641-5.