International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 9, No. 2, July-December2020 Online ISSN: 2250-3137
Print ISSN: 2977-0122

ORIGINAL RESEARCH

A Prospective Evaluation of Effect of Maternal Liver Disorder on Foetal Outcome

Dr. Saima Razi Khan

Specialist Obstetrics and Gynaecology, Ministry of Health, King Khalid Hospital and Prince Sultan Centre for Health services, Al-Kharj, Saudi Arabia

Corresponding Author:
Dr. Saima Razi Khan
Specialist Obstetrics and Gynaecology, Ministry of Health, King Khalid Hospital and Prince Sultan Centre for Health services, Al-Kharj, Saudi Arabia
Email: saimarazik17@gmail.com

Received: 7 July 2020 Acceptance: 24 August 2020

ABSTRACT:
Background: To assess the effect of maternal liver disorder on foetal outcome. **Materials &Methods:** Fifty pregnant subjects, aged 25 to 45 years, presenting with varying months of pregnancy and liver disorders, were enrolled between Feb 2018 to Feb 2019. Comprehensive demographic and clinical data, including age, gravidity, parity, lab test, ultrasound findings and pertinent physical findings were collected for analysis. Foetal outcome was assessed in all the patients. The results were recorded in Microsoft excel and were subjected to statistical analysis using SPSS software. **Results:** Neonatal mortality was seen in 2 percent of the subjects. Neonatal ICU admission was seen in 20 percent of the subjects. Fetal growth restriction & Low birth weight infant, Fetal distress, Preterm delivery, and Birth Asphyxia were seen in 32 percent, 26 percent, 36 percent, and 8 percent of the subjects respectively. More than one complication was noted in some cases. **Conclusion:** Pregnancies complicated by liver diseases are associated with severe foetal outcomes, regardless of whether the liver disorder is related to or independent of pregnancy.
Key words: Pregnancy, Fetal, Liver disorder

INTRODUCTION

Managing liver disease during pregnancy poses significant challenges, necessitating a collaborative multispecialty approach. Physiological and anatomical changes during pregnancy, the complex interaction between the mother and the foetus, and the rarity of liver disease in pregnancy itself are some of the many challenges that a hepatologist and obstetrician face while managing liver disease during pregnancy.[1,] Biochemical and hematological tests during normal pregnancy show decreased albumin in all trimesters due to hemodilution, and the decline in albumin levels becomes more pronounced as pregnancy advances. Alkaline phosphatase (ALP) is increased in the third trimester, but it is of placental origin due to fetal bone development. Alpha fetoprotein (AFP) levels also increase because it is produced by the fetal liver.[2,3] Contrastingly, standard liver tests such as total bile acid concentration, AST, ALT, GTT, and bilirubin typically remain within normal ranges in a healthy pregnancy. Liver diseases can be pregnancy-related or unrelated to pregnancy, emphasizing the need to evaluate the impact of maternal liver disorders on foetal outcomes.

MATERIALS & METHODS

This study, conducted between February 2018 and February 2019, aimed to investigate the impact of maternal liver disorders on foetal outcomes. Fifty pregnant subjects, aged 25 to 45 years, presenting with varying months of pregnancy and liver disorders, were enrolled. Comprehensive demographic and clinical data, including age, gravidity, parity, and relevant lab tests (FBC, Bile Acid, LFT, U&E, coagulation profile, autoantibodies, and serology for hepatitis A, B, C, and E), along with abdominal ultrasound and pertinent physical findings, were collected for analysis. Foetal outcome was assessed in all the patients. The results were recorded in Microsoft excel and were subjected to statistical

analysis using SPSS software. Chi-square test and student test were used for evaluation of level of significance.

RESULTS

A total of 50 subjects were included in the study, with a mean age of 29.2 years. Among these women with liver disorders, 22 (44%) had Preeclampsia & HELLP syndrome, 12 (24%) had IHCP, 11 (22%) had viral hepatitis, 2 (4%) had persistent hyperemesis of pregnancy with deranged LFT, 2 (4%) had chronic liver disease and 1(2%) had AFLP. Most of these patients presented in the 3rd trimester (70%) while remaining 30% were in 1st and 2nd trimester. Cesarean section was the mode of delivery in 26 women (52%) while the remaining 48% delivered vaginally. Neonatal mortality was seen in 2 percent of the subjects. Neonatal ICU admission was seen in 20 percent of the subjects. Fetal growth restriction & low birth weight, fetal distress, preterm delivery and birth asphyxia of newborn, was seen in 32%, 26%, 36% and 8% of the subject respectively. Out of 18 preterm births, 1 was at <28 weeks, 3 were between 28 weeks to 33 weeks 6 days and 14 were between 34 weeks to 36 weeks 6 days. More than one complication was noted in some cases.

Chart 1: Types of Liver disorders

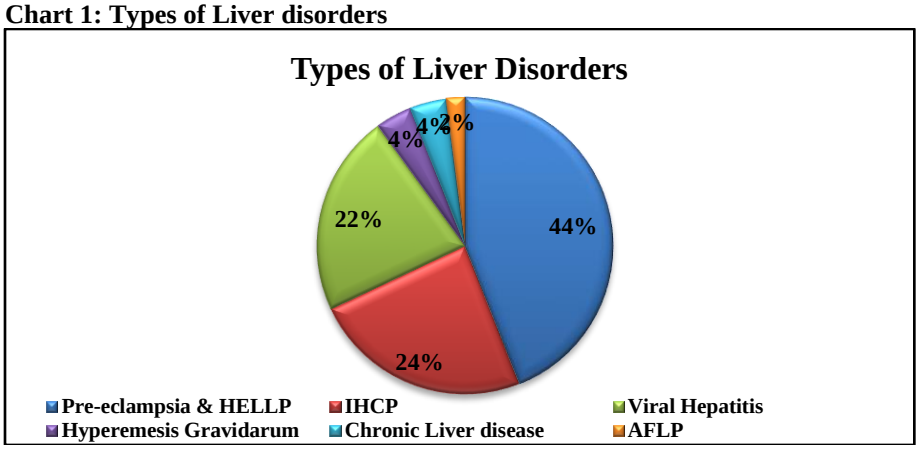

Table 1: Mode of delivery and time of birth

Mode of Delivery	Number	Percentage
Cesarean Section	26	52
Vaginal delivery	24	48
Time of Birth	**Number**	**Percentage**
Preterm	18	36
<28 weeks	1	
28-33 weeks 6 days	3	
34 -36 weeks 6 days	14	
Term	32	64

Table 2: Foetal outcomes (more than one complication was noted in some cases)

Foetal Complications	Number	Percentage
FGR & LBW	16	32
Fetal Distress	13	26
Preterm Delivery	18	36
Birth Asphyxia	4	8
NICU admission	10	20
Neonatal mortality	1	2

DISCUSSION

Liver diseases in pregnancy are usually categorized into liver disorders that occur only in pregnancy and liver diseases that occur coincidentally in pregnancy. There are five liver disorders that are pregnancy-specific: hyperemesis gravidarum, preeclampsia/ eclampsia, syndrome of hemolysis, elevated liver tests, and low platelets (HELLP), acute fatty liver of pregnancy, and intrahepatic cholestasis of pregnancy.[4,5] Pregnancy directly affects the physiology of the liver and hepatic disorders can

adversely affect pregnancy outcomes. In developed countries, approximately 3% of pregnant women are affected by some form of liver disease during their pregnancy. Some of these conditions can be fatal for both the mother and fetus. It is, therefore, important to determine the underlying cause of abnormal liver function, enabling prompt management to reduce morbidity and mortality.[6,7] Consequently, this study was undertaken to evaluate how maternal liver disorders impact foetal outcomes.

A total of 50 subjects were enrolled. Pre-eclampsia and HELLP syndrome were the commonest causes of liver disorders in this study (44%). Overall foetal complication was seen to be increased in these pregnant women, with some women having more than one complications in their new born. Neonatal mortality was seen in 2 percent of the subjects. Neonatal ICU admission was seen in 20 percent of the subjects. In a similar study conduct by Rathi U et al, authors determined the frequency, causes and outcome of liver disease in pregnant women. Liver disease was found in 107 (0.9%) of 12,061 pregnancies. Of these, fifty-six (52.3%) had pregnancy-specific liver disorders (pregnancy-induced hypertension [PIH]-associated liver dysfunction 36 including HELLP syndrome 22 and pre-eclamptic liver dysfunction 14; intrahepatic cholestasis of pregnancy 10; hyperemesis gravidarum 7; acute fatty liver of pregnancy 3). Liver disorders not specific to pregnancy included hepatitis E (16), hepatitis B, non-A-E hepatitis and chronic liver disease (5 each) and others (14); in 6 patients no cause could be found. Ninety-six patients completed follow up. Overall maternal and perinatal mortality rates were 19.7% and 35.4%, respectively. PIH-associated liver dysfunction was the most common cause of liver disease in pregnancy.[8] In this study also the most common cause of liver disease was PIH associated (Pre-eclampsia and HELLP syndrome). In the present study, fetal growth restriction & Low birth weight infant, Fetal distress, Preterm delivery, and Birth Asphyxia of newborn was seen in 32 percent, 26 percent, 36 percent, and 8 percent of the subjects respectively. More than one complication was noted in some cases. In another study conducted by Solanke D et al, authors studied the etiology, clinical profile, and prognostic factors related to maternal and fetal health in pregnant patients with liver disease. Pregnancy- specific causes of liver dysfunction was found in 39 % (40/103) patients. Liver diseases were most frequent in the third trimester 69.9 % (72/103) which coincides with the current study. Etiologies in third trimester were viral hepatitis 36.1 % (26/72), pregnancy induced hypertension (PIH) 30.5 % (22/72), intrahepatic cholestasis of pregnancy 11.1 % (8/72), acute fatty liver of pregnancy (2/72), etc. Hepatitis E was the most common agent among viral hepatitis 71.8 % (28/39). Causes of maternal mortality (n = 25) were hepatitis E 40 % (10/25), PIH 32 % (8/25), and tropical diseases 20 % (5/25). Fetal mortality (n = 31) was 38.7 % (12/31) in hepatitis E. Maternal mortality was significantly associated with presence of jaundice, fever, abdominal pain, oliguria, anemia, leukocytosis, and coagulopathy.[9]

CONCLUSION

Pregnancies complicated by liver diseases are associated with severe foetal outcomes, regardless of whether the liver disorder is related to or independent of pregnancy.

REFERENCES

1. Esposti SD. Pregnancy in patients with advanced chronic liver disease. Clin Liver Dis (Hoboken). 2014 Sep;4(3):62-68.
2. Shekhar S, Diddi G. Liver disease in pregnancy. Taiwan J Obstet Gynecol. 2015;54:475–82.
3. Joshi D, James A, Quaglia A, et al. Liver disease in pregnancy. Lancet. 2010;375:594–605.
4. Fairweather DV. Nausea and vomiting in pregnancy. Am J Obstet Gynecol. 1968;102:135–175.
5. Kallen B. Hyperemesis during pregnancy and delivery outcome: a registry study. Eur J Obstet Gynecol Reprod Biol. 1987;26:291–302.
6. Ch'ng CL, Morgan M, Hainsworth I, Kingham JG. Prospective study of liver dysfunction in pregnancy in Southwest Wales. Gut 2002;51:876–80.
7. Bacq Y, Zarka O, Brechot J, et al. Liver function tests in normal pregnancy: a prospective study of 103 pregnant women and 103 matched controls. Hepatology 1996;23:1030–2.
8. Rathi U, Bapat M, Rathi P, Abraham P. Effect of liver disease on maternal and fetal outcome--a prospective study. Indian J Gastroenterol. 2007 Mar-Apr;26(2):59-63. PMID: 17558066.
9. Solanke D, Rathi C, Pandey V, Patil M, Phadke A, Sawant P. Etiology, clinical profile, and outcome of liver disease in pregnancy with predictors of maternal mortality: A prospective study from Western India. Indian J Gastroenterol. 2016 Nov;35(6):450-458.