ORIGINAL RESEARCH

A prospective study on maternal and fetal outcome in pregnancy with hepatobiliary disorders

Dr. Reshma[1], Dr. Anita Madan[2], Dr. Jagdeep Kaur[3]

[1]Senior Resident, [2]Associate Professor, [3]Assistant Professor, Department of Obstetrics and Gynaecology, Government Medical College, Amritsar, Punjab, India

Corresponding author:
Dr. Jagdeep Kaur, Assistant Professor, Department of Obstetrics and Gynaecology, Government Medical College, Amritsar, Email: jagdeepkaur172012@gmail.com

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ABSTRACT

Background: According to the literature, a mortality rate of 0-25% has been reported among mothers with pregnancy-related liver diseases. The aim of this present study was to identify the various etiologies and distribution of hepatobiliary disorders in Pregnant women attending a tertiary care centre in Punjab with reference to age, parity and trimesters, and also to determine the feto-maternal outcome.

Materials and method: This Study was conducted Prospectively in the Department of Obstetrics and Gynaecology, Government. Medical College, Amritsar for the pregnant women with liver disease attending the indoor and outdoor services (Between January 2020 to May 2021). Patients were subjected for routine investigations to detect liver abnormalities. Based on inclusion and exclusion criterias 245 pregnant women with liver disease in pregnancy were followed from time of admission till 6 weeks postpartum period to know their maternal and fetal outcome, complications and prognosis associated with these liver disorders.

Results: Out of 245 subjects, 37.1% were from urban areas and 62.9% belong from rural background. 37.5% were diagnosed with intrahepatic cholestasis of pregnancy, followed by 28.2% with Preeclampsia, 20.4% had Eclampsia. Raised blood pressure was observed in 2nd Trimester of pregnancy in 22% of the cases whereas 55.9% pregnant females had raised blood pressure in the 3rd trimester. In 17.1% pregnant females icterus was present, while in 31% pregnant females pallor was present. In fetal outcome 86.1% babies born were alive and 13.9% were still birth. Intrauterine fetal growth restriction was noted in 37.1% cases. Out of total of 211 live births, 26% (55) did not present with any post natal complication, while 15.6% babies were admitted to SNCU, 1.42% admitted to NICU, 4.73% had sepsis as a complication, 31.27% had neonatal Jaundice, 14.2% had respiratory distress syndrome, 2.36% had metabolic complications and 4.26% had neonatal death.

Conclusion: There is paucity of data in literature regarding predictors of adverse maternal outcome in Pregnancy with hepatobiliary disorders. Further studies are required to assess whether pregnancy can be prolonged in cases of infective hepatitis in order to improve the perinatal outcome. More studies with a larger sample size is recommended.

Key words: Hepatobiliary, Pregnancy.

INTRODUCTION:

Pregnancy is a dynamic process which involves anatomical, physiological and metabolic changes in the future mother as her body adapts to facilitate the growth and development of the fetus. The relationship between liver disease and pregnancy is of great clinical impact. Some changes in hepatic function occur normally in pregnancy, but need to be differentiated from pathology as it carries significant risk to the mother and her baby. Severe liver disease in pregnancy is rare; however, pregnancy-related liver disease is the most frequent cause of liver dysfunction during pregnancy and represents a severe threat to fetal and maternal survival.[1,2]

Liver involvement in pregnancy is of three types, namely, liver diseases peculiar to pregnancy, liver

diseases coincidental to pregnancy, and pregnancy in patients with pre-existing liver disease. The liver diseases unique to pregnancy include hyperemesis gravidarum, acute fatty liver of pregnancy (AFLP), intrahepatic cholestasis of pregnancy (ICP), and hemolysis and elevated liver enzymes and low platelets (HELLP) syndrome. Some of these lead to maternal and perinatal death.The diagnosis of liver disease in pregnancy is challenging and relies on laboratory investigations. There is insufficient information about the frequency, etiological profile, outcome, and management guidelines for pregnancy-related liver disease in India.[3-5]

According to the literature, a mortality rate of 0 to 25% has been reported among mothers with pregnancy-related liver diseases. The main factors determining the maternal prognosis are the cause of the liver disease, the degree of impaired synthetic, metabolic, and excretory liver function, and timing of delivery. High maternal mortality and morbidity in our country are due to many factors like poor hygiene, inadequate sanitation, malnutrition, prevalence of anemia, delay in seeking medical advice, lack of awareness and delay in referral to the higher centers.[6-8] The aim of this present study was to identify the various etiologies and distribution of hepatobiliary disorders with reference to age, parity and trimesters and also to determine the feto-maternal outcome among the pregnant women. We therefore studied prospectively the spectrum of liver disease in pregnancy and its course and effect on maternal and fetal outcomes, at a tertiary-care center.

AIMS AND OBJECTIVES :

1. To screen all antenatal patients reporting to Gynae OPD for any preexisting liver disease and to know their maternal and fetal outcome.
2. To study the maternal and fetal outcome of patients developing liver disorders in pregnancy.
3. To know the complications and prognosis associated with liver disorder in pregnancy.

MATERIALS AND METHOD

The present Study was conducted in the Department of Obstetrics and Gynaecology, Govt. Medical College, Amritsar for the pregnant women with liver disease attending the indoor or outdoor services. All patients reporting for antenatal checkups were subjected to liver function test and ultrasound abdomen to screen for preexisting liver disease. Women suspected to have liver dysfunction on the basis of clinical or investigative data were included in the study. Written informed consent was obtained from all the patients willing to participate in the study. The protocol of the study was approved by the Ethics Committee of the Institute. All these subjects who were enrolled, were followed from time of admission till 6 weeks postpartum period to see the outcome measures.

Inclusion Criteria:

In this study following patients were included:

1. Patients with Liver disorders caused by pregnancy like obstetrics cholestasis, acute fatty liver of pregnancy, preeclampsia, eclampsia, HELLP syndrome and hyperemesis gravidarum induced hepatic damage.
2. Patients having pregnancy associated liver diseases like acute hepatitis (hepatitis A,B,C,E).
3. Patients with chronic(preexisting) liver diseases like chronic hepatitis, liver cirrhosis, budd chiari syndrome and liver tumors.

Exclusion Criteria:

1. Hyperemesis gravidarum caused by molar pregnancy and multiple pregnancy.
2. Liver transplantation.

RESULTS

TABLE 1: SHOWING DEMOGRAPHIC DATA

DEMOGRAPHIC DATA		No. of Cases (n=245)	Percentage
Area	Urban	91	37.1
	Rural	154	62.9
Socioeconomic Status	Low	153	62.4
	Middle	80	32.7
	Upper	12	4.9

Majority (62.9%) of population belonged to rural background and low socioeconomic status (62.4%).

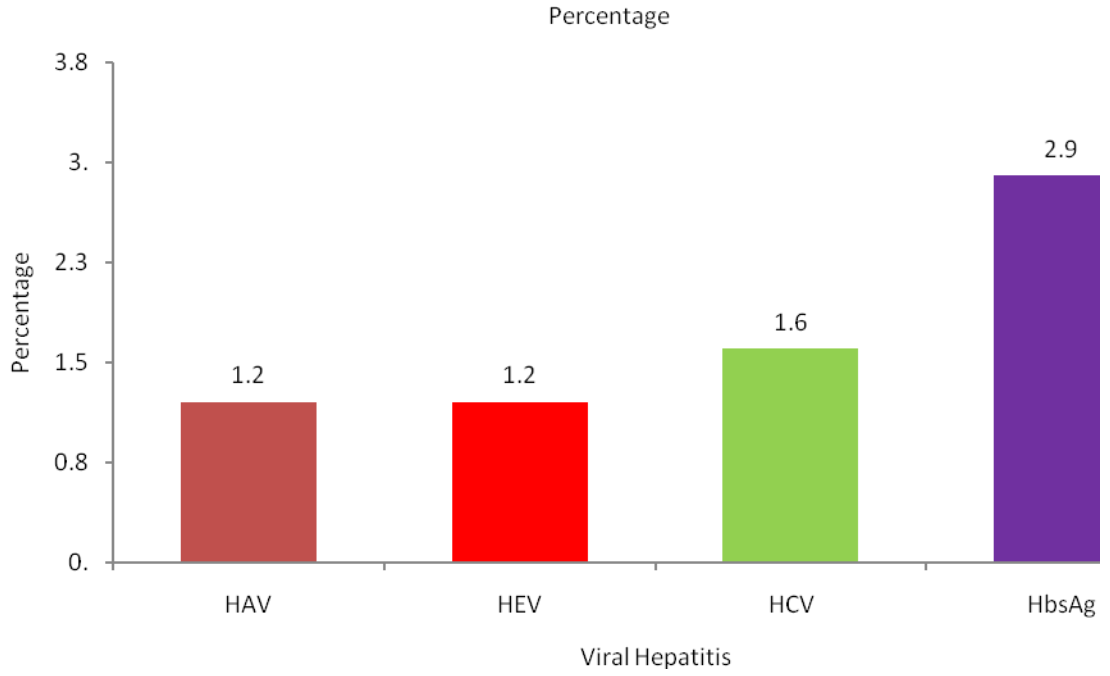
TABLE 2: DISTRIBUTION OF LIVER DISORDERS IN PREGNANCY

DIAGNOSIS	NO. OF CASES	PERCENTAGE
Intrahepatic cholestasis of pregnancy	92	37.5
Acute fatty liver of Pregnancy (AFLP)	3	1.2
Preeclampsia	69	28.2
Eclampsia	50	20.4
HELLP Syndrome	8	3.3
Hyperemesis gravidarum induced hepatic damage.	6	2.4
Chronic Hepatitis	11	4.5
Acute Viral Hepatitis	6	2.4
Budd Chairi Syndrome	0	0.0
Liver Tumors	0	0.0
Total	245	100.0

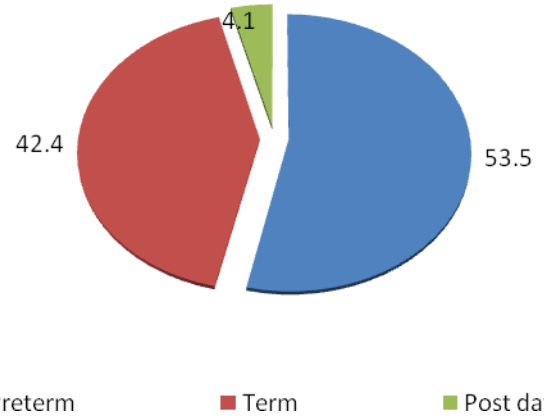
In our study most common cause of liver disorder in pregnancy was Intrahepatic cholestasis (37.5%) followed by Preeclampsia (28.2%) and Eclampsia(20.4%).

Among symptomatology, Raised blood pressure was noted in 54(22%) patients in second trimester, whereas, 137(55.9%) cases presented with raised BP in third trimester.

GRAPH 1: HEPATITIS SEROPREVALENCE.

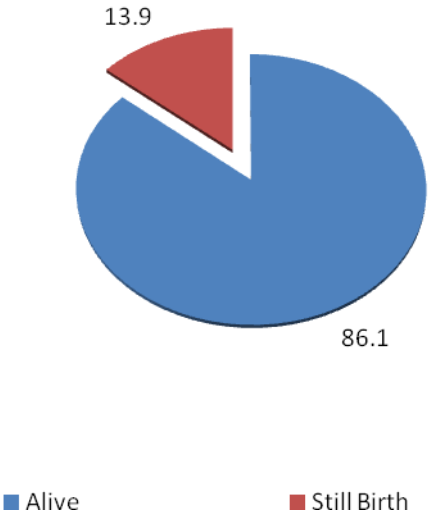


GRAPH 2: GESTATIONAL AGE AT DELIVERY



As is clear from the graph majority of the patients (53.9%) with hepatobiliary disorders had Preterm delivery.

GRAPH 3: SHOWING FETAL OUTCOME (ALIVE/STILL BIRTH)



13.9% Pregnant women with hepatobiliary disorders had stillbirth.

TABLE 3: INCIDENCE OF INTRAUTERINE FETAL GROWTH RESTRICTION (IUFGR)

IUFGR	No. of cases (n=245)	Percentage
Growth appropriate for gestational age	154	62.9
Restricted growth	91	37.1

37.1% of Fetuses in pregnant women with hepatobiliary disorders had intrauterine growth restriction.

In our study, 64.5 % females had vaginal delivery and the remaining 35.5% underwent Caesarean section due to different indications.

TABLE 4 : MATERNAL COMPLICATIONS

Maternal Complications		No. of cases (n=245)	Percentage
Intrapartum complications	Hemorrhage	122	49.8
	Hypotension	57	23.3
	Seizures	11	4.5
Postpartum complications	Hemorrhage	77	31.4
	Pyrexia	39	15.9
	Jaundice	31	12.7
	Sepsis	28	11.4
	Seizures	5	2.0
	Maternal Death	15	6.1

Hemorrhage was the predominant intrapartum (49.8%) and postpartum (31.4%) maternal complication.[15] 6.1% Maternal deaths occurred in our study among the Pregnant women with hepatobiliary disorders.

TABLE 5 : CORRELATION OF DIAGNOSIS WITH MATERNAL DEATH

Diagnosis	Maternal Death	
	No. of cases (n=15)	Percentage
Intrahepatic cholestasis of Pregnancy	2	2.2%
Preeclampsia	4	5.8%
Eclampsia	7	14.0%
HELLP Syndrome	1	12.5%
Acute Viral Hepatitis	1	16.7%
'p' value	0.195 (Not Significant)	

Acute viral hepatitis (16.7%), Eclampsia (14%) and HELLP syndrome (12.5%) were the predominant contributors to maternal mortality in women with hepatobiliary disorders in Pregnancy.

TABLE 6 - SHOWING POST NATAL COMPLICATIONS.

Post natal complications	No. of Cases	Percentage
No Post natal complications	55	26.0%
SNCU Admission	33	15.6%
NICU Admission	3	1.42%
Sepsis/Maningitis	10	4.73%
Neonatal Jaundice	66	31.27%
Respiratory Distress Syndrome	30	14.2%

Post natal complications	No. of Cases	Percentage
No Post natal complications	55	26.0%
SNCU Admission	33	15.6%
NICU Admission	3	1.42%
Sepsis/Maningitis	10	4.73%
Metabolic Complication	5	2.36%
Death	9	4.26%
Total	211	100.0%

In our study, 15.6% neonates were admitted to SNCU, 1.42% neonates to NICU. Neonatal jaundice (31.27%) and respiratory distress syndrome (14.2%) were the commonest postnatal complications.

DISSCUSION

In the present study, the mean age of study population was 25.54± 0.26 years, which was comparable with the study conducted by Bhardwaj R et al[9], in which mean age of their study population was 24.15±3.72 years. Also, In the study done to assess the predictors of feto-maternal outcome in pregnancies complicated by hepatic dysfunction by Bhalla S et al[10] the mean age of the study population was 25.18±4.29 years. In a study by Suresh I[11] et al, the median age of study was 24 years, which was also consistent with findings of our study. In the present study, 28.2% were diagnosed with Preeclampsia, 20.4% were diagnosed eclampsia, 3.3% were diagnosed with HELLP syndrome. Our findings were consistent with a study conducted by Singh KN et al[12], in which they studied liver disorders during pregnancy and fetomaternal outcome and found that 32.9% women had preeclampsia, 11.7% had eclampsia. In our study 37.5% were diagnosed with intrahepatic cholestasis of pregnancy,2.4% were diagnosed with hyperemesis gravidarum induced hepatic damage, 2.4% acute viral hepatitis, 1.2% cases of acute fatty liver of pregnancy (AFLP) and 4.5% cases had chronic hepatitis. Our findings were similar to the results of the study conducted by Singh KN et al[12], where 2.3% cases were of AFLP and 1.1% cases had hyperemesis gravidarum. In our study, 64.5 % females had vaginal delivery and the remaining 35.5% underwent Caesarean section due to different indications. The results are similar to the study done by Mitta P et al[13] to assess the fetomaternal outcome in jaundice complicating pregnancy and study by Suresh I et al[11] and Bhalla S et al[10], which also showed that most of the patients were delivered by natural labour, which were 69.2%, 62% and 66.9% respectively. The results of our study were also consistent with study done by Changede P et al[14] with 67% vaginal deliveries and 14% were Caesarean section.

In our study, 62.4% of the subjects belonged to the lower socioeconomic strata, while 32.7% were from middle class families and the remaining 4.9% belonged to upper socio-economicclass. Our results were similar of a study conducted by Kishore R et al[18], in which 63.7% of the subject's belonged to the lower socioeconomic status. Similar results were also stated by Mitta P et al[13] and Changede P et al[14]in which patients belonging to lower socio-economic status was 57.1% and 65% respectively. In our study, the patients who suffered from acute viral hepatitis (Hepatitis A and Hepatitis E) belonged mainly from lower socioeconomic strata.

In the present study, 13.9% babies born were still birth and 86.1% were alive which is similar to study of maternal and fetal outcome in jaundice complicating pregnancy conducted by Sharma S et al[15], in which 13.5% fetal mortality occurred and a study of feto-maternal outcome in patients of jaundice in 3rd trimester by Patel BJ et al[16] showed 16.2% fetal mortality rate. The results were also consistent to other similar studies done by Bhalla S et al[10], in which14.33% were still birth and the study by Nath J et al[17] presented 10.3% still birth.

The results of the present study showed that 53.5% females delivered preterm babies, 42.4% deliveries were at term and the remaining 4.1% were postdated. This is in accordance with similar studies on feto-maternal outcome in hepatic dysfunction done by Bhalla S et al[10], were 45% had pre-term deliveries. Similar results were presented in a study conducted by Kishore R et al[18] where the major obstetric complications associated with preeclampsia related disorders were preterm labor in approximately 58.5%.

In our study 37.1% study population had Intrauterine fetal growth restriction, while 62.9% showed fetal growth appropriate for the gestational age**.** Lata[19] had concluded in a review suggesting that liver diseases in

pregnancy, ranges from mild to severe form, where in milder forms there occur only increase in liver enzymes, whereas in severe form liver failure can occur affecting the entire system causing maternal mortality and morbidity. It cannot only complicate mother's life but also poses a burden on the life of fetus as growth restriction. Out of total of 245 females, 22.4% did not present had any Intrapartum complications, while 49.8% had bleeding as intrapartum complication, 23.3% had hypotension, and 4.5% had intrapartum seizures. In post-partum period, 20.4% had normal puerperium, while 31.4% had PPH, 15.9% had pyrexia, 12.7% had jaundice, 11.4% had sepsis as a complication, 2.0% had seizures as complication and 6.1% maternal deaths were observed. The major contributors for maternal death were DIC and septicemia leading to MODS. Various studies also report jaundice as one of the major indirect cause of maternal death, responsible for 5 to 30% of all maternal deaths. Maternal deaths were directly proportional to the level of the serum bilirubin. In a study conducted by Bhalla S et al[10] the maternal mortality rate was 5.9%, 1 patient had eclampsia, 2 had HELLP syndrome, 2 had viral hepatitis, and 2 patients had sepsis. The results shown in a study done by Changede P et al[14], out of 17 maternal deaths 4 subjects had HELLP syndrome, one patient with acute fatty liver and 8 patients with disseminated intravascular coagulopathy and 5 cases of hepatic encephalopathy.

CONCLUSION :

Currently, moderate quality evidence shows that hepatic dysfunction in pregnancy in India occurs due to several causes. Liver diseases occurring during pregnancy may be fatal and fulminating situation. It requires immediate attention. It is responsible for maternal and fetal morbidity and mortality. Early diagnosis and prompt management of cases may decrease the perinatal and maternal morbidity as well as mortality to a great extent in pregnancy complicated by hepatobiliary disorder. There is paucity of data in literature regarding predictors of adverse maternal outcome in hepatobiliary disorders . Further studies are required to assess whether pregnancy can be prolonged in cases of infective hepatitis in order to improve the perinatal outcome. More studies with a larger sample size is recommended.

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