Maternal and fetal outcome in liver diseases of pregnancy - A tertiary hospital experience

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***Abstract*- Objective:** To determine the frequency, causes and outcome of liver disease in pregnant women

STUDY DESIGN: This retrospective cohort study was conducted in the Department of Obstetrics and Gynecology, in a tertiary hospital in Punjab between January 2014 and December 2014. Medical records of all pregnant patients who were admitted to our department with pre-existing liver disease or those suspected to have liver dysfunction on the basis of clinical and /or laboratory data were reviewed and analyzed statistically.

RESULT: During the study period, there were 1528 deliveries in the hospital and 51 pregnant women were diagnosed to have liver disorders giving an overall incidence of 3.3%. Cholestasis of pregnancy was the commonest cause accounting for 54.9% of cases, followed by hypertensive disorders/HELLP (21.6%) and viral hepatitis (19.6%). Hepatitis E infection was most common cause for viral hepatitis (11.8%). DIC (33.3%) was most common maternal complication. There was one maternal death. Preterm delivery occurred in 13.7%, while intrauterine fetal death (IUFD) occurred in 5.7% of patients. There was no neonatal death.

CONCLUSION: Signs and symptoms of liver disease in pregnancy are not specific, but the underlying disorder can have significant morbidity and mortality effects on the mother and fetus. Early recognition can be lifesaving

***Index Terms*-** Liver disease, pregnancy, cholestasis of pregnancy, maternal and fetal outcome

I. BACKGROUND AND OBJECTIVE

Liver disease in pregnancy encompasses a spectrum of diseases encountered during gestation and the postpartum period that result in abnormal liver function tests, hepatobiliary dysfunction, or both. It occurs in 3% to 10% of all pregnancies [1].The cause of liver disease in pregnancy can be difficult to diagnose. Making the correct diagnosis is of paramount importance, as failure to do so can result in morbidity or mortality for not only the mother, but also for her fetus. Pregnancy causes very few alterations in the results of standard liver tests. The aminotransferases (AST and ALT), -glutamyl transpeptidase (GGTP), total bilirubin, and serum bile acid level remain within the normal range. Alkaline phosphatase rises modestly in the third trimester. The albumin level is lower than in nonpregnant women, and the cholesterol level higher [2]. Thus, elevations in aminotransferases or GGTP signify pathology, and should prompt a search for disease.

The objective of our study was to bring forward the incidence and maternal and fetal outcome in Indian scenario.

II. MATERIAL AND METHODS

This is a retrospective cohort study conducted in the Department of Obstetrics and Gynecology, in a tertiary hospital in Punjab. We reviewed the medical records of all pregnant patients who were admitted to our department with pre-existing liver disease or those suspected to have liver dysfunction on the basis of clinical and /or laboratory data from January 2014 through December 2014. The results were tabulated and data was analyzed as frequencies, percentages and descriptive statistics.

III. RESULTS

During the study period, there were 1528 deliveries in the hospital and 51 pregnant women were diagnosed to have liver disorders giving an overall incidence of 3.3%. The demographic characteristics of women with liver disorder are elaborated in Table 1.

Liver disease was more commonly seen in younger age group (52.9%).The maximum number of women in the entire study group were primigravida (51%) followed by second gravida (21.6%). Most of these patients were of low income group (62.7%) but residing in urban area (84.3%) and thus aware of the possible complications during pregnancy, thereby leading to less maternal mortality.

Table 1: Frequency distribution of socio-demographic variables

Characteristics	Cases (n = 51)	Percentage (%)
AGE(YRS)		
21-25	27	52.9
26-30	17	33.3
31-35	5	9.8
36-40	2	3.9
EDUCATIONAL STATUS		
No formal education	5	9.8
Primary	4	7.8
Secondary	27	52.9
Higher education	16	31.4
RELIGION		
Hindu	28	54-9
Christian	4	7.8
Muslim	19	37.2
OCCUPATION		

Housewife	35	68.6
Employed	16	31.4
ANC Status		
Booked	37	72.5
Unbooked	14	27.5
GRAVIDA		
1	26	51.0
2	11	21.6
3	7	13.7
4	5	9.8
≥5	2	3.9
GESTATIONAL AGE		
Term	37	72.5
Preterm	14	27.5
SOCIECONOMIC STATUS		
Low income group	32	62.7
Medium income group	20	39.2
High income group	2	3.9
RESIDENCE		
Urban	43	84.3
Rural	8	15.7

The commonest chief complaints associated with liver disease found in this study was pruritus (76.5%) followed by jaundice (17.6%) and gastrointestinal symptoms (13.7 %) as elaborated in Table 2. Intrahepatic cholestasis of pregnancy was most common cause of liver disease (54.9 %.) followed by hypertensive disorders / HELLP syndrome (21.6%) and viral hepatitis (19.6%). Hepatitis E infection was most common cause of viral hepatitis (11.8%) in this study as elaborated in Table 3.

Table 2: Distribution of cases according to symptoms

	Cases (n=51)	**Percentage (%)**
Pruritis	39	76.5
Jaundice	09	17.6
Gastrointestinal symptoms	07	13.7
Altered sensorium	01	02

Table 3: Etiological factors

Causes	**Cases (n=51)**	**Percentage (%)**
Cholestasis of pregnancy	28	54.9
Preeclampsia/Eclampsia/ HELLP	11	21.6
Acute fatty liver of pregnancy (AFLP)	01	2.0
Viral hepatitis (n=10; 19.6%)		
Hepatitis E	06	11.8
Hepatitis B	02	3.9
Hepatitis C	02	3.9
Cirrhosis	01	02

Most common abnormality in laboratory parameters were abnormal liver enzymes (49%) followed by increased serum bilirubin (35.3%) and abnormal coagulation profile in 33.3% of patients. Out of 51 patients 21 (41.2%) had normal vaginal delivery, 7 patients (13.7%) had preterm vaginal delivery, 4 patients (7.8%) had forceps delivery, 1 patient (2%) had assisted breech delivery while 18 patients (35.3%) underwent LSCS. The most common maternal complication seen was DIC (33.3%) followed by preterm labour (27.4%). Meconium staining of liquor (15.7%) and fetal heart abnormalities were seen in 13.7%. as elaborated in Table 4.

Table 4: Obstetric complication

	Cases (n=51)	**Percentage (%)**
Preterm labor	14	27.4
Premature rupture of membranes	01	02
Fetal growth restriction	02	3.9
Fetal distress	07	13.7
Meconium stained liquor	08	15.7
Postpartum hemorrhage	01	02
Disseminated intravascular coagulation	17	33.3
Acute renal failure	01	02
Hepatic encephalopathy	01	02
Maternal death	01	02
Blood/ blood product transfusion	06	11.8
ICU admission	02	3.9

Regarding the neonatal outcome, out of 52 babies born, there were 49 (94.2%) live births and 3 (5.7%) fresh still births. Majority (67.3%) of the neonates born to mother with hepatic disorder were appropriate for their gestational age as elaborated in Table 5. NICU admission (57.6%), hypoglycemia (7.6%) and neonatal hepatitis (1.9%) were few of the complications seen in the live births. There were no neonatal deaths as elaborated in Table 6

Table 5: Birth weight characteristics

Weight (kg)	**Cases (n=52)**	**Percentage (%)**
≤1	2	3.8
1.1-2	5	9.6
2.1-3	35	67.3
>3	10	19.2

Table 6: Neonatal outcome

	Cases (n=52)	**Percentage (%)**
Singleton	50	96.1
Twin	1+1	3.8
Live birth	49	94.2
Still birth	3	5.7
Complications		
Hypoglycemia	4	7.6
Neonatal hepatitis	1	1.9
NICU Admission	30	57.6

IV. DISCUSSION

Liver disease in pregnancy can manifest as a benign disease with abnormal elevation of liver enzyme levels and a good outcome, or it can manifest as a serious entity affecting hepatobiliary function and resulting in liver failure and death to the mother and her fetus. There are no clinical markers that predict the course of a pregnancy and the pathophysiologic mechanisms are not always understood. The overall mortality attributed to liver disorders in pregnancy has dramatically decreased in the past few years because of clinicians' understanding of the physiologic changes that occur during pregnancy, their vigilance in recognizing clinical and laboratory abnormalities, identifying the etiology and its effective management in a timely manner. A coordinated team approach that involves the primary care physician, obstetrician, hepatologist, is often required to promote good maternal and fetal outcomes.

The incidence of liver disorders in pregnancy varies in different parts of the world. Liver disease in pregnancy can present with subtle changes in liver biochemical profile or with fulminant hepatic failure (FHF). The overall incidence of liver disorder in pregnancy in our institution (3.3%) was comparable to previously reported studies. [1]

The peak age of incidence in our study was 21-25 years (52.9%) and majority were primigravida (51 %): it is consistent with study by Acharya N et al. [3] Cholestatic jaundice was found to be the most common cause (54.9%) of liver dysfunction associated with pregnancy in our study. It presents with non specific symptoms like pruritis (76.5%) which may be ignored by the clinicians. Hence, a high index of suspicion is required for diagnosis. Pruritis is the hallmark feature of this disease. In the study done by Reily et al [4], 80% of the patients presented with pruritus. Maternal prognosis was excellent with symptoms and lab parameters improving rapidly postpartum, as has been reported. **[5]** Hepatitis E was the most common cause of acute hepatitis in our study. It was commonly associated with FHF and high maternal and perinatal morbidity and mortality with 2% patients developing FHF. This is in accordance with previous reports from India. **[6,7]** AFLP was found to be responsible for the worst maternal and perinatal outcomes in our study with 2% maternal deaths which is similar to study conducted by Fisk et al. [8] The rate of occurrence of complications like DIC was high being 33.3%. Similar results have been reported in literature. [9]

Nearly 2% of the patients required ICU admission in our study. Intensive care is a necessity in these cases and various studies had ICU admissions raging from 4.3% to 62.6%. [10] Hypertensive disorders, AFLP, Hepatitis E were the leading cause in obstetric patients requiring ICU admissions.

Liver disorders during pregnancy have a devastating effect not only on the mother but also on the neonate. In our study, 94.2% were live births and 5.7% fresh still birth. A study done by Oladokun A et al [11] showed similar results. The incidence of prematurity found in this study is 13.7 % which matches with 15-44%, that reported by Fisk et al. [8]

V. CONCLUSION

- Signs and symptoms of liver disease in pregnancy are not specific, but the underlying disorder can have significant morbidity and mortality effects on the mother and fetus. Early recognition can be lifesaving.
- Vigilance in recognizing liver disorders in pregnancy and early coordinated multidisciplinary team approach is key for the successful management of pregnancies complicated by conditions such as those described here, to optimize the maternal and fetal outcome.

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