ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 15, Issue 9, 2022

Online - 2455-3891
Print - 0974-2441

Research Article

A PROSPECTIVE STUDY ON PREGNANCY COMPLICATED WITH JAUNDICE AND FETOMATERNAL OUTCOME

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Received: 20 May 2022, Revised and Accepted: 22 June 2022

ABSTRACT

Objectives: The aim of the study was to determine biochemical factors and maternofetal outcome in women with jaundice during pregnancy and to study its association with jaundice in pregnancy.

Methods: It was an observational study done among 60 pregnant patients with abnormal liver functioning. Laboratory parameters were studied which mainly includes liver function tests. Demographics and the detailed clinical history were recorded. The detailed laboratory investigation was carried out to study the complications concerning biochemical parameter. SPSS (Version 22.0) was used for analysis.

Results: HELLP syndrome was the most common etiology (45%). Decreased levels of hemoglobin observed in 75%, increased total leukocyte count observed in 26%, and low platelet count observed in 34%, respectively. Among mothers, most common adverse outcome was requirement of emergency lower segment cesarean section (45%). Maternal outcomes were significantly associated with raised direct bilirubin, raised serum glutamic pyruvic transaminase, raised alkaline phosphatase, and thrombocytopenia (p=0.03, p=0.01, p=0.02, and p=0.01, respectively).

Conclusion: Hepatic dysfunction during pregnancy is associated with adverse events for both the mother and the fetus.

Keywords: Alanine transaminase, Alkaline phosphatase, Bilirubin, Liver diseases, Low birth weight, Thrombocytopenia.

 DOI: http://dx.doi.org/10.22159/ajpcr.2022v15i9.45280. Journal homepage: https://innovareacademics.in/journals/index.php/ajpcr

INTRODUCTION

The prevalence of liver dysfunction during pregnancies ranges between 3% and 10% [1]. Jaundice, also mentioned as hyperbilirubinemia, is presented by accumulation of bile pigments in the skin that grades in yellowing mucous membranes and the skin [2,3]. Jaundice in pregnancy may lead to adversarial maternofetal outcomes including perinatal and maternal mortality which accounts for around 60% and 14% separately [4]. However, it is caused by a number of causes, some associated and some coincidental including abnormal liver functioning distinctive to pregnancy, pre-hepatic causes, hepatic causes, and post-hepatic causes of jaundice. Abnormal liver functioning distinctive to pregnancy are HELLP syndrome, pre-eclampsia, acute fatty liver, hyperemesis gravidarum (HEG), and intrahepatic cholestasis of pregnancy. Pre-hepatic causes including hepatic pathologies (viral hepatitis), hemolytic anemia, drug-induced hepatitis, Wilson's disease and Budd-Chiari syndrome. Post-hepatic causes include CBD obstructions, pancreatitis, choledochal cyst, and gall stones. Although jaundice in pregnancy is relatively rare, it may lead to serious maternofetal complications. The rationale behind the study is to determine clinicoetiological, biochemical factors, and maternofetal outcome in women with jaundice during pregnancy.

METHODS

Post receiving Institutional Ethical Committee clearance, the observational study was conducted in department of obstetrics and gynaecology of a tertiary care hospital from July 2021 to December 2021. The sample size was calculated in SPSS using standard formula (pwr. Chi-square test [effect size=0.60, df=1, power=0.80, sig. level=0.05]) at 95% significance level, power being 80% and the minimum sample size was found to be 53. A total of 60 patients with abnormal liver functions were included in the study. All pregnant patients with abnormal liver function tests were included in this study. Patients with normal liver functioning were excluded from the study. Written informed consent was obtained from all the patients before the study. Demographic data and a detailed clinical history were collected including age, obstetrical profile, gravida, and etiology. The detailed laboratory investigation was carried out to study the complications concerning biochemical parameter. Maternal and fetal outcomes were also recorded.

Statistical analysis

Statistical analysis was done using the software Statistical Package for the Social Sciences (SPSS) 22.0 version. Continuous variables was presented by mean±SD and categorical variables by frequency or percentages. To find the association between categorical variables, we have used Chi-square or Fisher's exact test. Independent t-test was used to find the significant difference in means of the variables. p value of <0.05 indicated a statistically significant.

RESULTS

As per Table 1, the most common age group seen the study was 26–30 years (34%) of participants, followed by 21–25 years. Although >30 years were also seen but most of females belonged to 21–30 years. Mean age of the patients was 25.2±3.75 years.

As per Table 2, high number of patients had low level of Hb (67%), total leukocyte count between 7000 and 11000 cells/µL (60%), platelets >150000 cells/µL (34%), total bilirubin <2 mg/dL (54%), direct bilirubin >0.2 mg/dL (59%), serum glutamic oxaloacetic transaminase >70 U/Lit (74%), serum glutamic pyruvic transaminase (SGPT) >70 U/Lit (74%), alkaline phosphatase >180 IU/Lit (65%), lactase dehydrogenase >600 U/Lit (74%), albumin >2.5 gm/dL (72%), total protein >8.5 gm/dL (54%), and urea >6.8 mg/dL (60%), while creatinine (mg/dl) (54%).

As per Table 3, among 60 cases showed, adverse maternal and fetal outcomes were observed in 27 and 29 cases, respectively. Low birth weight was observed as most common adverse fetal outcomes in 35% of cases. Among mothers, most common adverse outcome was requirement of emergency cesarean section lower segment cesarean section (45%).

Table 1: Age-wise distribution of the study participants (n=60)

Age groups	Frequency (%)
<20 years	8 (17)
21–25 years	20 (33)
26–30 years	22 (34)
>30 years	10 (16)

Table 2: Details of laboratory parameters in the study participants (n=60)

Parameters	Category	Frequency (%)
Hb (g%)	<7	40 (67)
	>7	20 (33)
Total leukocyte count (cells/µL)	<7000	10 (13)
	7000–11,000	34 (57)
	>11,000	16 (30)
Platelets (cells/µL)	<50,000	08 (13)
	51,000–150,000	32 (53)
	>150,000	20 (34)
Total bilirubin (mg/dL)	<2	32 (54)
	>2	28 (46)
Direct bilirubin (mg/dL)	<0.2	25 (41)
	>0.2	35 (59)
SGOT (U/Lit)	<70	16 (26)
	>70	44 (74)
SGPT (U/Lit)	<70	16 (26)
	>70	44 (74)
Alkaline phosphatase (IU/Lit)	<180	21 (35)
	>180	39 (65)
Lactase dehydrogenase (U/Lit)	<600	16 (26)
	>600	44 (74)
Albumin (gm/dL)	<2.5	17 (28)
	>2.5	43 (72)
Total protein (gm/dL)	<8.5	28 (46)
	>8.5	32 (54)
Urea (mg/dL)	<6.8	24 (40)
	>6.8	36 (60)
Creatinine (mg/dL)	<1.4	28 (46)
	>1.4	32 (54)

Table 3: Maternal and fetal outcomes

Outcome	Frequency (%)
Maternal outcomes	
LSCS	27 (45)
ICU admission	17 (29)
Blood transfusion	13 (27)
Maternal mortality	01 ((2)
Fetal Outcomes	
LBW	21 (35)
IUGR	19 (32)
Preterm	07 (13)
Neonatal death	01 (2)

As per Table 4, raised serum total bilirubin level, direct bilirubin level, and thrombocytopenia were significantly associated with adverse fetal outcomes and low hemoglobin. Maternal outcomes were significantly associated with raised direct bilirubin, raised SGPT, raised alkaline phosphatase and thrombocytopenia, and low hemoglobin ($p<0.05$).

DISCUSSION

HELLP syndrome is defined as increased blood pressure with proteinuria or end-organ dysfunction in absence of proteinuria seen post 20 weeks of gestation [5]. Although, in the present study, HELLP syndrome was the most common syndrome seen (44%) tracked by acute fatty liver of pregnancy (AFLP) (32%), preeclampsia (28%), cholestasis of pregnancy (28%), and HEG (12%). Likewise, in study by Reddy *et al*., HELLP syndrome was most common and was perceived in 33.3% patients, followed by

Table 4: Association of laboratory parameters with adverse maternal and fetal outcomes

Parameters	Category	Adverse fetal outcome	Adverse Maternal Outcome
Hb (g%)	<7	0.02*	0.01*
Total leukocyte Count (cells/µL)	>11000	0.11	0.21
Platelets (cells/µL)	<50000	0.001*	0.001*
Total bilirubin (mg/dL)	>2	0.01*	0.43
Direct bilirubin (mg/dL)	>0.2	0.03*	0.01*
SGOT (U/Lit)	>70	0.32	0.01*
SGPT (U/Lit)	>70	0.31	0.11
Alkaline phosphatase (IU/Lit)	>180	0.45	0.001*
Lactase dehydrogenase (U/Lit)	>600	0.31	0.22
Albumin (gm/dL)	<2.5	0.11	0.32
Total protein (gm/dL)	<8.5	0.17	0.76
Urea (mg/dL)	>6.8	0.34	0.23
Creatinine (mg/dL)	>1.4	0.12	0.41

AFLP in 22.2% and intrahepatic cholestasis of pregnancy in 11.1% patients [6]. Inconsistently, in a study conducted by Suresha *et al*. and Allen *et al*., HELLP syndrome was the second mutual etiology after eclampsia and preeclampsia, correspondingly [1,7]. Satia *et al*., reported viral hepatitis (62%) as the most common etiology monitored by cholestasis of pregnancy (24%) [8]. The pathogenesis of HELLP is still not strong but is supposed to involve abnormalities in placental vasculature and faults in maternal vascular endothelial cells, which consequences in poor perfusion [5]. In developing countries, anemia is a public health problem particularly during pregnancy [9]. Change in blood count is a common spectacle in pregnancy [10-12]. Liver dysfunction was quite obvious in high number of patients due to increased level of bilirubin. SGOT, SGPT, and level of bilirubin were high in 70%, 70%, and 44% of cases, respectively. However, in aalike study, Ronceglia *et al*. reported judiciously increased bilirubin level of 1–10 mg% and hypoglycemia [13]. Shinde *et al*. also reported elevated bilirubin level in the pregnant patients with jaundice compared to non-pregnant patients [14]. In their study, serum bilirubin levels between 11 and 15 mg/dl and between 16 and 25 mg/dl were recorded in 38.4% and 19.2% of pregnant patients, respectively, but among non-pregnant patients, 36.5% had serum bilirubin between 6 and 10 mg/dl [14]. Most common adversarial neonatal outcome was low birthweight (35%) followed by intrauterine growth retardation (32%). About 40% of the neonates were preterm and rate of neonatal death was originate to be 12%. In the present study, percentage of fetal deaths due to jaundice among total perinatal deaths was 12%. Parveen *et al*. also reported low birth weight as the most common adverse fetal outcomes [15]. This can be attributed to the low levels of hemoglobin among mothers, as it limits the oxygen supply to the fetus which results in restriction of intrauterine growth and low birth weight [16]. Bora *et al*. reported the significant association between fetal birth weight and anemia (mild and severe) [17].

CONCLUSION

Overall, hepatic abnormalities during pregnancies consequently have the adverse effect on both maternal and neonatal outcomes. Maternal anemia, thrombocytopenia, coagulopathy, and hyperbilirubinemia are also evident. Early diagnosis of these patients is crucial and may reduce the adverse outcomes of both mother and the new-born.

CONFLICT OF INTEREST

None declared.

SOURCE OF FUNDING

None.

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