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Fetomaternal Outcome in Jaundice Complicating Pregnancy

Archish Desai[1], Sonam Parikh[2], Smriti Mishra[3], Shivangi Gondaliya[4], Sejal Patel[5], Nidhi Patel[6]

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[1]Associate Professor, [2]Assistant Professor, [3,4]Third year Resident, [5,6]First year Resident, Department of Obstetrics and Gynaecology, SMIMER Hospital & Medical College, Umarwada, Surat, Gujarat 395010, India.

Corresponding Author: Sonam Parikh, Assistant Professor, Department of Obstetrics and Gynaecology, SMIMER Hospital & Medical College, Umarwada, Surat, Gujarat 395010, India.

E-mail: smritimishranew@gmail.com

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Abstract

Introduction: Jaundice affects a small share of pregnant women, yet it takes a serious toll on health of both mother and fetus particularly in developing countries like India. Jaundice is responsible for 10% of maternal deaths.

Aim: To find out the maternal and fetal outcome in pregnancy complicated with jaundice in a tertiary care hospital.

Material and methods: Prospective observational study of fetomaternal outcome included 50 ANC patients with jaundice (Serum bilirubin > 1.2 mg/dl; SGOT > 40 IU/L; SGPT > 40 IU/L) admitted in SMIMER hospital during January 2018 to December 2018.

Parameters like age, socioeconomic status, LFT and Viral markers were recorded. Patients were treated in line with standard protocol and fetomaternal outcome were then studied.

Results: Fifty patients had jaundice during pregnancy. The incidence of jaundice was 0.63%. Sixty-eight percent of patients were between 21 and 29 years of age. The most common cause of jaundice in pregnancy was viral hepatitis seen in 52% cases. Maternal mortality was seen in 5 (10%) cases. The common maternal complications were DIC, atonic postpartum hemorrhage, PET, hepatic encephalopathy and multiorgan failure. Perinatal mortality was seen in 16 (32%) cases.

Conclusions: Jaundice in pregnancy has adverse fetomaternal outcome. Viral hepatitis is the most common cause of jaundice in pregnancy. Maternal morbidity and mortality increases with rise in serum bilirubin level. Improvement in health awareness, education and regular antepartum checkups, early referrals end in early diagnosis and careful management of jaundice during pregnancy therefore reducing maternal and fetal mortality and morbidity.

Keywords: Jaundice; pregnancy; Hepatitis; Morbidity; Mortality.

Introduction

Jaundice is defined as a clinical manifestation of hyperbilirubinemia which consists of deposition of bile pigments in the skin, resulting in yellowish staining of the skin and mucous membrane. Normal serum bilirubin level is less than 1 mg/dl. Clinical jaundice is manifested if serum bilirubin level > 2 mg/dl. Jaundice complicates 3 to 5% of pregnancies and is one of the important causes of maternal and neonatal morbidity & mortality worldwide. It is responsible for 10% of maternal deaths.[1] Jaundice in pregnancy can be due to liver diseases unique to pregnancy, prehepatic causes, hepatic causes, posthepatic causes and underlying chronic liver diseases.

(A) Peculiar to pregnancy—cholestatic jaundice, AFLP, Preeclampsia/toxaemia, HELLP syndrome and hyperemesis gravidarum.

(B) Prehepatic causes— Hemolytic anemia

(C) Hepatic causes— Acute viral hepatitis, Drug induced hepatitis, Budd-chiari syndrome and Wilson's disease.

(D) Posthepatic causes— CBD obstruction, gallstones, choledochal cyst and Pancreatitis.

(E) Underlying chronic liver diseases— Liver cirrhosis, chronic hepatitis.

Preeclampsia related liver dysfunction and viral hepatitis are the most commonly encountered causes of jaundice in pregnancy.

India is hyperendemic for viral hepatitis A&E. Viral hepatitis particularly (faeco-oral hepatitis) is fairly common in lower socioeconomic, densely inhabitated areas of urban slums lacking basic hygiene with seasonal increase in incidence throughout summer and monsoon seasons.

Maternal complications that may result include hepatic encephalopathy, ascites, hypoglycemia, renal failure, hematemesis, preeclampsia and PPH. Fetal outcome may include preterm birth (live/IUD), term birth (live/IUD). Prognosis of fetus depends on factors such as underlying cause of jaundice, gestational age at the presentation and the timing of delivery.

Materials and Methods

Place of study: The study was conducted in the department of Obstetrics & Gynecology at SMIMER Hospital, Surat, Gujarat (a tertiary care hospital) from January 2018 to December 2018.

Study design: Prospective observational study.

Inclusion criteria: Antenatal patients with gestational age > 34 weeks with (Serum bilirubin > 1.2 mg/dl) (SGOT >40 IU/L, SGPT > 40 IU/L).

Exclusion criteria: K/C/O Hemolytic jaundice; chronic liver disease.

Methodology: This prospective study of maternal and fetal outcome included 50 ANC patients with jaundice (Serum bilirubin >1.2 mg/dl; SGOT > 40 IU/L;SGPT > 40 IU/L) admitted in SMIMER hospital during January 2018 to December 2018.

Elaborate history and thorough general, systemic & obstetric examination was done. LFT inclusive of serum bilirubin, total protein, serum transaminases, S. ALP, LDH, blood urea and creatinine, coagulation profile,viral markers such as HBsAg, Anti HAV IgM, Anti HCV Ab, Anti HEVIgM antibodies and urine albumin were done. Complete hemogram, serum fibrinogen, urine (routine and micro) and USG abdomen was done. Patients were treated according to standard protocol.

Maternal outcome in terms of mode of termination of pregnancy, maternal complications and maternal end result were noted. Fetal outcome in terms of perinatal morbidity and mortality, NICU admissions & neonatal end result were also assessed.

Results

Fifty cases of jaundice complicating pregnancy were studied during this period. Sixty percent of the cases belong to the 21–29 age group. They were classified according to Kuppuswamy scale. Fifty percent belonged to lower class followed by upper lower class (42%) and lower middle class (8%). Twenty were primigravida (40%) and rest 30 were multigravida (60%)(Table 1).

Table 1: Demographic profile

Parameters	Number of cases	Percentage (%)
Age group (years)		
<20	4	8
21–29	34	68
30–40	12	24
Lower middle class	4	8
Upper lower class	21	42
Lower class	25	50
Primigravida	20	40
Multigravida	30	60

On analyzing the presenting symptoms 82% had jaundice, i.e. S. bilirubin >2 (rest 18% had bilirubin <2 so clinical jaundice was not seen), followed by upper abdominal pain in (74%) cases and yellow color urine in (62%). Other predominant symptoms were fever and nausea/vomiting and signs were hepatomegaly, splenomegaly and Ascites (Table 2).

Table 2: Clinical features

Symptoms & signs	No. of cases	Percentage (%)
Jaundice	41	82
Nausea/vomiting	16	32
Upper abdominal pain	37	74
Yellow color urine	31	62
Itching/clay stools	0	0
Hepatomegaly	10	20
Splenomegaly	10	20
Ascites	2	4
Fever	17	34

Twenty-two patients (44%) had bilirubin between 2 and 5 mg/dl. Seven patients (14%) had bilirubin between 6 and 10 mg/dl. Nine patients (18%) had bilirubin between 11 and 15 mg/dl. Three patients (6%) had bilirubin >16 mg/dl. Twenty-nine patients (58%) had SGOT & SGPT less than 200 IU/L. Thirteen patients (26%) had SGOT & SGPT between 200 and 500 IU/L. Eight patients (16%) had SGOT & SGPT more than 500 IU/L & all of them were the cases of viral hepatitis. Maximum number of cases had ALP less than 400 IU/L i.e. 39 cases or 78%. Five patients (10%) had ALP between 400 and 800 IU/L. Two (4%) patients had ALP more than 800 IU/L (Table 3).

Table 3: Liver function tests

LFT	No. of cases	Percentage (%)
Serum Bilirubin mg/dl		
<2	9	18
2–5	22	44
6–10	7	14
11–15	9	18
>16	3	6
SGPT IU/L; SGOT IU/L		
<200	29;29	58;58
200–500	13;13	26;26
>500	8;8	16;16
ALP IU/L		
<400	39	78
400–800	5	10
>800	2	4

Viral hepatitis was the most common cause of jaundice in pregnancy 52% followed by HELLP (36%) then intrahepatic cholestasis of pregnancy (10%). Among viral causes Hepatitis E was the most common cause of jaundice in pregnancy (42%) (Table 4).

Seventy-four percent of cases had vaginal delivery while rest 26%had LSCS as the mode of delivery. Fifty-two percent had preterm delivery. Out of which 53.8% were live, 7.6% had still birth and rest 38.4% had early neonatal death. Forty-eight percent had term delivery. Out of which 83.3% were live, 16.6% had stillbirth and there was no case of early neonatal death in term babies. Common complications seen in patients were disseminated intravascular coagulopathy (DIC) in 16 cases (32%), PET (26%) and atonic PPH (20%). Blood and its components were given in 36 cases (72%). ICU admission was seen in 26 cases (52%). Total 5 cases (10%) of maternal mortality were present in our study (Table 5).

Table 4: Etiology of jaundice

Etiology	No. of cases (*n*)	Percentage (%)
Viral hepatitis		
A	2	4
B	3	6
C	0	0
D	0	0
E	21	42
Total viral cases	26	52
HELLP	18	36
Intrahepatic cholestasis of pregnancy	5	10
AFLP	1	2

Table 5: Fetomaternal outcome

Outcome of pregnancy	No. of cases (*n*)	Percentage (%)
Preterm delivery	26	52.0
Live	14	53.8
Stillbirth	2	7.6
Early neonatal death	10	38.4
Term delivery	24	48
Live	20	83.3
Stillbirth	4	16.6
Early neonatal death	0	0.0
Vaginal delivery	37	74.0
LSCS	13	26.0
Maternal complications		
DIC	16	32.0
Eclampsia	5	10.0
PET	13	26.0
Atonic PPH	10	20.0
Hepatic encephalopathy	3	6.0
Multiorgan failure	2	4.0

Two cases (40%) mortality was due to fulminant viral hepatic failure with DIC with jaundice in pregnancy. Other causes were severe PET with HELLP with DIC with multiorgan failure, viral hepatitis with fulminant hepatic failure and fulminant hepatic failure due to AFLP. 80% (4/5) cases of maternal mortality was seen in cases with Serum Bilirubin > 10 ng/dl.

Perinatal mortality was seen in 16 cases (32%). Maximum perinatal mortality was seen in cases with viral hepatitis (43.75%). Other causes of perinatal mortality were HELLP (37.5%), Intrahepatic cholestasis of pregnancy (12.5%) and AFLP (6.25%) (Table 6).

Total 42 neonates (84%) cases had low birth weight <2.5 kg. Maximum no. of neonatal death were seen in low birth weight babies < 2.5 kg i.e. (35.71%) (Table 7).

Table 6: Perinatal mortality in relation to etiology

Etiology	No. of cases with perinatal mortality (*n*) = 16	Percentage (%)
HELLP	6	37.5
Viral hepatitis	7	43.75
Intrahepatic cholestasis of pregnancy	2	12.5
AFLP	1	6.25

Table 7: Influence of baby weight on fetal outcome

Baby weight (kg)	No. of babies	Neonatal death	% of neonatal death
<1.5	14	8	57.14
1.5–2.5	28	7	25.0
2.6–3.5	8	1	12.5
>3.5	0	0	0.0

Discussion

Total deliveries during the study period were 7955. Out of which 50 patients had jaundice and the incidence is 0.63%. Sixty-eight percent of the cases belonged to the 21-29 age group. About 50% belonged to lower socioeconomic class followed by 42% upper lower class. Majority were multigravida, i.e. (60%) rest 40% were primi patients.[1] Study done by Pranathi Mitta et al. showed incidence of jaundice as 0.31% which was comparable to our study showing incidence as 0.63%.[2] Study by Swati sharma et al. reported jaundice affecting younger age group of patients, the peak age being 21–25 years (66.6%) and 60% were of lower socioeconomic status and 66.6% were primi.[3] Begum et al. studied about the seroprevalence (IgG anti HEV) of subclinical HEV infection in pregnant women and reported that exposure to hepatitis E was more in lower socioeconomic class.[4]

In the present study, most common symptom was clinical jaundice (82%) (Serum bilirubin 1.2 to 2) and followed by upper abdominal pain (74%). Jayanthi et al. reported 86.27% had yellow coloured urine. Nasuea and vomiting were present in 70.6% of patients. Other symptoms were fever, loss of appetite and upper abdominal pain. Jaundice was present in all the cases.[5]

Three patients (6%) had bilirubin > 16 mg/dl. Eight patients (16%) had SGOT & SGPT more than 500 IU/L. Maximum number of cases had S. ALP less than 400 IU/L i.e. 39 or 78%. Two patients (4%) had ALP more than 800 IU/L. High level of S. bilirubin, SGPT, SGOT levels more than 500 IU/L were associated with *viral hepatitis*. Jayanthi et al. reported 7.84% of patients had serum bilirubin more than 16 mg/dl. The serum transaminase level was below 100 IU/L in 13.72% of patients, 5.88% patients had level more than 500 IU/L. S. ALP was more than 200 IU/L in 37.25%.[5] Harshad et al. also reported that marked elevation of bilirubin & transaminases (10-fold) occurred in viral hepatitis whereas patients with pregnancy associated liver disease like HELLP. Intrahepatic cholestasis of pregnancy and hyperemesis had only 2–3 fold elevation.[6]

Viral hepatitis was the cause in 52% cases and viral hepatitis E comprised 42% of it comparable to the study by Shukla et al. who reported 57%[7] and Harshad et al. reported 47% cases of viral hepatitis.[6] Thirty-six percent cases had HELLP syndrome in present study. Rathi et al.[8] reported 52.3% of cases with liver dysfunction due to Preeclampsia and HELLP syndrome.

In the present study 5 (10%) patients died, 35 (70%) developed complications and 15 (30%) had uneventful recovery. Thirty-two percent had DIC, 26% had PET, 20% had atonic PPH while 6% had hepatic encephalopathy as complications of jaundice. Pranathi Mitta et al. reported that out of 42 total cases 17 patients developed complications. In 5 patients (11.9%) DIC was seen. Renal failure in 3 patients (7.14%) and atonic PPH in 2 patients (4.76%).[2] Jayanthi et al. reported that 7.8% patients died, 35% patients developed complications and 58% had uneventful recovery. Among those who developed complications, 9.8% had atonic PPH, 5.8% had DIC, 7.8% had hepatic encephalopathy. Abruption, hepatorenal failure, esophageal varices was seen in 3.9% each.[5] Blood and its components were given in 36 cases (72%). Pranathi Mitta et al. reported that blood & its components were given in 9 cases (21.42%).[2] ICU admission was seen in 26 cases (52%) in this study. Swati Sharma et al. reported that all patients were kept in ICU for intensive monitoring.[3] Nearly 2% cases required ICU admission in Aprajita et al. study.[9] Intensive care is a necessity in these cases and various studies had ICU admissions ranging from 4.3% to 62.6% in Acharya et al. study.[10]

Total 5 cases of maternal mortality were present in our study. Forty percent mortality was due to fulminant viral hepatic failure with DIC with jaundice in pregnancy. Other causes were severe PET with HELLP with DIC with multiorgan failure, viral hepatitis with fulminant hepatic failure and fulminant hepatic failure due to AFLP. Acharya et al. reported 5 out 30 cases (16.6%) of jaundice in pregnancy died of acute hepatic failure, AFLP and HELLP syndrome. Other associated complications contributing to maternal mortality were hepatorenal syndrome, DIC and Hepatic coma.[10] The factors

responsible for high maternal mortality are poor nutrition, prevalence of anemia, delay in seeking medical advice and delay in referral to the hospital. Many of the patients when brought to the hospital are already in moribund condition and often do not respond to treatment.

Fifty-two percent had preterm delivery and rest 48% had term delivery. Perinatal mortality was 32% in this study and maximum perinatal mortality was seen in cases with viral hepatitis (43.75%). Other causes of perinatal mortality were HELLP (37.5%). Intrahepatic cholestasis of pregnancy (12.5%) and AFLP (6.25%). Maximum no. of neonatal death were seen in low birth weight babies < 2.5 kg (15/42) (35.71%). Jayanthi et al.[5] reported preterm deliveries in 48.8% cases. The higher incidence of preterm delivery was supported by Kumar et al.[11] 66.6% and is due to high fever, increased cytokine release, disturbed hormonal status and debilitating effects of viremia of hepatitis. Perinatal mortality in study done by Jayanthi et al. was 35.5%[5] & Rathi et al. was 35.4%[8] which is comparable to our study. According to Jayanthi et al., causes of neonatal mortality were HELLP syndrome constituting 31.2%, hepatitis E 25%, hepatitis B 12.5% and intrahepatic cholestasis of pregnancy 12.5%.[5] According to Williamson et al. the poor fetal outcome in intrahepatic cholestasis of pregnancy was due to the toxic bile acid level in the fetus causing fetal arrhythmia.[12] Jayanthi et al. reported 53.3% babies below 2.5 kg and among them there was 80% mortality.[5] Shukla et al. also reported 30.8% mortality in low birth weight babieswhich is comparable to our study.[7] Jaundice and Pregnancy is a deadly combination resulting in a very high perinatal as well as maternal morbidity and mortality and requires an early diagnosis and careful management.

Conclusion

Jaundice can result in severe maternal and fetal compromise. Viral hepatitis is the most common cause of jaundice in pregnancy. Increasing public awareness about the various routes of transmission of the different types of infective hepatitis, improving sanitary conditions and habits, imparting health education and knowledge of preventive measures, routine and regular antenatal checkups and viral markers as a part of routine antenatal screening will facilitate in reducing the burden of jaundice in pregnancy. Jaundice in pregnancy should be managed as a team with collaboration of obstetrician, neonatologist, intensivist, physician, gastroenterologist and anesthetist so that early diagnosis & aggressive management can prevent and reduce fetomaternal morbidity and mortality.

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