Original Research Article

A comprehensive study on jaundice in pregnancy with emphasis on fetomaternal outcome

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Abstract

Background: Jaundice affects a small percentage (1-4 per 1000) of pregnant women, yet it is an important medical disorder especially in developing countries like India. Jaundice in pregnancy carries adverse outcomes for both the fetus and the mother. It accounts for 60% perinatal and 14% of maternal deaths. The aim of the study is to know the incidence of jaundice, to evaluate the causes of jaundice and to know the effect of jaundice during pregnancy on maternal and fetal outcome.

Materials and methods: All pregnant women with jaundice admitted in the Department of Obstetrics and Gynecology, King George Hospital, Visakhapatnam between September 2015 and August 2017 were taken up for study.

Results: The incidence of jaundice was 7.22 per 1000 deliveries. Since 92.54% of patients were between 20-35 years of age, maximum number of cases was Primi gravidae. The most common cause of jaundice was HELLP syndrome, hepatitis being the second most common cause. Maternal mortality was 12.74%, the perinatal mortality was 35.71%, prematurity being the commonest cause.

Conclusions: Jaundice in pregnancy has adverse fetomaternal outcome. It should be managed as a team in collaboration of obstetrician, physician, gastroenterologist, anesthetist and neonatologist. Improvement in health education, regular antenatal check-ups and early referrals result in early diagnosis and treatment of jaundice during pregnancy thus reducing maternal and fetal morbidity and mortality.

Key words

Jaundice, Pregnancy, Fetomaternal outcome.

Introduction

Jaundice affects a small percentage (1-4 per 1000) of pregnant women, yet is an important medical disorder especially in developing countries like India. Jaundice in pregnancy carries adverse outcomes for both the fetus and the mother. It accounts for 60% perinatal and 14% of maternal deaths. Causes peculiar to pregnancy are HELLP syndrome, Acute fatty liver of pregnancy, intrahepatic cholestasis, severe hyperemesis and toxemia of pregnancy. Causes concurrent with pregnancy are viral hepatitis, gallstones, hemolytic jaundice or due to drugs administered during pregnancy. The present study analyses the incidence of jaundice in the study population, its various causes and effect on maternal and fetal outcomes. This study will be helpful in better understanding and improving the maternal and perinatal outcome in jaundice complicating pregnancy.

Materials and methods

The study was conducted in the Department of Obstetrics and Gynecology, KGH, Visakhapatnam from September 2015 to August 2017. This prospective study included 102 pregnant women with jaundice admitted in the department during the study period. Elaborate history and thorough general, systemic and obstetric examination were carried out. Liver function tests like serum bilirubin total, direct and indirect, total proteins, albumin and globulin, serum transaminases, serum alkaline phosphatase, clotting time, bleeding time and ultrasonogram, complete hemogram, reticulocyte count, coagulation profile, viral markers study including HBs Ag, Anti HAV IgM, Anti HCV Ab, Anti HEV IgM were done in all patients. Maternal outcome was noted in terms of the mode of termination of pregnancy, maternal morbidity and mortality. Fetal outcome was assessed by perinatal morbidity and mortality.

Results

Total number of antenatal admissions during this period was 14,128. Total number of pregnant women with jaundice was 102. The incidence of jaundice complicating pregnancy during this period in the hospital was 0.722%. The patients in the study group were in the age range from 19 years to 37 years. Nearly 91.18% of the jaundiced patients were between 20 and 35 years. The incidence of jaundice was more common in low socio-economic groups. Maximum numbers of cases were second gravidae 43.14% and primi gravidae were 37.25%. Out of 102 cases, 82 cases (80.39%) presented with jaundice during III trimester (**Table - 1**).

Table - 1: Demographic profile.

Age group	**No: of cases**	**Percentage**
<20 years	6	5.88%
20-35 years	93	91.18%
>35 years	3	2.94%
Booking status		
Unbooked	97	95.1%
Booked	5	4.9%
Gravidity		
Primi gravida	44	43.14%
Second gravida	38	37.25%
Third gravida	18	17.65%
Fourth gravida	2	1.96%
Gestational age		
1st trimester	4	3.92%
2nd trimester	10	9.81%
3rd trimester	82	80.39%

8 Patients had past history of jaundice. 6 patients had history of blood transfusion. On analyzing the presenting symptoms, 25.49% had high colored urine. Nausea and vomiting were present in 15.69% of patients. Other predominant symptoms were fever, loss of appetite and upper abdominal pain. Jaundice was present in all the cases. Other signs were hepatomegaly, splenomegaly, scratch marks and Ascites (**Table - 2**).

3.92% of patients showed positive for bile pigments and bile salts in the urine. The level of S. bilirubin varied widely between 2.1 to 22.4 mg/ dl. 3.92% of patients had high S. bilirubin more than 14 mg/dl. The serum transaminase level was below 100 IU/L in 56.86% of patients,

23.53% patients had level more than 400 IU/L. S. alkaline phosphatase was more than 200 U/L in 50.98% (**Table - 3**).

Table – 2: Symptoms and signs.

Symptoms	**No. of cases**	**%**
Yellowish discoloration of urine/ sclera	26	25.49%
History of fever	31	30.39%
Itching	6	5.88%
Nausea and vomiting	16	15.69%
Abdominal pain	4	3.92%
Clay stools	1	0.98%
Signs		
Jaundice	102	100%
Edema	42	41.18%
Anemia	52	50.98%
Scratch marks	4	3.92%
Hepatomegaly	8	7.84%
Splenomegaly	4	3.92%
Ascites	9	8.82%

Table - 3: Liver function tests.

Serum bilirubin	**No. of cases**	**%**
2-4 mg%	47	46.08%
4-6 mg%	23	22.55%
6-10 mg%	22	21.57%
10-14 mg%	6	5.88%
>14 mg%	4	3.92%
Serum transaminase		
<100 IU/L	58	56.86%
100-400 IU/L	20	19.61%
>400 IU/L	24	23.53%
Serum Alkaline phosphatase		
<200 mg%	48	47.06%
200-800 mg%	50	49.02%
>800 mg%	2	1.96%

HELLP syndrome was the commonest etiology in 31.37%. Hepatitis was the next common etiology in 22.55% Out of this, hepatitis E was detected in 2 cases, hepatitis B in 12 cases. Acute fatty liver of pregnancy, cholestasis and portal hypertension were the other causes. Hemolytic jaundice due to sickle cell anemia was seen in 14.72% (**Table - 4**).

Table – 4: Etiology.

Diagnosis	**No. of cases**	**%**
HELLP syndrome	32	31.37%
Hepatitis	23	22.55%
Sickle cell anemia	15	14.72%
Other hemolytic anemias	3	2.94%
Complicated malaria	12	11.76%
Intrahepatic cholestasis	4	3.92%
AFLP	3	2.94%
Transfusion reaction	3	2.94%
Sepsis	6	5.88%
Gilbert's disease	1	0.98%

Table – 5: Pregnancy outcome.

Pregnancy outcome	**No. of cases**	**%**
Abortion	4	3.92%
Preterm deliveries	51	50%
Term deliveries	44	43.14%
Died without delivery	03	2.94%

Table – 6: Maternal mortality.

Diagnosis	**No. of cases**	**Maternal mortality**	**%**
HELLP syndrome	32	3	2.94
AFLP	3	2	1.96
Complicated malaria	12	2	1.96
Hepatitis	23	2	1.96
Sepsis	6	4	3.92

Table – 7: Perinatal outcome.

Perinatal outcome	**No. of cases**	**%**
Live births - Term	36	36.74
- Preterm	35	35.71
IUD/ Stillbirths - Term	11	11.22
- Preterm	16	16.33

Note: Of 102 patients, 4 had abortions and were excluded in calculating perinatal outcome.

Out of 102 patients, 95 delivered. 3 patients died antenatally and 4 had abortions. 70.59% of patients delivered vaginally. 22.55% patients had caesarean deliveries. Out of 95 patients, 44

patients (44.44%) had term deliveries, 51 patients (51.51%) had preterm deliveries (**Table - 5**).

Maternal mortality was 12.74% (13 out of 102 patients) in jaundice complicating pregnancy. Among 13 deaths, 2 were due to acute fatty liver of pregnancy, 3 died of HELLP syndrome, 2 died of fulminant hepatitis, 2 died of complicated malaria and 4 due to sepsis (**Table - 6**).

Perinatal mortality was 35.71%, which included 11(11.22%) term IUD/stillbirths, 16(16.33%) preterm IUDs and 8(8.16%) early neonatal deaths. Of these, 59.37% were due to prematurity. There were 71 live births (72.45%). Of these 35 were preterm and 36 were term babies (**Table - 7**).

Discussion

Total antenatal admissions during the study period were 14128, of which 102 patients had jaundice and the incidence is 0.72%. The maximum incidence of jaundice was in 3rd trimester and the complications were also high during that period. Harshad, et al., Shukla, et al. and other studies have stated that maximum incidence of jaundice was in III trimester and morbidity and mortality were also higher during III trimester [1, 2].

In present study, high level of S. bilirubin, SGPT and SGOT levels more than 500 IU/ml were associated with viral hepatitis. Harshad, et al. also reported that marked elevation of bilirubin and 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 [1].

Viral hepatitis was the cause in 22.55% cases whereas Shukla, et al. [2] reported 57% and Harshad, et al. [1] reported 47% cases of viral hepatitis.3,4 31.37% of cases had HELLP syndrome in present study. Rathi U, et al. reported 52.3% of cases with liver dysfunction due to preeclampsia and HELLP [3]. Intra hepatic cholestasis of pregnancy was diagnosed in 4 patients. Study had 3 cases of hemolytic jaundice due to thalassemia and autoimmune hemolytic anemia.

In the present study, 12.74% patients died, 32.16 % patients developed complications and 52.26% had uneventful recovery. 7.8% patients had atonic PPH. 5.88% had DIC, 3.92% had hepatic encephalopathy. Abruption and hepatorenal failure were seen in 3.92 % each. Jain S, et al. reported 52 patients with fulminant hepatic failure and concluded that renal dysfunction was the indicator of poor prognosis in patients with fulminant hepatic failure [4]. Rathi U, et al. reported 3 cases of AFLP and among them 2 cases died of DIVC and multiorgan failure [3]. Third patient died of HELLP syndrome, had severe hypertension, proteinuria, ascites delivered a dead born baby, died of DIVC and hepatorenal failure. Rathi U, et al. reported 25% mortality due to preeclampsia associated liver dysfunction [3]. The fourth patient was a case of non-cirrhotic portal hypertension with grade III esophageal varices died due to massive hematemesis at her second trimester. West brook, et al. reported one death in pregnancy due to variceal bleeding [5].

2 cases died due to viral hepatitis, hepatitis B and E were noted one in each. Study by Rasheeda CA, et al. observed that mortality rate of hepatitis E infection in southern India was very low 3-4% compared to high mortality 30-100% seen in studies from Northern India [6]. Study by Harshad, et al., reported that mortality was 41% in pregnancy associated liver disease and 7.5% in viral hepatitis and concluded mortality due to hepatitis E was low [1].

Preterm deliveries were 52.04% (35.71% live births and 16.33% intra uterine deaths). The higher incidence of preterm delivery was supported by Kumar, et al. [7] 66.6% and Harshad, et al. [1] 32% is due to high fever, increased cytokine release, disturbed hormonal status and debilitating effects of viremia of

hepatitis. The perinatal mortality in present study was 33.68% comparable to Rathi U, et al. [3] who reported 35.4% and Kumar, et al. [7] reported 26.5%. Among 32 Neonatal deaths, HELLP syndrome constitutes 31.2%, sepsis 25%, hepatitis B 12.5%, and intrahepatic cholestasis of pregnancy 12.5%. According to Williamson, et al. [8], the poor fetal outcome in intrahepatic cholestasis of pregnancy was due to the toxic bile acid level in the fetus causing fetal arrhythmia. 70.15% babies were below 2.5 kg in present study and among them there was 80% mortality. Shukla, et al. reported 30.8% mortality in low birth weight babies [2].

Conclusion

Although liver dysfunction is infrequently seen in pregnancy, it can result in severe maternal and fetal compromise. Viral hepatitis is the most common cause of jaundice in pregnancy. Generating 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 check-ups and viral markers as a part of routine antenatal screening can help in reducing the burden of jaundice in pregnancy. Jaundice in pregnancy should be managed as a team with collaboration of obstetrics, internal medicine, gastroenterology, anesthesia and critical care so that early diagnosis and aggressive management can prevent and reduce fetomaternal morbidity and mortality.

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