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Research Article

Study of risk factor and feto-maternal outcome in pregnancy with jaundice

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Abstract: Jaundice is defined as yellowish discoloration of skin and mucous membranes due to increase in serum bilirubin levels. Jaundice is clinically visible when bilirubin level exceeds 3mg%, the normal level being 0.2-0.8%. Liver is one of the organs affected during pregnancy due to hormonal and metabolic changes. Metabolic, synthetic and excretory functions of the liver are affected by the increased levels of estrogen and progesterone levels in pregnancy. *Aims And Objective*: To study the etiology of jaundice and maternal outcomes in terms of termination, maternal complications and mortality and neonatal outcomes of pregnancy with jaundice. *Materials and Methods*: This is an observational cross-sectional study including 150 patients of pregnancy with jaundice carried out over 3 years (2019-2022) in a tertiary care hospital of Berhampur, Odisha. Liver function test like serum bilirubin total, direct and indirect, serum protein, albumin and globulin, serum transaminases, alkaline phosphate, CT, BT, CBC, Coagulation profile and viral markers were studied. *Results:* Patient were between age group of 25-30 years from lower socio-economic status with maximum being primigravida. Around 52% of patients presented at a gestational age >38 wks. Around 68% of case had total bilirubin < 5 mg%.100% of patients presented with yellowish discoloration of sclera or urine. 54% of patients presented with severe preeclampsia and eclampsia, 36% patients landed in PPH. 57.33% patients delivered vaginally. *Conclusion*: Jaundice in pregnancy has adverse feto-maternal outcome. It should be managed as a team of Obstetrician in collaboration with Physician, Gastroenterologist, Anesthetist and Neonatologist. Improvement in health education, regular ANC, and early referrals result in early diagnosis and treatment of jaundice during pregnancy and reducing maternal and fetal morbidity and mortality.

Keywords: Jaundice, Etiology, Mode of termination, Maternal mortality.

INTRODUCTION:

Jaundice is defined as yellowish discoloration of skin and mucous membranes due to increase in serum bilirubin levels. (1) Jaundice is clinically visible when bilirubin level exceeds 3mg%, the normal level being 0.2-0.8%. (2) Liver is one of the organs affected during pregnancy due to hormonal and metabolic changes. Metabolic, synthetic and excretory functions of the liver are affected by the increased levels of estrogen and progesterone levels in pregnancy.

Pregnancy with jaundice is a high-risk pregnancy. It carries a grave prognosis for both the mother and fetus and is responsible for 10% of maternal deaths. (3) Incidence of jaundice in pregnancy is 0.4-0.9 / 1000 in India. (4) Jaundice is prevalent in developing countries due to low hygienic conditions, anemia, poor nutritional status and inadequate treatment facilities. (5)

In pregnancy there are a wide variety of physiological changes with alterations in the different parameters. Abnormal liver function tests occur in 3- 5% of pregnancies. Liver function abnormality can represent a physiologic change but elevations of bilirubin, transaminase and prothrombin time almost always indicate apathologic state. The findings such as palmar erythema, spider angiomas which may suggest liver disease may be found normally during pregnancy. (6)

Jaundice in pregnancy is caused by the number of causes, some related and some coincidental. Liver disease complicating pregnancy is divided into 3 general categories. First includes those specifically related to pregnancy, examples are hyperemesis gravidarum, intrahepatic cholestasis, acute fatty liver, hemolysis, elevated liver enzymes and low platelet count (HELLP syndrome). Second category includes acute hepatic disorders that are coincidental to pregnancy, such as acute viral hepatitis. Third category includes chronic liver diseases. (1)

Maternal complications of jaundice in pregnancy include DIC, coagulation disorders, hepatic encephalopathy, APH, PPH, hepatic coma, renal failure, septicemia etc. Adverse fetal outcomes include miscarriage preterm birth, birth asphyxia, stillbirth, meconium staining of amniotic fluid, intrauterine growth restriction and intrauterine deaths.

The occurrence of hepatobiliary disease with or without jaundice during pregnancy provides both the hepatologist and obstetrician with a diagnostic challenge. Advances in understanding and management of liver disorders unique to pregnancy and hepatobiliary disease in general have resulted in a significant improvement in the outcome for both mother as well as the fetus. (7)

Now the global health care system has been challenged from time to time due to the new era of coronavirus infection. Pregnant women infected with coronaviruses are at increased risk of adverse obstetrical outcomes, compared with the general population.(8) Changes in the hormonal levels, altered immunological status, reduced lung volumes due to gravid uterus may predispose pregnant women to a more rapidly deteriorating clinical course.

MATERIAL & METHODS

This is a prospective observational study conducted in the Department of Obstetrics and Gynecology, MKCG Medical College and Hospital during the periodfrom2019-2021 to study the obstetric out comes of jaundice in pregnancy.

Case Selection:

Pregnant women who presented with biochemical and clinical evidence of jaundice to the antenatal clinic (OPD) and emergency (labour room) of department of Obstetrics and Gynecology MKCG Medical College Berhampur, Ganjam, Odisha.

Written informed consent was obtained from all participants and/or their parent or legal guardian, where necessary, before participating in the study.

Data Collection:

The study includes 150 antenatal patients with biochemical and clinical evidence of jaundice. All the antenatal patients who presented with biochemical and clinical evidence of jaundice. All pregnant patients who presented with biochemical and clinical evidence of jaundice to the OPD and labour room were explained about the study and informed consent was taken. Ethical consideration of study was explained to the patients and the patients were asked to give consent after understanding the content. It was explained to the patients that they can withdraw from the study at any time without assigning any reason for it.

Detailed history of all cases was taken including demographics (Name, age residence, educational qualification, socio-economic status), obstetrical profile (parity, gestational age, ANC visits), presenting complaints (Yellowish discoloration of sclera or urine, fever, Abdominal pain, nausea and vomiting, pruritus) and features of preeclampsia and eclampsia.

A thorough clinical examination (General and Obstetrical) was carried out. pulse, BP, temperature, respiratory rate of pregnant ladies were recorded.

Routine and other relevant investigations were done. The investigations included complete blood count; liver function test; serum protein, albumin, real function test; blood sugar values; coagulation profile; serology for hepatitis A, B, C, and E, HIV, and ultrasonography (USG) abdomen in our institution for a case of jaundice complicating pregnancy.

Patients were followed up till discharge or death. Etiology, mode of delivery, maternal outcomes including complications (like postpartum hemorrhage (PPH), disseminated intravascular coagulation (DIC), renal failure, pulmonary oedema, hepatic encephalopathy, shock, abruptio placenta, ICU admission, requirement of blood and blood products, intrauterine death (IUD), near miss cases and maternal death were analyzed. In new born APGAR Score, fetal distress, IUGR, prematurity, neonatal jaundice, NICU admission, neonatal death etc were noted.

Multidisciplinary opinion was sought for all patients from the Department of Medicine, and Pediatrics and our management was modified accordingly.

STATISTICAL ANALYSIS

Statistical analysis was performed using Microsoft Excel Ver. 2019 and data were imported to SPSS Version 21.0 (IBM, IL, Chicago). Parametric numerical data were reported as mean ± standard deviation for continuous variables; nonparametric numerical data were represented as median (range)., Student's t-test and was used to compare numerical variables; Chi square test was used to compare qualitative data; and $P < 0.05$ was considered statistically significant.

RESULTS

**Table 1: Case distribution according to age group (n=150)**

Age group (years)	Number of cases	Percentage (%)
<20	15	10%
20-25	67	44.7%
25-30	42	28%
>30	26	17.3%
Total	150	100%

Table 1 shows that maximum number of cases 44.7% belonged to age group20-25yrs, followed by 25-30yrs age group (28%). The maximum age was 41yrs and minimum age was 17yrs.
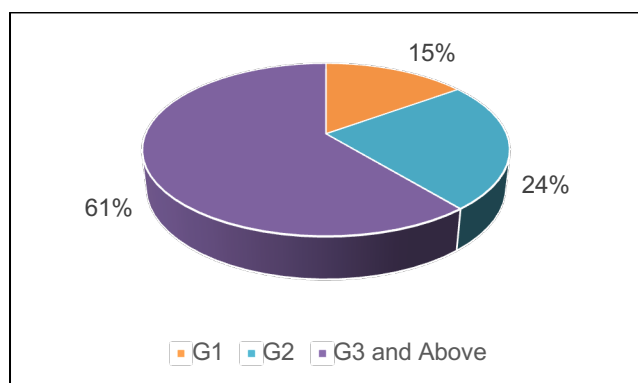
Figure-1 : Case distribution according to Parity (n-150)

Figure 1 shows that 61% of the patients were primigravida and 24% were 2nd gravida. Rest 15% were 3rd gravida and above.
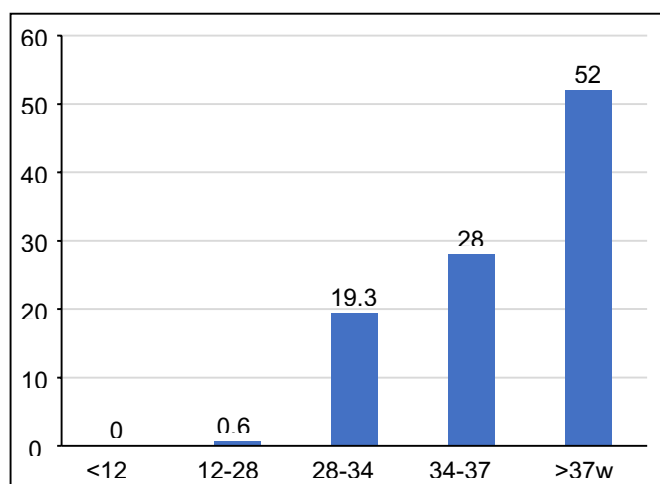

Figure 2 : Distribution of cases according to Gestational age at the time of admission (n=150)

Figure 2 shows that most of the patients (52%) were admitted after 37 weeks and 28% were admitted between 34-37 weeks of pregnancy. 19.33% were admitted between 28-34 weeks, only 1 patient was admitted in 2nd trimester.

**Table 2: Distribution of cases according to the etiology of jaundice (n=150)**

Etiology of jaundice	No. of cases	Percentage %
Severe preeclampsia and eclampsia	81	54%
Hemolytic disease	24	16%
HELLP syndrome	12	8%
Viral hepatitis	11	7.33%
Hyperemesis gravidarum	1	0.67%
Acute fatty liver of pregnancy	6	4%
Intrahepatic cholestasis of pregnancy	8	5.33%
Septicemia	6	4%
DIC	1	0.67%

Table-2 shows that in our study the most common cause of jaundice was severe preeclampsia and eclampsia (54%). 24 cases (16%) were due to hemolytic disease and 12 patients (8%) had HELLP syndrome and 11 (7.33%) had viral hepatitis
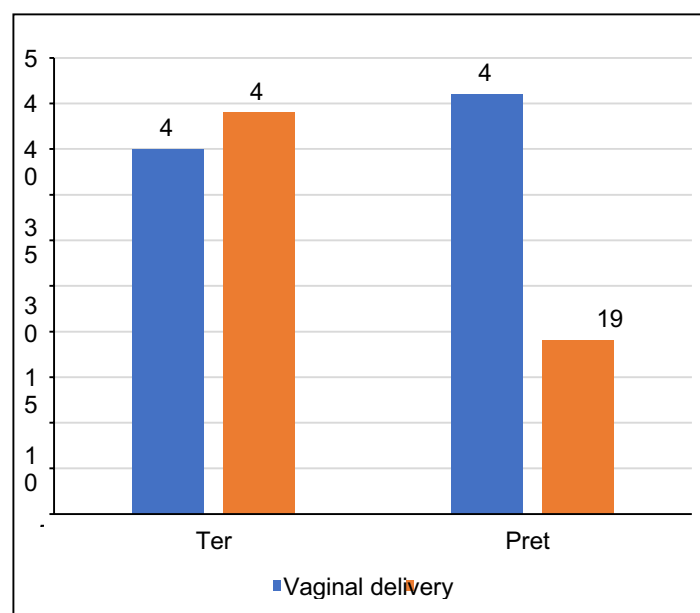
**Figure 3: Mode of delivery and gestational age at termination (n=150)**

Figure 3 shows 86 patients (57.33%) had vaginal delivery and 63 patients (42%) underwent LSCS. Total 84 patients (56%) had term delivery and 65 (43.33%) had preterm delivery, 1 patient had abortion.
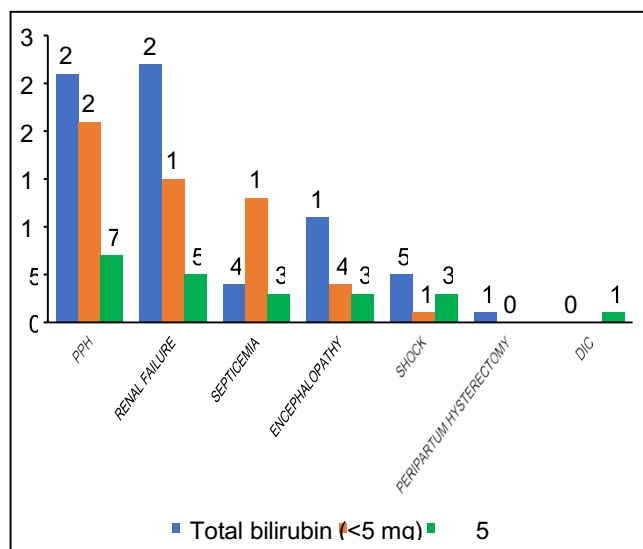
**Figure 4: Maternal complications and relation to serum bilirubin**

Figure 4 shows that most common complication was PPH (36%) followed by renal failure (31.33%), septicemia (13.33%), encephalopathy (12%), shock (6%) and DIC (0.67%). Peripartum hysterectomy was done in 1 patient.

Maternal complications were more when bilirubin level was >10mg%. The correlation is significant as the p value is <0.05
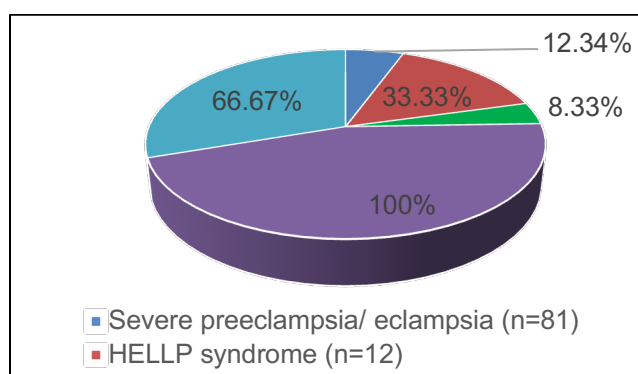
Figure-5 : Contribution of various etiological groups to maternal death

In our study of 150 cases, maternal deaths occurred in 21 cases, the maternal mortality being 14%. Highest mortality occurred in DIC group (100%) followed by septicemia with multiorgan failure (66.67%). It was 33.33% in HELLP syndrome, 12.34% in severe preeclampsia/ eclampsia and 8.33% in hemolytic jaundice (Figure-5).
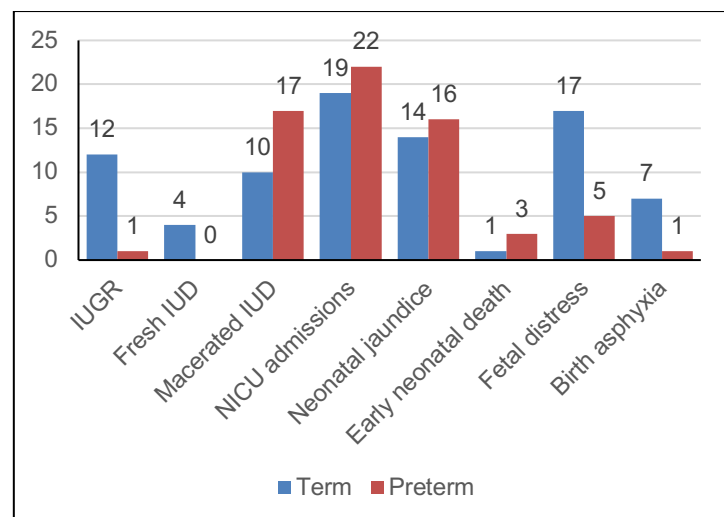
Figure-6: Adverse perinatal outcomes and their distribution according to GA at termination

Figure 6 shows that among 149 births, there were 27 cases with macerated IUD (18.12%), 4 cases (2.68%) fresh IUD and 4 cases (2.68%) early Neonatal death. 13 cases (8.72%) were IUGR babies,41 cases (27.5%) had NICU admissions, 30 (20.13%) had neonatal jaundice, 22(14.76%) had fetal distress, 8 (5.369%) had birth asphyxia.

DISCUSSION

In our study of 150 cases, the maximum number of cases (44.7 %), belonged to age group 20-25 yrs. Most of the cases belonged to lower socio-economic status and were from rural area. 30% were booked cases. 99.33 % cases were in third trimester and 61% were primigravida. All cases had yellowish discoloration of sclera or urine, 68% had mild jaundice and 18% had nausea, vomiting and abdominal pain. Most common cause of jaundice was severe preeclampsia and eclampsia (54% cases) followed by hemolytic disease and HELLP syndrome. 57.33% patients had vaginal delivery and 56% were born term. Among all maternal complications, PPH was the most common (36%) followed by renal failure. Maternal complications were proportional to the serum bilirubin level. There was significant correlation between severity of jaundice and PPH. PPH occurred in 83.33% of cases with deranged coagulation profile. 52% patients required blood or blood products transfusion. There were 21 deaths out of 150 cases of jaundice with the maternal mortality being 14%. Maximum deaths were contributed by severe preeclampsia and eclampsia group. However, case fatality was highest for DIC (100%). Mortality was highest in patients with serum bilirubin >10mg%. There were 35 perinatal deaths and the perinatal mortality was 23.5%. 41 babies were low birth weight (<2.5kg) and among them there was 87.5% mortality.

CONCLUSION

Though liver dysfunction occurs in a small percentage of pregnant women, yet its effect on maternal and perinatal mortality is significant. Early and timely diagnosis coupled with a multidisciplinary approach to the management can save lives of mother and fetus. In a developing country like India, social factors which influence maternal mortality are income inequality; level of access to prenatal care and care in the postpartum period; level of woman's education; the position of the mother in the regional rural/urban area that divide the mother's access to nutrition during pregnancy; the degree of local sanitation; and the caste position of the mother. Coverage of lifesaving health interventions and practices remains low due to gaps in knowledge, policies and availability of resources. Therefore, beginning from health education to the pregnant mother regarding warning signs and immediate visit to the doctor, to medical personnel at primary health centre for early transfer can go long way in lowering maternal and perinatal mortality and morbidity due to liver disorders in pregnancy Generating public awareness about the various routes of transmission of the different types of infective hepatitis, improving sanitary conditions & habits, imparting health education and knowledge of preventive measures, routine and regular antenatal checkups and viral markers as a part of routine antenatal screening can help in reducing the burden of jaundice in pregnancy. The availability of blood and blood products is also very crucial in management of cases with jaundice in pregnancy. NICU facilities will provide prompt treatment of newborns and improve perinatal outcomes. Jaundice in pregnancy should be managed as a team with the collaboration of the department of obstetrics, internal medicine, gastroenterology, anesthesia and critical care so that early diagnosis and aggressive management can prevent and reduce fetal morbidity and maternal mortality.

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