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Original Research Article

Maternal and Fetal Outcome in Pregnancy Complicated by Jaundice

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Abstract

Introduction: Jaundice is a clinical manifestation of increased serum bilirubin levels, either direct or indirect. The incidence of jaundice in India ranges from 0.4/1000- 0.9/1000 deliveries [1]. Pregnancy complicated by jaundice carries a grave prognosis for both the mother and the fetus, and is responsible for high maternal and perinatal mortality rates. Liver disease in pregnancy is an important medical disorder seen more in the developing countries than in the developed ones. This study analyzes the causes and the feto-maternal outcome in the pregnancy which is complicated by jaundice. Liver function tests are deranged in 3% to 5% of pregnancies because of many potential causes and the clinical outcomes ranges from self-limiting to rapidly fatal.

Objective: To determine the maternal outcome in terms of mode of termination of pregnancy, maternal morbidity and mortality in pregnancy complicated by jaundice and to identify the relation of maternal morbidity and mortality in relation to on- admission serum bilirubin level and to assess the fetal outcome in terms perinatal morbidity.

Materials and Methods: A prospective observational study conducted in the Department of Obstetrics and Gynaecolgy, Kamla raja hospital, Gwalior, M.P for a period of 2 yrs. The study included 100 antenatal women admitted with total serum bilirubin levels >1.2 mg/dl. Detailed history taking and examination followed by required investigations were done and maternal and fetal outcome was analyzed.

Results: HELLP remains the commonest cause of jaundice, either HELLP only, or associated with viral hepatitis or pre-eclampsia or eclampsia. Second most cause is the viral hepatitis. The incidence of post-partum hemorrhage was found 12%, 4% had hepatic encephalopathy, 6% had multi organ dysfunction syndrome. Amongst the total maternal deaths, the percentage of deaths in women with pregnancy complicated by jaundice was found to be 9.3% .In the total Maternal deaths of women having pregnancy complicated by jaundice, MODS i.e multi organ dysfunction syndrome was found the leading cause of death (35 %) .The initial level of bilirubin at the time of admission if >10mg/dl is associated with poor maternal outcome and high maternal mortality rate (80%).Majority of the babies were born preterm. Incidence of low birth weight was found to be 59%. Incidence of Intrauterine fetal death was found to be9.0% .29.6% of the babies got admitted in NICU in view of preterm, prematurity(75% of total NICU admission), low birth weight and fetal distress due to meconium stained liquor aspiration (25% of total NICU admission).

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Introduction

Jaundice is a clinical manifestation of increased serum bilirubin levels, either direct or indirect. The incidence of jaundice in India ranges from 0.4/1000-0.9/1000 deliveries [1]. Pregnancy complicated by jaundice carries a grave prognosis for both the mother and the fetus and is responsible for high maternal and perinatal mortality rates. Liver diseases in pregnancy are multi factorial in origin. Jaundice in pregnancy can be classified in 3categories:

- Jaundice specific to pregnancy such as hyperemesis gravidarum (HG), intra hepatic cholestasis of pregnancy (ICP), acute fatty liver of pregnancy (AFLP), preeclampsia / eclampsia and HELLP syndrome. These occur in patients' previously healthy liver and usually resolve spontaneously in puerperium.

- Pregnancy in preexisting chronic liver disease, e.g. cirrhosis of liver, chronic viral hepatitis, Wilson‘s disease.

- Pregnancy with acute viral hepatitis which may lead to fulminant hepatic failure, e.g. hepatitis E, hepatitis B, HSV, and drug induced hepatitis.

Some of the normal physiological changes in pregnancy e.g palmar erythema, lithogenic bile, cholestasis etc may mimic liver disease, but can be attributed to increase serum estrogen and progesterone [2]. Physiological changes during pregnancy leads to increase in alkaline phosphatase levels 3 to 4- fold and no change in liver transaminase levels (AST, ALT), GGT, bilirubin level, prothrombin time, blood flow to the liver [3]. Jaundice during pregnancy is considered as high-risk pregnancy carrying grave prognosis for both mother and foetus. Up to 3% of all pregnancies are complicated by liver disorders [4]. Jaundice in pregnancy carries adverse feto-maternal outcome and accounts for 60% of perinatal and 14% fraternal mortality [5]. The maternal complications that commonly occur are hepatic encephalopathy, disseminated intravascular coagulation, renal failure, shock, postpartum hemorrhage, pyrexia and also death.

The aim of the study is to identify the various etiologies and distribution of jaundice with reference to age, parity and trimesters and also to determine the fetal and maternal outcome among the pregnant women affected by jaundice.

Objective:

- To determine the maternal outcome in terms of mode of termination of pregnancy, maternal morbidity and mortality in pregnancy complicated by jaundice.

- To identify the relation of maternal morbidity and mortality in relation to on-admission serum bilirubin levels.

- To assess the fetal outcome in terms of abortion, perinatal morbidity

Materials and Methods

Study design: A prospective observational study

Study Place: Department of Obstetrics and Gynaecolgy, Kamla raja hospital, Gwalior, M.P

Sample size: 100

Duration of study: 2years (Oct.2019 to Sep.2021)

Inclusion Criteria: Antenatal women with total serum bilirubin >1.2 mg/dl.

Exclusion Criteria: Antenatal women with total serum bilirubin < 1.2 mg/dl

Procedure: 100 women with pregnancy complicated by jaundice were admitted and treated at Kamla Raja hospital, Gwalior from October 2019 to September 2021 were studied. Informed consent was taken from all subjects willing to participate before enrolling them into study.

- A detailed history including patient‘s age, socioeconomic status, booking status and details of menstrual history to estimate the expected date of delivery.

- Patients were enquired in detail regarding their presenting complaints and duration of illness like nausea, vomiting, pruritis, anorexia, yellow coloured urine, pale stools, pedal edema, bleeding tendency, joint pain, fever and others.

- Past history of jaundice especially in previous pregnancy and history of blood transfusions were elicited.

- General examination, systemic examination and obstetric examinations were carried out.

- Following investigations were carried out- Complete blood count (Hb, TLC, platelet count), ABO- Rh-typing n ,Viral markers: HBsAg, HCV, HIV, HAV

Liver function tests-total serum bilirubin, direct and indirect serum bilirubin levels,

SGOT, SGPT, ALP. Coagulation profile: BT, CT, PT-INR, a-PTT Renal function tests.

Random blood sugar test. Urine routine and microscopy USG whole abdomen USG obstetrics

- Labour was closely monitored. Jaundice perse was not an indication for cesarean section. Vaginal delivery with close monitoring was preferred and cesarean section was done only for obstetric indication. All precautions were timely taken to prevent maternal complications like post-partum hemorrhage. Cross matching fresh blood and blood products were kept ready as alteration in coagulation profile was expected in jaundice complicating pregnancy.

- Atonicity was managed with oxytocin drip, injection carboprost if required.

- Patients were kept in labour ward for close observation, or shifted to obstetric ICU as per patient‘s health need.

- Soon after the delivery, all babies were examined by a pediatrician. Alive or dead, sex, gestational age at birth, weight, APGAR score and presence or absence of any congenital anomalies, need for NICU admission were looked for and noted. As per Pediatrician advice, sick babies were admitted

in preterm ward for intensive care.

- The maternal outcome was noted in terms of the mode of delivery, maternal complications and maternal mortality. The relation of maternal morbidity and mortality to the admission serum bilirubin level was analyzed.
- To identify various etiologies and distribution of jaundice with reference to age, parity and trimesters.

Fetal outcome was assessed by perinatal morbidity and mortality.

Observation and Results

Table 1: Distribution of cases according to biochemical parameters

S.No	Parameter	Number	Percentage
1	**Haemoglobin**		
	Very severe anemia (<4gm/dl)	2	2%
	Severe anemia (4-6.9 gm/dl)	11	11%
	Moderate anemia (7-9.9gm/dl)	76	76%
	Mild anemia (20-10.9gm/dl)	4	4%
	Normal (>11gm/dl)	7	70%
2	**Platelet count**		
	<50000	6	6.0%
	50000-1 lac	28	28.0%
	>1lac-1.5lac	26	26.0%
	>1.5lac(normal)	40	40.0%
3	**Random blood sugar**		
	In normal range	95	95%
	Increased	5	5.0%
	Decreased	0	0
4	**Renal function test**		
	In normal range	95	95.0%
	Increased	5	5.0%

The mean hemoglobin in this study group is 7-9.9 gm/dl, which is around 76%. Out of these 100 patients studied, 60% of the patients had reduced platelet count, 6% had counts <5000/mm^3,28% had counts ranging between 50000-1lac/mm^3 and 26% had counts >1.0 lac/mm^3 but<1.5lac/mm^3.
5% of the women had raised random blood sugar and renal function tests.

Table 2: Distribution of cases based on liver function tests

S.No	Parameters	number	Percentage
1	**Initial Total bilirubin(mg/dl)**		
	Upto 5 mg/dl	65	65%
	5-10mg/dl	30	30%
	>10mg/dl	5	5%
2	**Direct Hyperbilirubinemia**		
		5	5.0%
3	**Indirect Hyperbilirubinemia**		
		95	95.0%
4	**SGOT**		
	In normal range	67	67.0%
	Elevated	33	33.0%
5	**SGPT**		
	In normal range	64	64.0%
	Elevated	36	36.0%
6	**Bleeding time**		
	In normal range	85	85.0%
	Elevated	15	5.0%
7	**Clotting time**		
	In normal range	85	85.0%
	Elevated	15	15.0%
8	**PT-INR**		
	In normal range	85	85.0%
	Elevated	15	5.0%

95% of the patients had indirect Hyperbilirubinemia whereas 5% had direct Hyperbilirubinemia.

Table 3: Distribution of viral markers

Type of viral marker	Number	Percentage
Sero-negative for HBsAg and HCV antigen	85	85.0%
HAV positive	0	0%
HBsAg positive	14	14.0%
HCV positive	01	1.0%

Out of 15 patients affected with viral hepatitis, 14 patients were affeted with Hepatitis B, 1 with hepatitis C, rest 85% of all patients were sero-negative for hepatitis B and hepatitis C.

Table 4:Pregnancy outcome in terms of mode of delivery

S.no	Pregnancy outcome	Number (n)	Percentage (%)
1	Full-term vaginal delivery	23	23.0%
2	Pre-term vaginal delivery	27	27.0%
3	Term LSCS	18	18.0%
4	Pre-term LSCS	20	20.0%
5	Instrumental delivery	0	0
6	Abortion (All II spontaneous abortion)	05	5.0%

50 percent of the patients got delivered per vaginally and 38% patient underwent LSCS. Total of 47% patients delivered at pre-term, 41% patients delivered at pre-term. 5% of the patients had abortion.

Table 5: Distribution of cases according to etiology of jaundice

Etiology	Number(n)	Percentage(%)
Intra hepatic cholestasis of pregnancy	12	12.0%
HELLP	25	25.0%
HELLP with severe pre-eclampsia	04	4.0%
HELLP with eclampsia	05	5.0%
HELLP with viral infection	01	1.0%
Mild PIH/ Severe preeclampsia/eclampsia	10	10.0%
AFLP	0	0
Obstructive jaundice	04	4.0%
Viral hepatitis	18	18.0%
Hyperemesis gravidarum	05	5%
HG with wernicks	0	0
Hemolytic jaundice	01	1.0%
Undiagnosed	17	17.0%

The most common cause for jaundice found in the studied population was HELLP syndrome which was seen in around 34% of the patients, either only as HELLP or associated with severe pre-eclampsia or eclampsia or viral hepatitis.

Whereas viral hepatitis was found to be the second most common cause of jaundice in this study.

Table 6: Maternal complications observed in the cases

Type of complication	Number	Percentage
ICU admission	46	46.0%
Pre-eclampsia eclampsia	19	19.0%
Preterm labour	47	47.0%
Post-partum hemorrhage	12	12.0%
Encephalopathy	04	4.0%
Need for blood /blood product transfusions	90	90%
MODS	06	6.0%
DIC	03	3.0%
Maternal death	17	17.0%

In our study, it was found that preterm labour (47%) was precipitated in most of the patients, such that either they got vaginally delivered or LSCS due to certain fetal complication sex- MSAF, PROM etc.

12% of the patients had post-partum hemorrhage where uterine atonicity remains the major cause and traumatic in rest of the cases.

90% of the patients had requirement for blood or blood products transfusions.

Around 46% of the women needed ICU admissions.

Out of 100 patients, 17 patients got certified, out of

which 4 developed MODS and 5 had DIC.

Table 7: Causes attributing to maternal mortality in pregnancy complicated by jaundice

Cause of death	Number	Percentage
MODS	06	35.0%
DIC leading to multiple hemorrhages and MODS	03	17.6%
Hepatic encephalopathy	04	23.5%
Hepato-renal syndrome	04	23.5%
AFLP	0	0
Cerebrovascular accident	02	11.7%
Pulmonary edema	03	17.6%
Sepsis	02	11.7%

The most leading direct cause of maternal mortality in pregnancy complicated by jaundice in our study is found to be multiple organ dysfunction syndrome in 35% of all deaths. The other causes were DIC leading tp multiple hemorrhages and ultimately MODS.

Hepatic encephalopathy and hepatorenal syndrome were also found in majority of the cases.

Table 8: No. of maternal mortality in relation to initial levels of bilirubin

Initial bilirubin levels	Total	Expired	Recovered
<5mg/dl	65	06 (9.2%)	59 (90.8%)
5-10mg/dl	30	07 (23.3%)	23 (76.7%)
>10mg/dl	05	04 (80.0%)	01 (20.0%)
	100	17(17.0%)	83(83.0%)

Table 9: Fetal outcome

Fetal outcome	Number	Percentage
Full term	41	46.5%
Pre-term	47	53.4.0%
Low birth weight	52	59.0%
IUGR	08	9.0%
IUFD	07	7.9%
Abortus	05	5.0%

Maximum patients delivered preterm babies, which were around 47% of the total delivered.

Table10: Causes of NICU admission of the babies

	Number	Percentage (%)
Preterm /prematurity	18	75%
LBW	18	75%
MSAL aspiration	06	25%

Discussion

In our study, HELLP remains the commonest cause of jaundice, either HELLP only, or associated with viral hepatitis or pre-eclampsia or ecclampsia (35%). Second most cause is the viral hepatitis (18%). About the associated complications, the incidence of post-partum haemorrhage was found 12%, 4% had hepatic encephalopathy, 6% had multi organ dysfunction syndrome. Amongst the total maternal deaths, the percentage of deaths in women with pregnancy complicated by jaundice was found to be 9.3%. In the total maternal deaths of women having pregnancy complicated by jaundice, MODS i.e multi organ dysfunction syndrome was found the leading cause of death (35%). DIC was found among 17.6% and hepatic encephalopathy and hepato-renal syndrome among 23.5%. Maternal deaths were directly proportional to the level of total serum bilirubin. According to this study the initial level of bilirubin at the time of admission if >10mg/dl is associated with poor maternal outcome and high maternal mortality rate (80%).

About fetal outcome, Majority of the babies were born preterm. Incidence of low birth weight was found to be 59%. Incidence of Intrauterine fetal death was found to be9.0% .29.6% of the babies got admitted in NICU in view of preterm, prematurity (75% of total NICU admission), low birth weight and fetal distress due to meconium-stained liquor aspiration (25% of total NICU admission).

In other studies, done by Meena et al [6], Swati et al [7], Brijesh et al [8] and Krishna moorthy et al [9], viral hepatitis is the commonest cause of jaundice.

In the study Meena et al, 20% had hepatic encephalopathy, 11% had renal failure and postpartum hemorrhage, 44% had DIC, 9% had multi organ failure whereas in study done by Swati et al, 13.3% had multi organ failure, renal failure, post-partum hemorrhage, 20 % had DIC.

In the study conducted by Brijesh et al, 21.4% had bilirubin >10mg/dl at the time of admission, in study by Pranathi mitta et al [10], 14.3% had bilirubin level >10 mg/ dl at the time of admission.

In study done Swati et al and Pranathi mitta et al fetal maturity was found higher and babies were born term. Incidence of low birth weight (59%), which is comparable with the study done by Meena et al.

Incidence of Intrauterine fetal death in our study was found to be 9.0% which was comparable with study done by Swathi et al. The incidence of preterm deliveries were comparable with study done by Brijesh et al, in our study it was found to be 53.4%.

Conclusion

The study was conducted in 100 women with pregnancy complicated by jaundice. The most common age group affected by this disease is 21-25 years and it's mainly found in the third trimester. Primigravidas were most commonly affected by the disease. 93% of the patients were unbooked. The rate of LSCS was less compared to vaginal deliveries in our study. Most common cause of the jaundice found in our study was HELLP, as sole cause or associated with severe pre-ecclampsia or ecclampsia or viral hepatitis (35%), followed by viral hepatitis, hepatitis B being the commonest virus (15%). Out of 100 women, 88 undergo delivery, in which 47 were preterm and 41 were Term, 81 were born alive and 7 were IUFD. In our study, the most common cause of maternal mortality in pregnancy complicated by jaundice is Multiple organ dysfunction syndrome. The present study shows a higher incidence of maternal mortality in pregnancy complicated by jaundice and more in cases who had admission bilirubin levels >10 mg/dl when compared to those having bilirubin levels <10mg/dl. The common maternal complications occurred were post-partum hemorrhage, hepatic encephalopathy, acute renal failure. 29.6% of the babies got admitted in NICU in view of preterm, prematurity (75% of total NICU admission), l ow birth weight and fetal distress due to meconium-stained liquor aspiration (25% of total NICU admission)

Jaundice in pregnancy is associated with high maternal morbidity and mortality and perinatal morbidity rates. The factors responsible for a high maternal mortality in our country may be due to delay in seeking medical advice, lack of awareness, poor nourishment, poor hygiene, prevalence of anemia, and delay in referral to the hospital.

Many of the patients when brought to the tertiary health care system are already in moribund condition and often do not respond to the treatment.

In order to prevent the morbidity and curtail the mortality rate among the women with pregnancy complicated by jaundice, following points if taken care of, health of the patients will be hugely benefitted.

- Awareness regarding regular antenatal checkups for early diagnosis and treatment, thus preventing undue complications.
- Awareness regarding vaccination against hepatitis B antigen, proper sanitation, health and hygiene.
- Awareness regarding the signs and symptoms of the disease, motivating the women to approach health facility and seek advice as soon as possible.
- Outreaching of health facilities and health personnel's to the remote areas. Proper guidelines for referral to higher institutes if the condition seems complicated, avoiding undue delay.
- Encouraging regular follow up, specifically in high-risk pregnant women.
- Special concern and complete antenatal workup in pregnant women with raised blood pressure.

References

1. Reddy MG, Prabhakar GC, Sree V. Maternal and fetal outcome in jaundice complicating pregnancy. JNTR Univ Health Sci. 2014; 3:231-3.
2. Misra R. Ian Donald's Practical Obstetric Problems, 7th edition. Lippincott Williams and Wilkins; 2014.
3. Mitra AK, Patki PS, Mitra SK. Liver disorders during pregnancy and their management. The Antiseptic. 2008; 105 (4):193-6.
4. Ch'ng CI, Morgan M, Hainsworth I. Prospective study of liver dysfunction in pregnancy in South West Wales. Gut. 2002; 51(6):876-80.
5. Nagaria T, Agarwal S. Feto maternal outcome in jaundice during pregnancy. J Obstet Gynecol India. 2005; 55(5): 424-7.
6. Meena N. Satia, Madhavi Jandhyala. A study of feto-materna outcomes in cases of jaundice at a tertiary care centre. 2016:5(7):2352-2357.
7. Sharma S, Aherwar R, Jawade S. Maternal and fetal outcome in jaundice complicating pregnancy: a prospective study. International Journal of Reproduction Contraception. 2016 April; 5(4):1084–87.
8. Brijesh J. Patel, Rajal V. Thaker, Jagrutri M. Shah, Bhavna N. Mewada Study of feto-maternal outcome in patients of jaundice in third trimester of pregnancy. 2015;4(6):1961-1964.
9. Krishna Moorthy J, Murugesan A. Jaundice

during pregnancy: maternal and fetal outcome/ International Journal of Reproduction Contraception. 2016 Aug;5(8):2541–45.
10. Pranathi Mitta, Sujaya V Rao. Feto-maternal Outcome In Jaundice Complicating Pregnancy. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). 2016Oct; 15(10Ver.II): 72–76.