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**Research Article**

# MATERNAL AND FETAL OUTCOME AMONG PREGNANT WOMEN WITH JAUNDICE ATTENDING A TERTIARY CARE INSTITUTE IN NORTHERN INDIA

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**ABSTRACT**

**Background:** Jaundice in pregnancy is responsible for 10% of maternal deaths but more importantly it carries a grave prognosis for both the fetus and the mother. Though it only affects a small proportion of pregnant women population, yet it takes a major toll on health of both mother and fetus especially in developing countries like India. The aim of the study was to assess maternal and fetal outcome of jaundice during pregnancy.

**Methods:** 126 pregnant women with jaundice attending the Institute of obstetrics and gynaecology, IGMC, Shimla in year 2016-2017 have been studied for etiology, clinical profile and pregnancy outcome.

**Results:** Age group of 25-29 years was most affected (35.72%). Majority (62.7%) belongs to rural locality, were multi gravidae (60.3%) and have period of gestation more than 28 weeks (89.7%). Viral hepatits and intra hepatic cholestasis were (33.3%) the most common etiologies for jaundice. Neonatal mortality was found to be 8.25% Prematurity (n-4) birth asphyxia (n-2) and sepsis (n-1) was the causes of mortality. 13 study patients died in current study i.e. four with viral hepatitis, two with PIH and one with Srcub infection resulting in maternal mortality of 7.14%

**Conclusions:** Feto-maternal outcome in current study was relatively poor. Jaundice and pregnancy in combination, result in high morbidity and mortality, and warrant an early diagnosis and careful management.



## INTRODUCTION

Liver disease in pregnancy may manifest just as a benign disease with abnormal elevation of liver enzyme levels with good maternal or fetal outcome, or can manifest as a serious entity resulting in liver failure and increased morbidity and mortality to the mother and her fetus. [1] Jaundice is commonly referred term for clinical manifestation of underlying liver diseases though not exclusively. It affects a small proportion of pregnant women but is responsible for 10% of maternal deaths. More importantly it is known to cause serious fetus and the mother morbidities. [2]

It could be peculiar to the pregnancy such as acute fatty liver of pregnancy, recurrent cholestatic jaundice in pregnancy and jaundice complicating toxemia of pregnancy. It can be concurrent with pregnancy such as due to infective pathology like viral hepatitis or due to gallstones or it could be due to drugs administered during pregnancy. [3]

Obstetrics and gynecology department, IGMC Shimla being a tertiary care institute and referral unit, is catering a huge part of pregnant women population from the northern region of Himachal Pradesh. Shimla is also happen to be the epicenter of jaundice outbreaks especially Hepatitis E virus infection which is known to have very bad outcome in pregnancy. [4,5] This study will be helpful in better understanding of jaundice in the pregnancy in this region of country and provides insights for improving the maternal and perinatal outcome. Present study is an effort to determine the causes of the jaundice and its distribution in the population. Pregnancy outcome in term of fetal/maternal morbidity and mortality has also been studied.

## MATERIAL AND METHODS

Current study was conducted in the department of Obstetrics & Gynaecology, [Kamla Nehru State Hospital for Mother & Child] Indira Gandhi Medical College, Shimla, for a period of one year i.e. August 2015 through July 2016. Prospective cohort of 145 pregnant women with single intra uterine

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pregnancy with clinical or biochemical evidences of liver dysfunction were included in the study. A detailed history, clinical and obstetric examination and laboratory investigations were done to determine the etiology of jaundice in every patient. All subjects were followed up under the guidance of hepatologist up to two weeks of delivery for determining pregnancy outcome. Pregnancy was supervised as per the protocol of the hospital and admission advised as and when required. Information from 126 patients has been analyzed to determine the results as 19 patients were lost to follow up during study period.

Prior permission has been taken from institute ethical committee to conduct the study. Informed written consent has been obtained from each study participants after explaining them the purpose of study. Descriptive statistics has been used in from of frequencies and percentage to expresses the results.
For the purpose of etiology following definitions has been used in current study:

The derranged LFTs [6]: TSB > 1.2mg % , ALT > 55 U/L , AST > 48 U/L , ALP > 115U/L

[In addition viral markers study (anti HAV, HbsAg, anti HCV, anti HEV), hepatobiliary ultrasound, PIH workup (CHG, platelet count, LDH, 24 hr urinary protein, RFT, Fundus),coagulation profile, urinary ketones, uric acid, were carried outas and when required]Acute fatty liver of pregnancy: [7] Six or more of the following features in absence of another explanation; [Vomiting, Abdominal pain, Polydipsia/polyuria, Encephalopathy, Elevated bilirubin, Hypoglycaemia, Elevated urate, Leucocytosis, Ascites or bright liver on ultrasound scan (USS), Elevated transaminase, Elevated ammonia, Renal impairment, Coagulopathy, Microvesicular steatosis on liver biopsy.

HEPL Syndrome: [8] Elevated AST > 70 u/l, Low platlet count <100 x 109/l, Haemolysis (lactate dehydrogenase (LDH) >600 u/l.

Obstetric cholestasis: [9] Pruritis with elevated serum transaminase and /or bile acids in the second or third trimester.

Pre-eclamptic liver dysfunction: [10] Elevated liver enzymes or bilirubin in the presence of hypertension, proteinuria, and oedema after 20 weeks of gestation.

***Observations***

A total of 4,798 deliveries were conducted during the study period, out of which 145 pregnant subjects were diagnosed to have abnormal liver function tests resulting in an Incidence of 3.02%. Out of total 145 subjects, 126 subjects completed follow up while19 subjects were lost to follow up. 63% of the patients were in the age group between 21 to 30 years. Majority (62.7%) belongs to rural locality, were multi gravidae (60.3%) and have period of gestation more than 28 weeks (89.7%). (Table 1)

**Table 1** Demographic profile of study participants (n-126)

| Age groups | Frequency (n-126) | Percentage (%) |
|---|---|---|
| <20 | 25 | 19.84 |
| 21-24 | 34 | 26.98 |
| 25-29 | 45 | 35.72 |
| >30 | 22 | 17.46 |
| **S.E. Class** | | |
| Class I | 14 | 11.11 |
| Class II | 17 | 13.50 |
| Class III | 47 | 37.30 |
| Class IV | 28 | 22.22 |
| Class V | 20 | 15.87 |
| **Locality** | | |
| Urban | 47 | 37.30 |
| Rural | 79 | 62.70 |
| **Gravida** | | |
| Primigravidae | 50 | 39.68 |
| Multigravidae | 76 | 60.32 |
| **Period of gestation** | | |
| <28 Weeks | 13 | 10.32 |
| 28- 36 Weeks | 65 | 51.58 |
| > 36 Weeks | 48 | 38.10 |

Yellowish discoloration of eyes/skin (37.3%) was the most common clinical finding among study participants followed by nausea/vomiting (34.1%) and pruritis (33.3%). Other predominant symptoms were high colored urine, malaise, anorexia, myalgia and athalgia. (Table 2)

**Table 2** Clinical profiles of the study participants (n-126)

| Chief complaint | Frequency (n=126) | % age |
|---|---|---|
| Pruritis | 42 | 33.33 |
| Yellowish discoloration of eyes/skin (Jaundice) | 47 | 37.30 |
| Nausea/ vomiting | 43 | 34.13 |
| Malaise/ myalgia/ arthalgia | 41 | 32.53 |
| High colored urine | 38 | 30.16 |
| Loss of appetite | 36 | 28.57 |
| Abdominal discomfort | 21 | 16.67 |
| Headache/peripheral edema | 13 | 10.32 |
| Altered sensorium | 10 | 7.93 |
| Eclampsia | 9 | 7.14 |
| Non specific/ miscellaneous | 21 | 16.67 |

All the patients had raised serum trans-aminase. 48.4% of the women had total serum bilirubin level more than 2 mg%. 30.2% had positive viral serology. (Table 3)

**Table 3** Laboratory findings of the study participants

| Lab value | Frequency (n=126) | %age |
|---|---|---|
| Raised serum trans-aminases | 126 | 100 |
| Bilirubin (TSB > 2mg%) | 61 | 48.42 |
| Creatinine (>1mg/dl) | 21 | 16.67 |
| Platelets (<$100\times10^9$/l) | 29 | 23 |
| Fibrinogen (decreased) | 12 | 9.52 |
| Prothrombin time (raised) | 26 | 20.63 |
| Evidence of Hemolysis (present) | 14 | 11.11 |
| Hypoglycaemia | 11 | 8.73 |
| Positive viral serology | 38 | 30.15 |

Viral hepatits and intra hepatic cholestasis were (33.3%) the most common etiologies for jaundice in current study followed PIH (26.1%). (Table 4)

**Table 4** Etiology of Jaundice among study participants

| Etiology | Frequency (n=126) | %age |
|---|---|---|
| 1. Viral hepatitis | 42 | 33.3 |
| 2. Intrahepatic cholestasis of pregnancy | 42 | 33.3 |
| 3. PIH associated liver dysfunction | 33 | 26.19 |
| a. Pre-eclamptic liver diseases | 12 | 9.52 |
| b. Partial HELLP | 12 | 9.52 |
| c. Complete HELLP | 9 | 7.14 |

| | | |
|---|---|---|
| syndrome | | |
| 1. Others | 9 | 7.14 |
| a. Non- alcoholic fatty liver disease | 1 | 0.79 |
| b. Acute fatty liver of pregnancy | 1 | 0.79 |
| c. Scrub typhus | 1 | 0.79 |
| d. Sepsis | 1 | 0.79 |
| e. Iatrogenic (drug induced) | 1 | 0.79 |
| f. Diagnosis obscure | 4 | 3.17 |

33.3% women experienced pre term labour among study participants, 19% had IUGR while 11.9% had intrauterine death. 25.4% of the participants underwent cesarean section.

**Table 5** Pregnancy outcomes

| Outcome | Frequency | % age |
|---|---|---|
| Abortion | 2 | 1.58 |
| Preterm labour | 42 | 33.33 |
| PROM | 9 | 7.14 |
| IUGR | 24 | 19.04 |
| NRFHR | 19 | 15.08 |
| MSL | 18 | 14.29 |
| IUD | 15 | 11.90 |
| LSCS | 32 | 25.39 |

Low birth weight (16.5%) was the most common neonatal complication followed by sepsis (7.3%) and birth asphyxia (3.6%). Neonatal mortality was found to be 8.25% i.e. 9 death per 109 live birth in current study. Prematurity (n-4) birth asphyxia (n-2) and sepsis (n-1) was the causes of mortality. (Table 6)

**Table 6** Fetal mortality and morbidity

| Neonatal Morbidity | Frequency (n) | % age |
|---|---|---|
| 1. Hypoglycemia | 3 | 2.75 |
| 2. RDS | 3 | 2.75 |
| 3. Severe birth asphyxia | 4 | 3.66 |
| 4. Meconium aspiration syndrome | 2 | 1.83 |
| 5. Neonatal hepatitis | 2 | 1.83 |
| 6. Hyperbilirubinemia | 3 | 2.75 |
| 7. Sepsis | 8 | 7.33 |
| 8. Extremely LBW | 18 | 16.51 |
| **Neonatal mortality* (only upto2 weeks)** | 9 | 8.25 |
| 1. Prematurity (n-4) | | |
| 2. Birth asphyxia (-2) | | |
| 3. Sepsis (n-1) | | |
| 4. Cause obscure (n-2) | | |

Need for blood/blood product transfusion (30.9%), Disseminated intravascular coagulation (23%), ICU admission (11.1%) and post partum hemorrhage (10.3%) were the noticed maternal morbidities. 13 women succumbed to the complication with etiology of viral hepatitis (n-10), PIH (n-2) and Srcub infection (n-1) resulting in maternal mortality of 7.14%. (Table 7)

**Table 7** Maternal Morbidity and Mortality

| Maternal morbidity | Viral hepatitis | PIH | Cholestatic jaundice | Others | Total (n=126) | %age |
|---|---|---|---|---|---|---|
| DIC | 23 | 4 | 0 | 2 | 29 | 23.01 |
| PPH | 10 | 2 | 0 | 1 | 13 | 10.32 |
| ARF | 9 | 1 | 0 | 2 | 12 | 9.52 |
| Hepatic Encephalopathy | 7 | 2 | 0 | 1 | 10 | 7.93 |
| Blood Transfusion | 26 | 8 | 3 | 2 | 39 | 30.92 |
| ICU Admission | 11 | 2 | 0 | 1 | 14 | 11.11 |
| **Maternal mortality** | 10 | 2 | 0 | 1 | 13 | 7.14 |

## DISCUSSION

The incidence of jaundice in India varies from 0.4 to 0.9/1000 deliveries.[11] Incidence in current study was 3.02% which is way higher than other studies reported from the country. [12-14] Such high incidence is also reported by Dsouza A *et al*. [15] Higher incidence in our study can be attributed to the outbreak of viral hepatitis, during our study period in Shimla city where our hospital is situated.

Age group of 25-29 years was most affected (35.72%) which is comparable to the studies of Acharya N *et al* [16] (30%), Dsouza A S *et al* [15] (33.21) and Nath J *et al* [14] (39%). Majority (62.7%) belongs to rural locality, were multi gravidae (60.3%) and have period of gestation more than 28 weeks (89.7%). Liver dysfunctions tends to occur usually in third trimester of pregnancy due to either intrahepatic Cholestasis of Pregnancy, frequent condition of preeclampsia and its severe form; hemolysis, elevated liver enzymes, and a low platelet count syndrome or due to Acute Fatty Liver of Pregnancy. [17] Yellowish discoloration of eyes/skin (37.3%) was the most common clinical finding among study participants followed by nausea/vomiting and pruritis. All the patients had raised serum trans-aminase. 30.2% had positive viral serology (HEV being most common).

Viral hepatits and intra hepatic cholestasis were the most common etiologies for jaundice in current study followed PIH. Viral hepatitis has been reposted as most common cause of jaundice in pregnancy by Krishnamoorthy *et al* [3], Shukla *et al* [18] and Harshad *et al*. [19] Rathi U *et al* [12] reported 52.3% of cases with liver dysfunction due to preeclampsia and HELLP.

33.3% women experienced pre term labour among study participants, 19% had IUGR while 11.9% had intrauterine death. 25.4% of the participants underwent cesarean section. Neonatal mortality was found to be 8.25% i.e. 9 death per 109 live birth in current study. Prematurity (n-4) birth asphyxia (n-2) and sepsis (n-1) were the causes of mortality. Low birth weight (16.5%) was the most common neonatal complication followed by sepsis (7.3%) and birth asphyxia (3.6%).

13 study patients died in current study i.e. four with viral hepatitis, two with PIH and one with Srcub infection resulting in maternal mortality of 7.14% which is comparable with the study of Nath J *et al* [14] (10%). Need for blood/blood product transfusion, disseminated intravascular coagulation, ICU admission and post partum hemorrhage were the noticed maternal morbidities. DIC is an important complication and may lead to devastating complications like PPH. In our study we observed that out of total 126 patients with liver disorders in pregnancy, 23.01% patients developed DIC which was comparable with Nagaria T *et al*. [20] Acute renal failure occurred in 9.52% of the patients in the present study which is comparable to the study of Nath J *et al* (14%) but less than the study of Nagaria T *et al* (19.45%) and Acharya N *et al* (20%).

Encephalopathy is seen in viral hepatitis patients and is proportional to the serum bilirubin levels. In the present study encephalopathy was seen in 7.93% of the patients which is less than the study of Nagaria T *et al* (26.27%),this could be due to the fact that Nagaria T *et al* included subjects with bilirubin levels ≥ 3mg% whereas encephalopathy was seen in 2% of

patients in the study of Dsouza A S *et al*, as the number of patients with viral hepatitis was less than the present study and 17% in the study of Nath J *et al* who had more number of viral hepatitis patients than the present study.

Jaundice as reported from various part of country is not very frequent phenomenon seen in pregnancy, but in region where outbreaks of viral hepatitis are reported it can result in severe maternal and fetal morbidity and mortality. Viral hepatitis is the most common cause of jaundice in pregnancy and in our study it accounts to almost all jaundice related deaths. Understanding dynamics of transmission of infective hepatitis, increasing public awareness about the infection, improving sanitary conditions as preventive measures are recommended. Antenatal screening, monitoring of viral markers and aggressive patient care can help in reducing the burden of jaundice in pregnancy.

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