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Original Research Article

A study on jaundice in pregnancy and its impact on maternal and perinatal outcomes in a tertiary care hospital, Bhavnagar

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ABSTRACT

Background: Jaundice during pregnancy is a significant clinical condition that affects 3-5% of pregnancies and represents an important cause of maternal and perinatal morbidity and mortality. With viral hepatitis being the predominant cause in developing countries, comprehensive studies examining outcomes in tertiary care settings are essential for evidence-based management strategies.
Methods: A retrospective observational study was conducted at Government Medical College, Bhavnagar, Gujarat, and data taken from April 2022 to April 2023. Fifty antenatal patients with clinical and laboratory evidence of jaundice (serum bilirubin >1.2 mg/dl, liver transaminases >45 IU/l) were enrolled using purposive sampling. Detailed clinical assessment, laboratory investigations including liver function tests, viral serology, and coagulation profiles were performed. Maternal and perinatal outcomes were systematically recorded and analysed.
Results: The study population predominantly comprised women aged 21-29 years (72%) with 56% being primigravida. Viral hepatitis was the leading cause (60%), followed by preeclampsia with HELLP syndrome (32%). Maternal complications included preterm delivery in 54% of cases, with coagulopathy present in 24% and thrombocytopenia in 42%. Neonatal outcomes revealed concerning statistics with 62% low birth weight babies and 18% early neonatal mortality, primarily due to pneumonia (8%) and intrauterine growth restriction (4%).
Conclusions: Jaundice in pregnancy significantly impacts maternal and perinatal outcomes in our tertiary care setting. The high rates of preterm delivery, low birth weight, and neonatal mortality emphasize the critical need for enhanced antenatal surveillance, early detection protocols, and preventive strategies including hepatitis vaccination programs to reduce associated morbidity and mortality.

Keywords: HELLP syndrome, Jaundice in pregnancy, Maternal outcomes, Perinatal outcomes, Viral hepatitis

INTRODUCTION

Jaundice during pregnancy represents a significant clinical challenge with profound implications for maternal and perinatal health outcomes globally. Characterized by elevated serum bilirubin levels manifesting as yellow discoloration of skin, sclera, and mucous membranes, this condition affects 3-5% of pregnancies worldwide and remains a leading cause of maternal morbidity and mortality.[1] Recent data demonstrates alarmingly high maternal mortality rates of up to 40% and perinatal mortality rates reaching 37% in complicated cases.[2]

The epidemiological landscape exhibits striking geographic variations. In developing countries, particularly India, viral hepatitis predominates as the leading etiology, with hepatitis E virus (HEV) accounting for 42-80% of cases.[3] HEV infection during pregnancy demonstrates unique virulence characteristics, with case-fatality rates reaching 15-25% in the third trimester and a 6-fold higher risk of maternal mortality compared to other viral hepatitis.[4] This contrasts with developed countries where intrahepatic cholestasis of pregnancy (ICP) and gallstone disease represent the predominant causes.[5]

Contemporary classification encompasses pregnancy-specific liver diseases (ICP affecting 0.4-10% of pregnancies, acute fatty liver of pregnancy with 18% maternal mortality, preeclampsia-related HELLP syndrome, hyperemesis gravidarum), pregnancy-coincident conditions (viral hepatitis, autoimmune liver disease), pregnancy-exacerbated disorders, and pregnancy-unrelated conditions.[1,6]

The maternal-fetal implications extend beyond traditional morbidity metrics. Recent studies demonstrate that jaundice significantly increases risks of preterm delivery (54-71% of cases), low birth weight (55-62% of neonates), and fetal distress.[3,7] Severe complications include disseminated intravascular coagulopathy (28%), postpartum hemorrhage (15%), and hepatic encephalopathy (11%), contributing to overall maternal morbidity rates of 65%.[2] HEV infection specifically demonstrates a 50% vertical transmission rate with associated adverse neonatal outcomes.[4]

Therapeutic advances have transformed management paradigms. Ursodeoxycholic acid (UDCA) has emerged as first-line therapy for ICP, with doses of 10-15 mg/kg/day demonstrating efficacy in improving symptoms and biochemical parameters in 79-90% of cases.[8,9] Recent meta-analyses confirm UDCA's effectiveness in reducing spontaneous preterm birth (number needed to treat =15) and meconium-stained amniotic fluid.[10] The latest 2024 guidelines recommend risk stratification based on bile acid levels, with delivery at 36-39 weeks for levels <100 µmol/l and at 36 weeks for levels >100 µmol/l.[6]

Contemporary management emphasizes early recognition and risk-stratified care. For ICP, severe disease (bile acids ≥40 µmol/l) requires intensive surveillance and planned delivery to prevent stillbirth.[8] Recent research has unveiled important pathophysiological insights, including cardiotoxic effects of bile acids on fetal cardiomyocytes and genetic susceptibility factors.[11] Emerging hepatitis E vaccination offers prevention opportunities, with recent trials demonstrating safety and effectiveness in women of childbearing age.[12]

In the Indian healthcare context, pregnancy-related jaundice presents unique challenges including delayed presentation, high infectious disease burden, and healthcare accessibility issues. Urban populations demonstrate particularly high incidence rates, with 53% of cases requiring transfer from peripheral hospitals.[2]

This study aimed to comprehensively evaluate the clinical profile, etiological distribution, and maternal-perinatal outcomes of jaundice complicating pregnancy at a tertiary care center in Bhavnagar, Gujarat. By systematically analyzing contemporary disease patterns and evaluating evidence-based management strategies, this research seeks to generate insights that will inform clinical practice guidelines and improve outcomes for mothers and infants affected by this challenging condition.

METHODS

Study design

This study was a retrospective observational study conducted to assess the maternal and perinatal outcomes in pregnancies complicated by jaundice.

Study setting and duration

The study was conducted at Government Medical College, Bhavnagar, Gujarat, utilizing data recorded in the High Dependency Unit (HDU) register over a one-year period from April 2022 to April 2023.

Study population

The study population included 50 antenatal patients admitted with clinical and laboratory evidence of jaundice. Jaundice was defined by a serum bilirubin level >1.2 mg/dl, and liver transaminases (SGOT, SGPT) >45 IU/l.

Inclusion criteria

Pregnant women of any gestational age presenting with jaundice (clinical icterus or laboratory evidence of hyperbilirubinemia) enrolled between April 2022 to April 2023 were included in the study.

Exclusion criteria

Women with known chronic liver disease prior to pregnancy.

Sampling technique

Purposive sampling technique was used to enrol 50 patients fulfilling the inclusion criteria.

Data collection procedure

Detailed clinical history including age, parity, gestational age, presenting complaints, past medical history, and antenatal care was recorded. Thorough general and obstetric examination was conducted. Laboratory investigations included: liver function tests: serum bilirubin, SGOT, SGPT, ALP, LDH, total protein; renal function tests: blood urea, serum creatinine; coagulation profile: PT, INR; hemogram: hemoglobin, platelet count; urine analysis: albumin; viral serology: HBsAg, anti-HAV IgM, anti-HCV, anti-HEV IgM antibodies

Clinical management and outcome assessment

All patients were managed according to standard clinical protocols based on etiology. Maternal outcomes such as complications (HELLP syndrome, DIC, hepatic encephalopathy, postpartum hemorrhage, maternal mortality) and mode of delivery were recorded. Neonatal

outcomes including birth weight, prematurity, NICU admission, and early neonatal mortality were assessed.

Ethical considerations

Ethical approval for the study was obtained from the institutional ethics committee of Government Medical College, Bhavnagar. The requirement for written informed consent was waived as the study was retrospective in nature and utilized anonymized data from the high dependency unit (HDU) register.

Data analysis

The data were compiled and analyzed using descriptive statistics. Categorical variables were presented as frequencies and percentages.

RESULTS

A total of 50 antenatal women diagnosed with jaundice were enrolled in this retrospective observational study.

Demographic profile

In the present study, jaundice in pregnancy most commonly affected females in the 21-29 years age group (72%), followed by 22% in the 30-40 years group and only 6% in patients below 20 years of age. This suggested that reproductive-age women are more vulnerable to hepatic insults during pregnancy (Table 1).

Table 1: Age distribution.

Age group (years)	No. of patients	Percentage (%)
<20	3	6
21–29	36	72
30–40	11	22

Table 2: Parity distribution.

Parity	No. of patients	Percentage (%)
Primigravida	28	56
Multigravida	22	44

Most cases were primigravida (56%), while the remaining 44% were multigravida, indicating that first pregnancies may have a slightly higher risk (Table 2).

Clinical presentation and laboratory parameters

Laboratory investigations revealed that serum bilirubin levels between 2-4 mg/dl were most common (42%), while 30% had levels between 4-8 mg/dl, and 12% had severe hyperbilirubinemia (>8 mg/dl). Only 16% had levels <2 mg/dl (Table 3).

Raised SGPT (>50 IU/l) was seen in 68% of patients, and serum LDH (>300 IU/l) was elevated in 76%. Coagulopathy was identified in 24% of cases with PT>20 seconds or INR>1.5. Additionally, urine albumin was positive in 36% of patients, with varying degrees of proteinuria. Severe anemia (Hb<7 gm/dl) was seen in 14%, and thrombocytopenia (<50,000/µl) was found in 42% of cases (Table 4).

Table 3: Serum bilirubin levels.

Total bilirubin level (mg/dl)	No. of patients	Percentage (%)
<2	8	16
2-4	21	42
4-8	15	30
>8	6	12

Table 4: Laboratory findings.

Parameters		No. of patients	Percentage (%)
SGPT	<50 IU/l	16	32
	>50 IU/l	34	68
S. LDH	<300 IU/l	38	76
	>300 IU/l	12	24
PT>20 seconds/INR>1.5		12	24
Urine albumin	Nil	32	64
	+	9	18
	++	4	8
	+++	5	10
Hb	<7 gm/dl	7	14
	>7 gm/dl	43	86
Platelets	<50,000/µl	21	42
	>50,000/µl	29	58

The most common presenting symptom was icterus, observed in 76% of patients. This was followed by upper abdominal pain (72%), yellowish urine (52%), and nausea/vomiting (28%), while itching or clay-coloured stools were noted in only 2% of cases (Table 5).

Table 5: Presenting symptoms.

Symptoms	No. of patients	Percentage (%)
Icterus	38	76
Nausea/vomiting	14	28
Upper abdominal pain	36	72
Yellow urine	26	52
Itching/clay stools	1	2

Etiological distribution

Among the causes of jaundice, viral hepatitis was the most common etiology, seen in 60% of the cases. This was followed by preeclampsia with HELLP syndrome (32%). Less frequently observed causes included acute fatty liver

of pregnancy (AFLP) in 4%, acute cholecystitis, and hyperemesis gravidarum, each accounting for 2% of cases (Table 6).

Table 6: Etiology of jaundice.

Cause	No. of patients	Percentage (%)
Hepatitis	30	60
Preeclampsia/HELLP	16	32
AFLP	2	4
Acute cholecystitis	1	2
Hyperemesis gravidarum	1	2

Maternal outcomes

In terms of gestational age at delivery, preterm delivery (<37 weeks) was observed in 54% of cases, while 42% delivered at term (37-42 weeks) and 4% delivered post-term (>42 weeks) (Table 7).

Table 7: Time of delivery.

Gestational age at delivery	No. of patients	Percentage (%)
Preterm (<37 weeks)	27	54
Term (37–42 weeks)	21	42
Post-term (>42 weeks)	2	4

Neonatal outcomes

At birth, 62% of neonates had a low birth weight (<2.5 kg), while 30% weighed between 2.5–3.5 kg, and only 8% had a birth weight >3.5 kg (Table 8).

Table 8: Neonatal birth weight.

Birth weight	No. of neonates	Percentage (%)
<2.5 kg	31	62
2.5-3.5 kg	15	30
>3.5 kg	4	8

Table 9: Neonatal mortality causes.

Cause of mortality	No. of neonates	Percentage (%)
Pneumonia	4	8
IUGR	2	4
Pathological jaundice	1	2
Early neonatal sepsis	1	2
Birth asphyxia	1	2
Total	9	18

A total of 9 neonatal deaths (18%) were recorded. The leading cause was pneumonia (8%), followed by intrauterine growth restriction (IUGR) in 4%, and 2% each due to pathological jaundice, early neonatal sepsis, and birth asphyxia (Table 9).

DISCUSSION

The present study provides comprehensive insights into the clinical profile and outcomes of jaundice in pregnancy at a tertiary care hospital in Bhavnagar, Gujarat. Our findings reveal several important patterns that are consistent with existing literature while also highlighting regional variations in disease presentation and outcomes.

The demographic analysis showed that jaundice in pregnancy predominantly affected women in the reproductive age group of 21-29 years (72%), which aligns with findings from similar studies conducted in developing countries.[13] This age distribution reflects the peak reproductive years and is consistent with the study by Ambreen et al, who reported similar age-related patterns.[14] The higher prevalence in primigravida (56%) compared to multigravida (44%) in our study differs from some previous reports, suggesting that first pregnancies may carry additional risk factors for developing jaundice, possibly due to immunological adaptations or increased susceptibility to pregnancy-related complications.[15]

Viral hepatitis emerged as the leading cause of jaundice in our study population (60%), followed by preeclampsia with HELLP syndrome (32%). This finding is particularly significant as it contrasts with studies from developed countries where intrahepatic cholestasis of pregnancy and gallbladder diseases are more common.[16] The high prevalence of viral hepatitis in our setting reflects the endemic nature of hepatitis E virus in the Indian subcontinent and emphasizes the importance of preventive measures and vaccination programs.[17] The substantial proportion of cases attributed to preeclampsia with HELLP syndrome (32%) underscores the importance of early detection and management of hypertensive disorders in pregnancy.

The maternal outcomes in our study revealed concerning statistics, with 54% of pregnancies resulting in preterm delivery. This rate is higher than reported in some international studies but consistent with other Indian studies examining jaundice in pregnancy.[18] The high preterm delivery rate can be attributed to the severity of underlying conditions, particularly viral hepatitis and HELLP syndrome, which often necessitate early delivery for maternal safety.[19] The presence of coagulopathy in 24% of cases and thrombocytopenia in 42% further emphasizes the systemic nature of these conditions and their potential for serious complications.

Neonatal outcomes were particularly concerning, with 62% of babies having low birth weight and an 18% early neonatal mortality rate. These figures are significantly

higher than national averages and reflect the severe impact of maternal jaundice on fetal well-being.[20] The leading cause of neonatal mortality was pneumonia (8%), which may be related to prematurity and compromised immune status. The high incidence of intrauterine growth restriction (4%) suggests chronic placental insufficiency secondary to maternal hepatic dysfunction.[21]

The laboratory findings revealed that most patients (42%) had moderate hyperbilirubinemia (2-4 mg/dl), while 12% had severe elevation (>8 mg/dl). The elevated liver enzymes in 68% of cases and raised LDH in 76% indicate significant hepatocellular injury. These biochemical markers correlated with the severity of clinical outcomes, supporting their use as prognostic indicators.[22]

Our study's limitations include its single-center design and relatively small sample size, which may limit generalizability. However, the retrospective nature and comprehensive data collection provide valuable insights into the regional pattern of disease. The findings emphasize the need for improved antenatal care, early detection of jaundice in pregnancy, and prompt referral to tertiary care centers for optimal management and outcomes.

CONCLUSION

Jaundice in pregnancy significantly impacts maternal and perinatal outcomes, with viral hepatitis being the predominant cause in our tertiary care setting. The study demonstrates high rates of preterm delivery (54%), low birth weight (62%), and early neonatal mortality (18%), particularly affecting primigravida in the reproductive age group. The substantial burden of disease emphasizes the critical need for enhanced antenatal surveillance, early detection protocols, and timely referral systems. Preventive strategies including hepatitis vaccination programs and improved management of hypertensive disorders could potentially reduce morbidity and mortality associated with jaundice in pregnancy in similar healthcare settings.

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