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Audit of Liver Disorders in Pregnancy

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Abstract: ***Introduction: Liver disease during pregnancy presents a unique and complex medical challenge due to the physiological changes in liver function associated with gestation. Liver disease in pregnancy can be broadly categorized into those unique to pregnancy, such as intrahepatic cholestasis of pregnancy, HELLP syndrome and acute fatty liver of pregnancy (AFLP) and those unrelated to pregnancy such as viral hepatitis or autoimmune liver disease. Maternal liver diseases significantly impact both maternal and fetal outcomes. The spectrum ranges from mild, self-limiting conditions to life threatening complications, including postpartum hemorrhage, maternal death, and fetal death. Timely diagnosis and interventions are of paramount importance to reducing morbidity and mortality rates. This audit explores the prevalence, clinical presentations, management and outcomes of liver disease in pregnancy. Materials and Methods: Type of study: Retrospective. Study area: MGM Medical College and Hospital, Aurangabad. Study period: January 2024 to February 2025 (14 months). Sample size: 22. Inclusion Criteria: All pregnant females with deranged liver function tests. Exclusion Criteria: Pregnant females with history of substance abuse. Results: In this study, 22 pregnant women diagnosed with liver disorders were evaluated. Most of them-about three out of four-had conditions that were specific to pregnancy, with HELLP syndrome being the most common. A few others were diagnosed with acute fatty liver of pregnancy (AFLP) and intrahepatic cholestasis of pregnancy (IHCP), while the remaining had general liver conditions like hepatitis or portal hypertension. Nearly all patients (95%) were referred from other centers, reflecting the specialized care available at our institute, particularly with access to multidisciplinary teams and a hepatobiliary unit. The majority of patients were young, between 18 and 25 years old. Many came in with symptoms such as nausea, vomiting, high blood pressure, and in some cases, signs like yellowing of the skin or intense itching-each pointing toward different underlying liver issues. Blood tests often revealed concerning findings like low platelet counts, abnormal liver enzymes, and impaired kidney function, especially in cases of HELLP, AFLP, and hepatitis. Preterm delivery was common, particularly in HELLP and hepatitis cases, and cesarean sections were more frequently performed in those with HELLP. Sadly, there were poor neonatal outcomes in several cases, including NICU admissions and five instances of stillbirth or intrauterine death. Maternal complications were also significant. Many women required ICU care, blood transfusions, and prolonged hospital stays. Some developed serious conditions like sepsis or acute kidney injury. Tragically, five mothers-two with AFLP and three with hepatitis-did not survive, underscoring how severe and life-threatening liver disorders can be during pregnancy. Conclusion: Liver disorders in pregnancy, particularly those unique to the gestational period such as HELLP syndrome, AFLP, and IHCP, pose significant risks to both maternal and fetal health. Early recognition and timely referral to specialized centers with multidisciplinary care capabilities are critical for optimizing outcomes. Despite advances in supportive and obstetric care, these conditions continue to carry high rates of maternal and neonatal morbidity and mortality. Our findings underscore the need for heightened clinical vigilance, rapid intervention, and the development of standardized protocols to manage liver-related complications during pregnancy more effectively.***

Keywords: Deranged liver function tests, liver disorders in pregnancy, maternal mortality

1. Introduction

Liver disease during pregnancy presents a unique and complex medical challenge due to the physiological changes in liver function associated with gestation. Liver disease in pregnancy can be broadly categorized into those unique to pregnancy, such as intrahepatic cholestasis of pregnancy, HELLP syndrome and acute fatty liver of pregnancy (AFLP) and those unrelated to pregnancy such as viral hepatitis or autoimmune liver disease. The spectrum ranges from mild, self-limiting conditions to life threatening complications, including postpartum hemorrhage, maternal death, and fetal death. Low resource countries like India carry the highest burden of maternal mortality and morbidity. Despite an increase in institutional deliveries, most pregnant women do not receive any antenatal care and are at risk for obstetric complications.[1] Liver disorders in pregnancy present a diagnostic dilemma with a considerable overlap in presenting complaints, signs and laboratory investigations. Hence, there could be a delay in diagnosis and eventual Obstetric management. Expeditious clinical evaluation is critical to distinguish liver disease unique to pregnancy from non–pregnancy-related liver dysfunction, to ensure timely, appropriate care and reduce risks to the pregnant woman and her baby. The gastroenterologist/hepatologist has a key role to play in the diagnosis, management, and after care of patients with pregnancy-associated liver diseases.[2]

2. Materials and Methods

The present study was conducted at MGM Hospital, Aurangabad. A total of 22 patients with liver disorders in pregnancy were included fulfilling the inclusion and exclusion criteria.

Inclusion criteria

All pregnant females with deranged liver function tests.

Exclusion criteria

Pregnant females with history of substance abuse.

3. Methodology

It was a retrospective study conducted in Department of OBGY, MGM Hospital, Aurangabad from 1 January, 2024 to 28 February, 2025. After ethics approval from ethical committee, a structured proforma was made and analysis of the outcomes was noted.

Statistical Analysis

4. Results:

Table 1: Distribution based on diagnosis

Specific to Pregnancy	HELLP	11
	AFLP	3
	Intrahepatic Cholestasis of Pregnancy (IHCP)	3
Co-Incidental with Pregnancy	HEPATITIS	4
	PORTAL HTN	1
Total		22

Table 2: Distribution based on number of patients referred to institute

HELLP (N=11)	11
AFLP (N=3)	3
IHCP (N=3)	2
HEPATITIS (N=4)	4
PORTAL HTN (N=1)	1
TOTAL (N=22)	21 (95.45%)

95.45% of patients were referred to our institute for management as it is a tertiary care institute that has availability of Multidisciplinary teams as well as a Hepatobiliary wing.

Table 3: Distribution of liver disorders based on age

AGE	HELLP	AFLP	IHCP	HEPATITIS	PORTAL HTN
<18	-	-	-	-	-
18-25	8	2	-	3	-
26-30	3	1	3	-	1
>30	-	-	-	1	-

Table 4: Distribution of liver disorders based on signs and symptoms

Signs and Symptoms	HELLP	AFLP	IHCP	HEPATITIS	PORTALHTN
No Complaints	4	-	-	1	1
Nausea and Vomiting	4	3	-	1	-
Epigastric Pain	3	-	-	1	-
Itching	-	-	3	-	-
Headache	1	-	-	1	-
Yellow Discolouration	-	2	-	3	-
Fever	-	-	-	1	-
Hypertension	11	-	1	2	-

Table 5: Distribution of liver disorders based on laboratory investigations

	HELLP	AFLP	IHCP	HEPATITIS	PORTALHTN
THROMBOCYTOPENIA	9	2	1	4	-
TOTAL S. BILIRUBIN (>4mg/dL)	2	3	-	4	-
SGOT Or SGPT (>200U/L)	7	2	1	1	-
S. CREATININE (>1mg/dL)	3	2	-	4	-
DERANGED PT-INR	2	3	-	4	-
URINE ALBUMIN: ABS**ENT**	3	3	3	3	1
PRESENT	8	0	-	1	-
ALP (>125U/L)	10	3	3	4	1

Table 6: Interval between admission and delivery

	HELLP	AFLP	IHCP	HEPATITIS	PORTAL HTN
<1 Day	7	2	1	3	1
1-2 Days	4	-	1	-	-
>2 Days	-	1	1	1	-

Table 7: Gestational age at termination of pregnancy

	HELLP	AFLP	IHCP	HEPATITIS	PORTAL HTN
Preterm	8	2	1	4	1
Full Term	3	1	2	-	-

Table 8- Mode of termination of pregnancy

	HELLP	AFLP	IHCP	HEPATITIS	PORTAL HTN
LSCS	9	1	2	2	-
Vaginal	2	2	1	2	1

Table 9- Neonatal Outcomes

	HELLP	AFLP	IHCP	Hepatitis	Portalhtn
NICU	8	1	-	3	1
With Mother	1	-	3	-	-
Still Birth/ Intrauterine Death	2	2	-	1	-

Table 10: Associated complications in pregnant patients with liver disorders

	HELLP	AFLP	IHCP	Hepatitis	Portalhtn
PPH	4	1	-	1	-
Prolonged Hospital Stay	11	3	3	4	1
ICU	7	3	-	4	-
Blood Products	9	3	1	4	-
DIC	2	2	-	3	-
SEPSIS	-	2	-	3	-
AKI	1	2	-	3	-
Ventilatory Support	3	3	-	4	-
Ionotropic Support	-	2	-	3	-
Mortality	-	2	-	3	-

5. Discussion

Liver disorders during pregnancy pose a significant threat to maternal and fetal health, given the complexity introduced by

physiological changes that affect liver function during gestation. These changes often mimic or mask pathological symptoms, making timely diagnosis and management a major challenge in clinical practice. The current retrospective audit of 22 pregnant women presenting with deranged liver function offers insights into the spectrum of hepatic dysfunctions, their clinical presentations, and outcomes at a tertiary care hospital.

In this study, liver diseases specific to pregnancy were more common than those not related to gestation. HELLP syndrome was the most frequently encountered condition (50%), followed by acute fatty liver of pregnancy (AFLP) and intrahepatic cholestasis of pregnancy (IHCP). Non-pregnancy-related conditions like viral hepatitis and portal hypertension accounted for a smaller, but clinically significant, proportion of cases. These findings echo results from global studies which confirm that HELLP and AFLP are among the most common pregnancy-related hepatic disorders, particularly in the third trimester [2,3].

An overwhelming 95.45% of patients were referred from peripheral centres, emphasizing the essential role of tertiary hospitals with multidisciplinary setups in managing complex cases. This aligns with recommendations from the Federation of Obstetric and Gynaecological Societies of India (FOGSI), which advocate for timely referral and collaborative care in high-risk pregnancies [4].

Most patients fell within the 18–30-year age group, a demographic congruent with reproductive-age women. Previous studies have also identified this age bracket as more prone to hepatic complications during pregnancy, particularly in primigravida patients [5]. The study did not find a direct correlation between age and specific liver disorders; however, age-related physiological differences can affect the clinical course and outcomes of such conditions [6].

Clinically, HELLP syndrome was frequently associated with hypertension, thrombocytopenia, proteinuria, and elevated liver enzymes. AFLP, on the other hand, presented more often with systemic symptoms such as nausea, vomiting, jaundice, and renal dysfunction. IHCP was marked primarily by pruritus and elevated alkaline phosphatase (ALP) levels. These symptom clusters are consistent with established diagnostic criteria in literature, where distinguishing features help guide early intervention [2,7].

Biochemical abnormalities were crucial for both diagnosis and prognosis. Elevated aminotransferases (SGOT/SGPT>200 U/L) were observed in over half of the HELLP and AFLP cases. Hyperbilirubinemia and prolonged coagulation parameters (PT-INR) were more common in hepatitis and AFLP, pointing to hepatic failure or systemic involvement. Elevated serum creatinine (>1 mg/dL) and low platelet counts were prominent in severe cases. These laboratory trends are well-established markers of disease severity and are routinely used in risk stratification protocols [8,9].

The time between hospital admission and delivery was less than 24 hours for most patients with HELLP and AFLP, underscoring the urgency often associated with these conditions. Prompt delivery, especially in the presence of maternal or fetal compromise, remains the cornerstone of management for these syndromes, even if it results in preterm birth [10,11]. However, the diagnosis of hepatitis warrants no active obstetric intervention. Thus, in cases of hepatitis, it is essential that active obstetric intervention is not undertaken. In our study, 3 patients with hepatitis were already in labour on admission, hence, the admission delivery interval was < 1 day. In this study, 73% of the pregnancies were terminated before term due to worsening maternal condition, reinforcing the delicate balance clinicians must strike between fetal maturity and maternal safety.

Liver diseases in pregnancy present a diagnostic dilemma with considerable overlap in presenting complaints, signs and laboratory investigations. Hence, there could be a delay in diagnosis and eventual obstetric management. Termination is the only treatment for pregnancy related liver disorders to improve maternal outcomes, whereas, in disorders like hepatitis, active obstetric intervention should not be undertaken. Hence, due diligence must be taken in carefully arriving at definitive diagnosis with an eventual obstetric care plan.

Caesarean section was the preferred mode of delivery in HELLP and hepatitis cases. Vaginal delivery was feasible in stable cases, especially those with IHCP. The choice of delivery mode should remain individualized, tailored to maternal status, fetal well-being, and obstetric indications [3,12].

Neonatal outcomes revealed considerable morbidity and mortality, particularly in AFLP and viral hepatitis groups. Over half of the neonates required NICU admission, and about one-fourth resulted in intrauterine death or stillbirth. These adverse outcomes can be attributed to placental insufficiency, preterm birth, or intrauterine fetal distress, all of which are common sequelae of maternal liver dysfunction [6,13].

Complications like postpartum haemorrhage (PPH), disseminated intravascular coagulation (DIC), sepsis, acute kidney injury (AKI), and need for ventilatory or inotropic support were common. These complications were more prevalent in AFLP and hepatitis patients, suggesting systemic disease progression. Literature confirms that AFLP and hepatitis E virus (HEV)-related hepatitis are among the most lethal hepatic disorders during pregnancy, with reported maternal mortality rates as high as 30% in some developing countries [14,15].

In this audit, maternal mortality occurred in five cases-two due to AFLP and three due to hepatitis. The findings align with prior Indian studies that have noted high maternal mortality rates associated with fulminant hepatic failure and advanced-stage AFLP [16].

Management of liver disorders in pregnancy necessitates a multidisciplinary approach involving obstetricians, hepatologists, anaesthesiologists, and intensivists. Early detection via antenatal liver function monitoring, especially in high-risk pregnancies, can significantly reduce morbidity. Several studies have advocated for inclusion of liver function

tests (LFTs) in routine antenatal screening in endemic areas to detect subclinical or evolving liver disorders early [17,18].

This audit also emphasizes the need for greater awareness and training at the primary and secondary care levels to improve early recognition and timely referral. Additionally, the role of standardized protocols, early warning systems, and checklists in obstetric emergency rooms cannot be overstated [4,19].

In summary, this study confirms that hepatic disorders in pregnancy remain a significant contributor to maternal and perinatal morbidity and mortality in India. HELLP syndrome was the most frequent condition encountered, followed by AFLP and viral hepatitis. Early diagnosis, timely referral, and a team-based approach are crucial for successful outcomes. Strengthening antenatal care systems and ensuring access to tertiary care services can drastically improve the prognosis of these high-risk cases.

6. Conclusion

Liver disorders in pregnancy, though uncommon, can lead to significant maternal and fetal complications. In this audit, HELLP syndrome was the most prevalent pregnancy-specific liver disorder, followed by AFLP and IHCP. Non-pregnancy-related conditions like viral hepatitis, while less frequent, were associated with severe outcomes.

Early diagnosis through clinical vigilance and targeted investigations is crucial, as most patients required urgent delivery and intensive care support. Maternal complications such as DIC, AKI, and sepsis were common, and neonatal outcomes were often poor.

This study highlights the importance of early detection, timely referral, and multidisciplinary management to improve outcomes in pregnancies complicated by liver dysfunction.

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