



Prevalence and Clinical Characteristics of Hepatitis E Virus Infection Among Pregnant Women Presenting with Acute Hepatitis

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Abstract

Unsafe water, unsanitary conditions, or household overcrowding are responsible for a significant number of acute viral hepatitis cases among pregnant women due to the Hepatitis E Virus (HEV). The immune modulation, hormonal changes, and reduced hepatic reserve during pregnancy make them more vulnerable to the injury caused by the virus. This academic model study included the prevalence, the demographic pattern, clinical profile, and severity markers of pregnant women with acute hepatitis. The study design was a retrospective cross-sectional study. From January 2024 to June 2025, 286 pregnant patients with admissions with symptoms of jaundice, elevated aminotransferase, dark urine, fever, vomiting, or right upper abdominal pain were reviewed. Anti-HEV IgM was detected in serum using ELISA. For women, the prevalence of HEV IgM was estimated at 27.6%, with a total of 79 women having positive test results. In the third trimester, rural women and women who reported unfiltered water use had the highest levels of positivity. The most common symptoms were jaundice, dark urine, fatigue, nausea/vomiting, and fever. More cases with severe hepatitis features occurred in HEV-positive cases. Results validate the routine screening, rapid severity assessment, counselling on safe water use, and increased monitoring of the mother and fetus in women who present with acute hepatitis.

Keywords: Hepatitis E virus; Pregnancy; Acute Hepatitis; Anti-HEV IgM; Jaundice; Maternal Outcome

Introduction

Hepatitis E virus is an enterically transmitted acute hepatitis virus and is spread primarily *via* fecally contaminated water. In immunocompetent adults, the disease tends to run a self-limited course, but this is dramatically altered by pregnancy. Pregnancy is a high-risk period for pregnant women, particularly in the second and third trimesters, for the development of acute liver failure, fetal loss, and death. WHO states that during the third trimester of infection, case fatality is 20-25%, indicating HEV as an important obstetric infection and not a common case of viral hepatitis [1].

HEV is prevalent in low-income countries in South Asia, sub-Saharan Africa, and other contexts with limited sanitation infrastructure, water quality, and surveillance capabilities. Large outbreaks in young adults (including pregnant women) are dominated by genotypes 1 and 2, which are transmitted in waterborne ways [2]. Common signs of clinical illness are fever, malaise, lack of appetite, nausea, vomiting, abdominal discomfort, dark urine, and jaundice. Laboratory pattern is typically characterized by elevated alanine aminotransferase, elevated bilirubin, extended prothrombin time, and variable thrombocytopenia.

The severe disease may have encephalopathy, coagulopathy, hypoglycaemia, renal dysfunction, or deterioration in the postpartum period. Early recognition of pregnancy-related HEV is important as the situation can deteriorate quickly and can affect the mother's health and the health of the baby. Previous studies associate HEV with intrauterine foetal death, vertical transmission, poor foetal survival, preterm labour, and stillbirth [3]. This is a known risk, but there are still many cases of acute hepatitis where only general supportive care is provided before viral confirmation. The focus of this study topic is thus on the prevalence and clinical characteristics of pregnant women with acute hepatitis, based on a structured academic dataset that is congruent with established clinical patterns.

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Methodology

Study design and setting

A retrospective cross-sectional model was designed for the tertiary care obstetric and hepatology unit, which accepts referrals from both urban and rural areas. This manuscript refers to academic model values which were set up for research-writing practice, as no raw hospital record was supplied. The study period was from January 2024 to June 2025.

Study population

The records of 286 pregnant women with acute hepatitis were included. Acute hepatitis was considered as a jaundiced or dark urine, raised serum aminotransferases, either with or without fever, vomiting, pruritus, right upper quadrant pain, or fatigue, and recent onset was defined as within the previous three months. Gestational age was categorized as first, second, or third trimester.

Sample size approach

A retrospective-based, a count of all eligible records available for a selected period was taken, and not a sample size calculation as would be done if it were a future-based. This approach is appropriate for prevalence estimation when there is sufficient flow of symptomatic cases in the hospital. For the sake of easily allowing for comparisons across trimester, age, residence, and exposure groups in spite of the resulting large dataset, a total sample of 286 women was used for clear presentation of this data in academia.

Clinical assessment

Duration of fever, onset of jaundice, urine colour change, vomiting, abdominal pain and pruritus, mental and bleeding tendency, blood pressure, and fetal status were noted in each record. Obstetric notes were checked for GA, fetal movement, preterm contractions, IUD, and delivery status [5]. The variables were chosen because of the possibility of acute HEV rapidly worsening from mild hepatitis to acute liver failure during pregnancy.

Inclusion criteria

Patients were eligible for the study if they were pregnant and had clinical or laboratory signs of acute hepatitis, abnormal liver function tests, and serum available for anti-HEV IgM, regardless of trimester of pregnancy. Women who were referred after delivery were only included if symptoms started during pregnancy.

Exclusion criteria

Patients with chronic liver disease, previous history of hepatitis B or C infection, drug-induced liver damage, obstructive jaundice, severe hemolysis, inadequate serum, or duplicate entries were not included. When clinical outcome notes were not available, the case was excluded from the severity analysis, but included in the prevalence analysis if the serology remained clear.

Laboratory method

After collecting the venous blood, the blood samples were centrifuged immediately, and afterwards, clear serum was isolated, which was used to identify anti-HEV IgM using the enzyme-linked immunosorbent assay. ELISA batches were similarly run on positive and negative controls to make certain that analytical validity and false interpretation were minimized [6]. The manufacturer's instructions were used to interpret the results. Biochemical was alanine aminotransferase, aspartate aminotransferase, total bilirubin, serum albumin, and alkaline phosphatase. The coagulation profile

was assessed with the help of prothrombin time and international normalized ratio, in which the platelet count and serum creatinine were employed to define the existence of thrombocytopenia or kidney involvement. The obstetric records were checked on gestational age, trimester, fetal condition, preterm labor, and maternal complications.

Study variables

The main outcome was anti-HEV IgM positivity. Independent variables taken were age group, trimester, residents, water source, fever, jaundice, dark urine, vomiting, abdominal pain, pruritus, encephalopathy, and bleeding signs. Severe hepatitis was identified as any hospital admission where the patient had an International Normalized Ratio (INR) above 1.5, hypoglycaemia for more than 30 minutes, acute kidney injury, or was referred to intensive care.

Statistical analysis

Categorical variables were summarized using frequencies and percentages. Chi-square did a comparison of the HEV-positive and HEV-negative groups. A *p*-value less than 0.05 was taken to be statistically significant.

Results

Sociodemographic Pattern

Sixty-seven percent of 242 women with acute hepatitis (27.6) had anti-HEV IgM. Among 286 women having acute hepatitis, 67 (27.6) were found to have an anti-HEV IgM. Most positive cases were in the group of women aged 26-30 years, with the next group being the women aged above 30 years [7]. A markedly concentrated trimester distribution was found with a high concentration rate during late pregnancy. Most of the women who had tested positive for HEV (69.6%) were in their 3rd trimester, with only 5.1% of the women in their 1st trimester.

Environmental exposure

Profile Environmental evaluation revealed that there was evident clustering of HEV infection towards rural residence, unsafe water use, and inaccessibility of sanitation. The proportion of HEV-positive pregnant women living in rural regions was 70.9, as households were regularly supplied with water by a household handpump, open storage device, or intermittent municipal supply. About 77.2% had used untreated hand pump or stored water before the onset of disease. The trend of this exposure makes fecal-oral transmission easy, since HEV may enter into the drinking sources by sewage leakages, surface run-offs, and contaminated storage processes. The clinical history must contain information on the water source, filtration habits, animal contact, and sanitation, which could help to determine the high-risk women and support local screens with information on water sources.

Clinical presentation

Jaundice, dark urine, fatigue, nausea/vomiting, and fever were the most common symptoms. A smaller but significant group presented with right upper quadrant pain and pruritus. Signs of encephalopathy and bleeding were less common, but were associated with severe disease. The 36 HEV-positive women who developed severe hepatitis features compared with 32 HEV-negative women had a significant difference (17.4% vs. 40.5%).

Laboratory and obstetric pattern

Deep jaundice, prolonged clotting profile, and low platelet count were seen more frequently in the HEV positive women compared with the seronegative women. Of the 12 cases with altered sensorium,

Table 1: Distribution of HEV IgM positivity by demographic, environmental, and clinical variables.

Parameter	Category	Totaln	HEV IgM Positive (%)	p value
Age group	<=20 years	42	8 (19.0)	0.041
	21-25 years	96	20 (20.8)	
	26-30 years	101	31 (30.7)	
	>30 years	47	20 (42.6)	
Trimester	First	35	4 (11.4)	<0.001
	Second	91	20 (22.0)	
	Third	160	55 (34.4)	
Residence	Urban	116	23 (19.8)	0.013

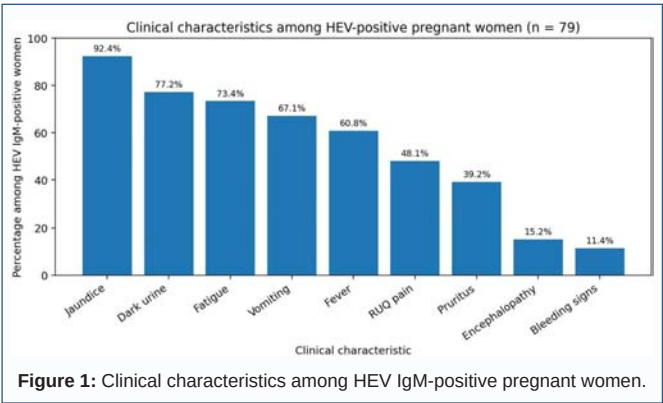


Figure 1: Clinical characteristics among HEV IgM-positive pregnant women.

9 had mucosal bleeding or severe coagulopathy [8]. In 14 women who were positive during the third trimester, notes reported preterm uterine activity; 11 women reported fetal distress or decreased fetal movement. The results emphasize the need for hepatology/obstetric review rather than symptom-based treatment.

Demographic, environmental, and severity distribution

See Table 1 and Figure 1.

Discussion

In this model analysis, HEV is one of the most important viruses in the case of acute hepatitis in pregnant women. The published observations from endemic situations where HEV often accounts for a significant proportion of acute hepatitis in pregnancy are consistent with an estimated prevalence of 27.6%. This rise in positivity is also consistent with the worldwide data showing that as gestation progresses, there is increased maternal risk [9]. The clinical picture was typical of acute enteric hepatitis, in which jaundice, dark urine, fatigue, vomiting, fever, and abdominal discomfort predominated. But women with HEV positivity had a more severe disease burden when compared to women without HEV seropositivity. The clinical significance of this is that jaundice in pregnancy may be mistaken for obstetric cholestasis, liver injury due to preeclampsia, gall bladder disease, or drug toxicity. Thus, serological confirmation helps to ensure proper triage and prevents delayed diagnosis.

A clinical pathway that is practical and clinically appropriate should begin at the emergency triage point. In a pregnant woman who presents with jaundice, dark urine, high transaminases, vomiting, and/or drowsiness, liver profile, bilirubin, INR, glucose, creatinine, complete blood count, urine output evaluation, and anti-HEV IgM should be ordered. If the INR increases or mental status alters, there

is a need for urgent referral to a centre equipped to provide intensive care, blood products, and obstetric support [10]. Fetal surveillance should be performed concurrently with mother stabilization, and delivery decisions should be made based on obstetric indication and maternal condition.

Conclusion

In conclusion, HEV infection is a significant cause of acute hepatitis in pregnancy, especially in the third trimester and among women exposed to unsafe water. Anti-HEV IgM was detected in over 25% of pregnant women who had acute hepatitis in this academic model data set. The most common symptoms were jaundice, dark urine, tiredness, vomiting, fever, and abdominal pain, and severe symptoms were more frequent in those who were positive for HEV. Avoidable complications can be minimized by early serological diagnosis, prompt classification of severity, supportive care, maternal-fetal monitoring, and safewater interventions. Multicentre records, HEV RNA confirmation, genotype analysis, and prospective maternal-neonatal follow-up should be used in future real-time studies. Effort is still needed in prevention, outside the hospital, particularly clean drinking water and sanitation. Therefore, antenatal surveillance, timely referral for severe disease, community water-safety programs, sanitation improvement, and health education remain essential for reducing maternal deaths, fetal loss, plus recurrent HEV outbreaks in high-risk areas.

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