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Prevalence of viral hepatitis in pregnancy: An observational study

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Abstract

Objective: To study the prevalence of viral hepatitis and maternal fetal outcomes in pregnant women with jaundice.
Material and Methods: A prospective study was conducted over a period of 6 months in a tertiary care centre of Govt. Medical College ,Amritsar. 63 pregnant women with jaundice were included in this study. All the patients were screened for viral markers, liver function tests, renal function tests and coagulation profile. They were then followed during their hospital stay and the maternal and neonatal outcomes were studied.
Results: The study showed that Hepatitis E virus was the main cause of viral hepatitis in pregnancy in our centre. Most of the patients reported in the third trimester and were primigravidae.
Conclusion: Hepatitis E infection has poor maternal as well as neonatal outcome out of all types of viral hepatitis. As the route of transmission is feco-oral, proper sanitation and clean drinking is the need of the hour. The second important cause of viral hepatitis was infection with Hepatitis C virus. Intravenous drug abuse is the main cause. Therefore, in order to minimise viral hepatitis in pregnant women, complete immunization should be advocated in all women of reproductive age group.
Key words: Pregnancy ,Hepatitis E, Hepatitis C, feco-oral route

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Introduction

Viral hepatitis is a major public health problem in India which is hyper endemic for Hepatitis A and Hepatitis E virus. In pregnancy, greater morbidity and mortality of hepatitis, especially during epidemics, have been noticed as a consequence of poor prenatal care and malnutrition [1-3, 12-14]. Viral hepatitis in pregnancy can lead to coagulation defects, post partum haemorrhage, multi organ failure and high maternal mortality. Neonatal complications such as still birth, neonatal death, acute and chronic liver disease and hepatocellular carcinoma have all been reported. Therefore, early diagnosis and treatment is required for the better management of patients [4].

Hepatitis E virus is responsible for worst maternal and fetal outcomes in pregnant women as compared to other types of viral hepatitis [5]. HEV infection is so severe that it often leads to Fulminant Hepatic Failure and mortality may go upto 75% [3]. Hepatitis E virus (HEV) infection is the major cause of outbreaks and acute sporadic hepatitis worldwide. HEV infecting humans consists of four different genotypes (genotype 1–4), with several sub genotypes in each. However, only one single HEV serotype was recognized. HEV genotypes 1 and 2 are found mainly in developing countries.

HEV is responsible mainly for outbreaks in developing countries and sporadic cases in the western world [6]. HEV outbreaks have been reported from 12 countries all over the world that include Indonesia, Myanmar, Vietnam, Japan, China, Bangladesh[7,8], Pakistan, Nepal, Iraq, Uzbekistan, Turkmenistan, and India. India represents a country with the highest number of reported HEV outbreaks. HEV genotypes 1 and 2 were responsible for most of the large outbreaks in developing countries. During the outbreaks in developing countries, a significantly higher case fatality rate was observed in pregnant women.

It is estimated that HEV is responsible for ~9.8% of pregnancy-associated deaths in Bangladesh and about 10,500 of annual maternal death in southern Asia. Some immunological and hormonal factors have been associated with high mortality rate in HEV-infected pregnant women [9]. Therefore, interventions to prevent the occurrence of HEV infections in the high-risk populations are urgently required.

Materials and Methods

This study was conducted in sixty three antenatal inpatients having jaundice in a tertiary hospital of Govt. Medical College Amritsar over a period of 6 months. Prevalence of different types of viral hepatitis in pregnancy was studied.

Inclusion criteria:

Pregnant women having jaundice
Pregnant women with serologically positive cases of viral hepatitis.

Exclusion criteria:

Severe PIH with HELLP syndrome.
Acute fatty liver
Drug hepatitis
Patients with negative serology
Intrahepatic cholestasis of pregnancy.
Chronic liver disease.

Baseline investigations i.e. CBC, Liver function tests, coagulation profile and serological tests were carried out. All the patients were followed throughout pregnancy and intrapartum period. Complications, both maternal and neonatal were recorded. The data was then statistically analysed.

Results

63 pregnant women with mean age 25± 7.07 years presented with clinical and biochemical evidence of hepatitis. These women were serologically proven cases of viral hepatitis. Majority were from rural area and were from low socioeconomic strata. 90% of the patients were emergency admissions and 10% were booked.

Table 1: Demographic profile

Parameter		No. of patients	Percentage
1.Age			
	<20 years	4	6.34%
	20 -24 years	22	34.9%
	25-29 years	32	50.7%
	>30 years	5	7.94%
2.Parity			
	Primigravida	25	39.68%
	Second gravida	16	25.3%
	Third gravida or more	20	31.74%
	Postpartum	2	3.17%
3.Duration of pregnancy			
	First trimester	2	3.17%
	Second trimester	8	12.69%
	Third trimester	51	80.95%
	Postpartum	2	3.17%

Table 1 shows that 32(50.7%) patients were in the age group of 25 -29 years of age,22 (34.9%) were in the age group of 21 -24 years , 4 (6.34%) were less than 20 years old and 5(7.94%) were more than 30 year old. Out of 63 women, 25(39.68%) were primigravidae, 20(31.74%) were third gravid or more, 16(25.3%) were second gravidae and 2(3.17%) were in the post partum period. 51(80.95%) women reported to us in the third trimester, 8(12.69%) in the second trimester, 2 (3.17%)in the first trimester and 2(3.17%) in the post partum period.

Table 2: Viral markers

Etiology	No. of patients	Percentage
HAV	4	6.34%
HbsAg	13	20.63%
HCV	20	31.74%
HEV	24	38.09%
HBsAg+HEV	2	3.17%

Table 2 shows that the aetiologies of acute viral hepatitis were HAV in 4 patients (6.34%) HBsAg in 13 (20.63%) HCV in 20 (31.74%), HEV in 24(38.09%) and HBsAg+ HEV were seen in 2(3.17%).

Table 3: Maternal morbidity

Complication	Frequency	Percentage
Fulminant Hepatic Encephalopathy	11	17.46%
Coagulopathy	2	3.17%
Post partum hemorrhage	5	7.93%
Acute renal failure	1	1.59%
Maternal death	4	6.35%

Table 3 shows that 11(17.46%) patients developed fulminant hepatic encephalopathy, 2(3.17%) patients developed coagulopathy, 5(7.03%) patients developed post partum hemorrhage , 1 (1.59%) patient developed acute renal failure and 4 (6.35%) patients died.

Table 4: Maternal outcome

outcome	no. of patients	percentage
Vaginal delivery	49	77.78%
Cesarean section	10	15.87%
Spontaneous abortion	4	6.35%

Table 4 shows that out of the 63 patients, 49(77.78%) had a normal vaginal delivery, (10)15.87% underwent a cesarean section and (4) 6.35% had spontaneous abortion

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Table 5: Neonatal outcome

Outcome	No.of cases	Percentage
Preterm delivery	12	19.04%
IUD	15	23.80%
Live births	32	50.79%

Table 5 shows that out of the 59 patients, 12 (9.04%) patients delivered a preterm baby, 15(23.80%) delivered a dead fetus and 32(50.79%) delivered healthy full term alive babies.

Discussion

In this prospective study of 63 pregnant women with jaundice and acute viral hepatitis admitted to our centre, we found that HEV infection accounted for 38.09% of cases. This is comparable with the observation of Jaiswal et al from India and Aziz et al from Pakistan who reported an incidence of 58 and 62% respectively[11,12]. Acute Hepatitis E infection during the third trimester of pregnancy is the cause of fulminant hepatic failure and has morbidity rate of up to 45.8% in our study which is comparable to Jaiswal et al and Beniwal et al[3,11] .Out of 63, most commonly affected were 20 to 29 years of age with mean age of 25± 7.07 years as was seen in the study by Patra et al and Shukla et al[4,10].

Most of the women were primigravidae (39.68%) and many of them were in the third trimester (80.95%). The obstetrical and neonatal outcome in HEV infection in pregnant women was not favourable as reported in other studies [13]. Out of 24 of HEV seropositive patients, 11(45.8%) developed hepatic encephalopathy, out of them 4 patients died. These findings are similar to another study by Khuroo et al [13]. An important observation made in present study was occurrence of coagulopathy and post partum haemorrhage in 3.17% and 7.93% of cases respectively, more so in HEV positive which was comparable to the number reported by Khuroo et al [13].

Out of 24 HEV infected women, 12 delivered a preterm baby, 15 cases delivered a dead fetus and 32 cases delivered a full term alive baby. The reason behind high perinatal mortality in HEV is still not clear. It may be due to vertical transmission from mother to fetus, preterm delivery and low birth weight babies [13,14] .

Prevalence of HAV infection was 6.34% and HBsAg infection was 20.63% in the present study which is consistent with other Indian studies done by Beniwal and Singh et al[3,15]. In 3.17% patients HBsAg and HEV co existed.

In patients with acute hepatitis B, vertical transmission was seen in up to 10% of neonates when infection occured in the first trimester and in 80-90% of neonates when acute infection occured in the third trimester. In women who were seropositive for both HBsAg and HBeAg vertical transmission was approximately 90%. 10-20% of women seropositive for HBsAg transmitted the virus to their neonates in the absence of immunoprophylaxis.

Immunoprophylaxis failure against vertical transmission appears to occur more frequently in mothers who are HBeAg-positive and or who have a high viral load. Although the presence of HBeAg generally indicates high levels of virus and greater infectivity, the absence of e-antigen does not exclude active viral replication. Maternal HBV-DNA level has been demonstrated to be the strongest predictor of neonatal immunoprophylaxis failure, with a lower effective rate being directly related to a higher maternal viral load.

Chronic infection occurs in about 90% of infected infants, 30% of infected children aged <5 years , and 2%-6% of adults. Among persons with chronic HBV infection, the risk of death from cirrhosis or hepatocellular carcinoma is 15%-25%.

The prevalence of HCV infection in our study was 31.74% which was higher as compared to other studies[16,17]. Earlier studies have found an association between the prevalence of HCV infection and known risk factors of this infection .i.e., blood transfusion, intravenous drug abuse, multiple sexual partners and homosexuality [16,17]. The prevalence is maximum in individuals of reproductive age. This may be because of the high prevalence of HCV infection in Punjab due to high rate of drug addiction, though no studies are available till date.

As the HEV infection in pregnant patients leads to high mortality, therefore, interventions to prevent the occurrence of HEV infections in the high-risk populations are therefore urgently required. Since HEV outbreak is mainly due to contaminated-drinking water, its control would depend upon improved hygiene and sanitation, such as increased access to safe water, provision of soap and chlorine tablets to improve personal hygiene, and proper sewage disposal.

During outbreak, it is necessary to intensively investigate the suspected underlying cause and then initiate targeted intervention to control and stop the outbreak. Mass vaccination of HEV could be another effective method to control the outbreaks. Currently, an HEV vaccine has already been licensed for use in China which gives an idea that HEV is a vaccine-preventable disease. Comparing the experience with HAV vaccination as an effective measure to control HAV outbreaks, the HEV vaccine holds promises to control large outbreaks.

However, it is not known whether the current vaccine works fast enough to effectively protect the exposed population against the disease during an HEV outbreak. Moreover, it is also not known whether the vaccine is safe and effective in pregnant women, the population in which a high fatality rate was seen during the outbreak. In fact, there is a disagreement among the HEV experts on whether the current licensed vaccine is necessary to prevent outbreak, following the recent earthquake in Nepal [18,19].

Conclusion

Acute viral hepatitis is the most common cause of jaundice in pregnancy with HEV infection being the most predominant cause. Maternal and perinatal morbidity and mortality are maximum in HEV infection. Cleanliness, construction of toilets and availability of clean drinking water to the population will improve the sanitary conditions of our rural areas. This will go a long way in minimising HAV and HEV infection. Judicious

use of blood and blood products is very important. Blood should be transfused only in dire emergencies. Substance abuse needs to be addressed as this is the main mode of transmission of Hepatitis B and C. Unwarranted intravenous infusions and injections given by the quacks in rural areas needs to be curbed. People should be educated regarding the parentral mode of transmission in hepatitis B, C and D infections. Safe sexual practices should be advocated. Effective immunization should be done against Hepatitis A and B in women of reproductive age group.

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