

Prevalence of Hepatitis E Virus (HEV)-IgG Antibodies in Hospitalized Jaundiced Patients

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In this study, 100 sera of hospitalized jaundiced patients were assayed for the presence of HEV-IgG antibody by enzyme immunoassay (EIA). Twenty two patients were found to be positive for HEV-IgG antibodies showing overall prevalence of 22%. Most of the patients with HEV-IgG seropositivity were in the age group of 40-59 years showing positive reactivity of 26%. Neither sex distribution nor various occupational groups showed any significant difference ($P>0.05$) in frequency of HEV-IgG antibodies.

Key words. Enterically transmitted non-A, non-B hepatitis, HBC, HCV, HDV, HEV, EIA, ELISA

Viral hepatitis is an important global health problem. Acute viral hepatitis is endemic in Pakistan. Presently viral hepatitis has become one of the commonest causes of hospital admission in most of the cities. Viral hepatitis can be caused by a large number of viruses. However the common hepatotropic viruses encountered in Pakistan are the A, B, C, D and E virus¹. The reported prevalence of hepatitis B virus (HBV) is 10% in children and 30% in adults amongst patients of acute viral hepatitis admitted in hospitals². In the blood donors population of the Armed Forces Institute of Transfusion (Pakistan) 3.7% of the total donors were found to be HCV infected³. While co- and superinfection with HDV was found in 3.11% of patients having ongoing silent infection with HBV⁴. Hepatitis A virus (HAV) infection accounted for 43% of acute viral hepatitis cases requiring hospitalization⁵. In our setup, HEV has been reported to be the cause of 77% adult and 29% paediatric cases of acute viral hepatitis⁶.

Following the introduction of HBV and HAV vaccines⁷, it is hoped that the magnitude of these infections will eventually decline. However other hepatitis viruses such as HEV and HCV may continue to pose a problem. The development of enzyme immunoassays for the detection of markers of acute (HEV) infection⁸ have prompted us to study the prevalence of HEV infection among patients admitted with acute viral hepatitis. Hepatitis E virus was previously called enterically transmitted non-A non-B hepatitis (ET-NANBH). Mode of transmission is mainly orofaecal and it causes acute and self limiting infection which is proved to be fulminant in pregnant females⁹.

Patients and methods

This study enrolled 100 cases of clinically diagnosed acute hepatitis. Patients were admitted in Jinnah Hospital, Services Hospital and Mayo Hospital, Lahore. Cases of obstructive and haemolytic jaundice were excluded from the study. Obstructive jaundice was ruled out by ultrasonographic examination. All patients were specifically questioned regarding present and past history

of jaundice.

About 3-6ml of serum was obtained from each case. Haemolysed samples were excluded. The samples were kept at 2-8°C if the assay was to be performed within 5 days or aliquoted and stored at -20°C. Repeated freeze thaw cycles were avoided. All sera alongwith positive and negative controls were tested in 3 batches for HEV-IgG in an ELISA utilizing recombinant antigens (Abbott). All results were read with the help of a spectrophotometer which was blanked with a substrate blank at 492nm. Absorbance of controls and specimens were determined at 492 nm. Absorbance of the specimen was related to the cutoff value for detection of antibody to HEV.

Results

A total of 100 sera of jaundiced patients were assayed for the presence of HEV-IgG by enzyme immunoassay. Out of 100 sera tested 22(22%) were reactive for HEV-IgG showing infection with HEV. There were 70(70%) male patients and 30(30%) female patients. Fifteen (21.3%) of the male patients and 7(23.3%) of the female patients were positive for HEV-IgG antibodies (Table 1). Statistically this sex distribution is not significant ($P>0.05$).

There were 6 jaundiced patients aged 1-19 years and only 1 (16.6%) was positive for HEV-IgG antibody. Out of 25 jaundiced patients in the age group 20-39 years, 5(20%) were reactive for HEV-IgG antibodies. There were 50 patients age 40-59 years and 13(26%) of them were positive for HEV-IgG antibody. Three (20%) out of the 15 jaundiced patients in the age group of 60-79 years were reactive for IgG antibodies to hepatitis E virus. None of the patients aged 80 or above was positive for HEV-IgG antibody (Table 2). The maximum number of jaundiced patients positive for HEV-IgG antibodies were in their 4th or 5th decades of life. Jaundiced patients in this study belonged to 8 different occupational groups; health care workers, labourers, office workers, housewives, businessmen, students and other without any specific occupation. There was no significant difference ($P>0.05$) in frequency of HEV-IgG antibody between these various occupational groups.

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Table 1 Frequency of HEV-IgG Antibodies in Jaundiced Patients of Different Sexes

Sex	HEV Ig Positive	
	No.	%age
Male (n=70-)	15	21.4
Female (n=30)	7	23.3

Table 2. Frequency of HEV-IgG Antibodies in Jaundiced Patients in Different Age Groups

Age group	Age (years)	HEV IgG positive	
		No.	%age
I	1-19 (n=6)	1	16.6
II	20-39 (n=25)	5	20.0
III	40-59 (n=50)	13	26.0
IV	60-79 (n=15)	3	20.0
V	80-99 (n=4)		00

Discussion

Hepatitis E virus has been recognized as the major aetiological agent of enterically transmitted non-A, non-B (ET-NANB) hepatitis. It is now well established that HEV was responsible for major outbreaks of ET-NANB hepatitis in India, Pakistan, Bangladesh, Nepal, Burma, Algeria, Somalia, Sudan, Ivory Coast and Mexico^{9,10,11,12,13,14}. The introduction of assays for the detection of HEV¹⁵ have further expanded the scope of our knowledge regarding the viral causes of hepatitis. The results of the present study have clearly demonstrated that HEV infection plays a significant role in the aetiology of acute viral hepatitis. In this study 22% of hospitalized jaundiced patients were found to be positive for HEV-IgG antibodies. Another reported incidence of hepatitis E is 77% in adult and 29% in pediatric cases of acute viral hepatitis⁶. In our study the preponderance of males accord with the known epidemiology of HEV¹⁶. A high male to female ratio 6.5:1 was also reported by Zhang et al¹⁷. The maximum number of patients (50%) in this study were in their 4th and 5th decades of life and 26% of them were reactive for HEV-IgG antibodies. According to Krawczynski¹⁸ the highest attack rate among cases with clinically overt disease is observed between 15 and 40 years of age. In a retrospective study by Lok et al¹⁹ and Dawson et al²⁰ the prevalence of HEV-IgG antibody was found to be higher in subjects over 20 years old than in younger subjects (24% vs 4%).

Twenty two percent of HEV-IgG positivity among hospitalized jaundiced patients indicated high rate of prevalence of hepatitis E. As HEV is enterically transmitted effective measures are needed to reduce its transmission. This agent should be included among the list of high risk agents in pregnant jaundiced females as HEV

infection is notorious for high morbidity and mortality among pregnant patients. The present test will assist clinicians and scientists in identifying and studying the epidemiology of HEV infection.

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