

Seroprevalence of HAV and HEV Infection in Patients Suspected Of Acute Viral Hepatitis

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Abstract: Background & objectives: HAV and HEV infections occur chiefly as a result of unhygienic conditions. This study was done to assess the seroprevalence of antibodies to HAV and HEV in patients of acute viral hepatitis. This study will also determine the disease distribution in different age groups. Methods: Serum samples of the patients presenting with jaundice were received in Serology laboratory, Department of Microbiology, B.J.M.C., of the patients admitted in Civil Hospital and outside from nearby PHCs and CHCs. These samples were tested for detection of IgM antibody against HEV and HAV by ELISA. Results and Interpretation: 1045 patients suspected of acute viral hepatitis were studied over a period of 3 months. The seropositivity of HAV was 49, out of which 35 were in the pediatric age group (71.4%). Seropositivity of HEV was 290, out of which 272 were adults (93.7%). Conclusion: HAV and HEV are notifiable diseases under IDSP. This study will help in determining the magnitude of public health problem posed by HAV and HEV. Also it will identify the age associated disease burden. Addressing the public health problems associated with the enteric transmission of viral hepatitis will require implementing stronger measures to prevent fecal contamination of food and water. [Priyadarshini NJIRM 2017; 8(2):88-90]

Key Words: HAV, HEV, Seroprevalence

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Introduction: Communicable diseases are still the major health problem in our country, and the hepatitis viruses residing in India are usually the endemic forms.

Hepatitis A virus (HAV) is transmitted via the feco-oral route, and has a global distribution.¹ HAV infection is a common infection responsible for about 1.4 million new infections worldwide each year.² HAV is a non-enveloped 27-nm, heat-, acid-, and ether-resistant ribonucleic acid (RNA) virus in the genus Hepatovirus of the family Picornaviridae. Antibodies to HAV (anti-HAV) can be detected during acute illness when serum aminotransferase activity is elevated and fecal HAV shedding is still occurring. This early antibody response is predominantly of the IgM class and persists for several months, rarely for 6-12 months. During convalescence, however, anti-HAV of the IgG class becomes the predominant antibody. Hepatitis A remains self-limited and does not progress to chronic liver disease.³ With the development of safe and effective hepatitis A vaccines in the early 1990s, understanding hepatitis A epidemiology has taken on new importance, because this information is needed to make well-informed decisions about prevention strategies and appropriate vaccine use. HEV is also transmitted enterically. HEV is a non-enveloped virus with a single-stranded positive-sense RNA in the genus Hepevirus of the family Hepeviridae. The IgM and IgG classes of antibodies to HEV (anti-HEV IgM and anti-HEV IgG) can be detected, but the former falls rapidly after acute infection, reaching low levels within 6 months.³

Methods: Study design and population A study, which included 1045 sera of patients during a 3 month period presenting with acute viral hepatitis was considered. The study population included sera of individuals from all age group who were suspected of acute viral hepatitis admitted at Civil Hospital, Ahmedabad.

Viral serology: Serum samples were analyzed for IgM anti HAV and IgM anti-HEV for the detection of acute hepatitis A and acute hepatitis E, respectively using commercially available HAV IgM ELISA kit (M/S Autobio Diagnostics Co. Ltd., Zhengzhou, China) and HEV IgM ELISA kit Dia.Pro (M/S Diagnostic Bioprobes Srl, Milano, Italy)

Statistical analysis: Data collected was fed in to Microsoft Excel and analysed. Statistical test (chi) 2 was used for analysing qualitative variable and Student 't' test for quantitative variable. P < 0.05 was taken as statistically significant.

Result: This study was conducted on total of 1045 samples, during a 3-month period in Serology laboratory, Department of Microbiology, Civil Hospital, Ahmedabad. Seropositivity of HAV was 49, out of which 35 were in the pediatric age group (<14 years). Seropositivity among females was 18 while that among males was 31. HEV was seropositive in 290 patients, out of which 272 were in the adult age group (> 14 years). Among these 290 patients, 102 were females of all age-groups (Fig: 1). Out of the 102 seropositive females, 60 were pregnant women. Age-

group wise distribution in this study has been illustrated in Fig: 2 and the age distribution in a similar study conducted in KMC, Mangalore is shown in Fig: 3.4

Figure: 1

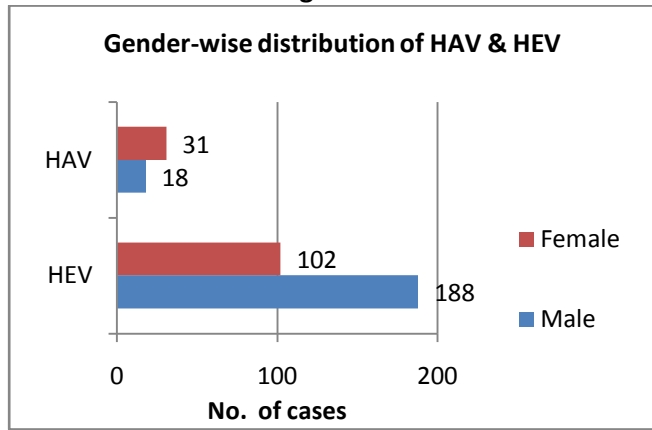


Figure: 2

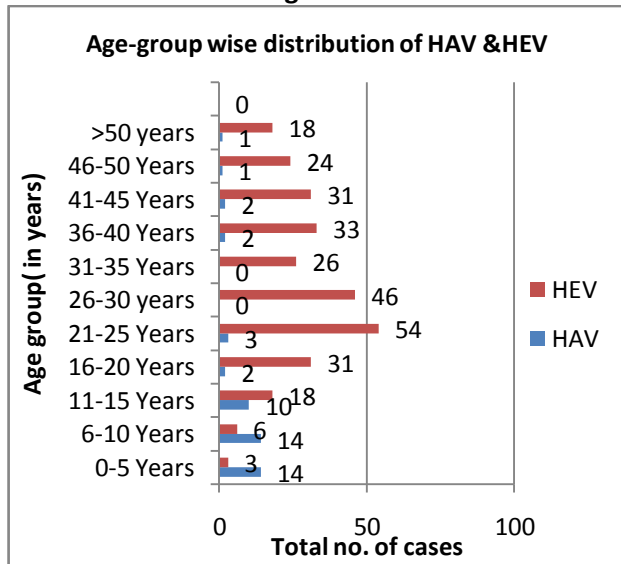
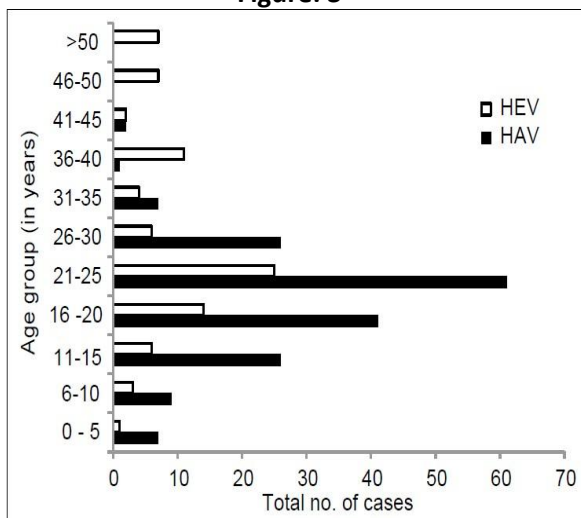


Figure: 3⁴



Discussion: Our study was conducted mainly to determine the prevalence of HAV and HEV and their age-group distribution. In the present study, out of the 1045 suspected cases, 339 had a positive viral marker (32.44% seropositivity). This was comparatively lower than the 49% as seen in another study.⁵ In this study, 49 (4.69%) were positive for anti-HAV IgM, 290 (27.75%) were positive for anti-HEV IgM. In another study, which included a total of 249, 100% of the adult population 23-86 years of age tested positive for anti-HAV and 11% of the same population had detectable anti-HEV antibodies.⁶ Prevalence of HEV was comparatively more than that of HAV. This differs from the prevalence found in another study in which prevalence of HAV (19.31%) is slightly more than HEV (10.54%).⁴ This could be attributed to difference in database. Acute hepatitis A is usually improved by conservative management. Generally, the incidence of Hepatitis A and Hepatitis E is closely related to the socioeconomic conditions of sanitation and hygiene.

HEV was predominantly seen among young adults, the risk and severity increases with age in HEV infection. The low prevalence of anti-HEV in children is attributable to lack of exposure to HEV in children.⁶ The HEV infection preferentially reaches teenagers and young adults. This seems paradoxical for an enterically transmitted infection, in which exposure is theoretically the same for all people subject to the terms of hygiene (Pawlotsky, 2001). It is possible that HEV infection is usually anicteric and goes unnoticed in children. These findings also agree with the results found in some other studies too. Prevalence of both HAV and HEV were higher in males than in females, which has correlated with other studies.⁵ It could be explained by a greater exposure of men in their professional and social activities.

Conclusion: The prevalence of HEV was comparatively more than that of HAV. This data will especially be useful in pregnant women where outcome of infection with HEV may turn out to be highly fatal. Clinical diagnosis of acute viral hepatitis must be confirmed by serology to detect all the types of causative viruses (A, B, C and E), since presence of certain predictors cannot be considered as a rule for expecting the type of the virus. With similar faeco-oral mode of transmission of Hepatitis A and E viruses and improving levels of personal and food hygiene among higher socio-economic population, periodic

surveillance of HAV/HEV exposure pattern may be of immense public health value. Collaboration of sectors to work together to supply safe water and safe sewage disposal is needed.

These data will be essential for planning of future vaccination strategies and for better sanitation program in this part of the country.

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