

Prevalence of HAV and HEV in Patients Presenting with Acute Viral Hepatitis in Silchar Medical College & Hospital

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ABSTRACT

Background: Hepatitis A virus (HAV) and Hepatitis E virus (HEV) are both enterically transmitted, resulting in acute viral hepatitis (AVH) in developing countries. Both are self-limiting viral infection, transmitted by feco-oral route. Exposure rate of HAV and HEV over a period are different in different parts of country.

Aim: This study was done to determine prevalence of HAV and HEV in patients presenting with AVH and the co-infection of HAV and HEV in these patients.

Materials and Methods: A cross sectional study of 2 years duration was conducted in the Department of Microbiology, SMCH, Silchar. A non random sampling of 200 patients presenting with AVH was considered in the study. On the basis of history, serum sample were analyzed for IgM anti HAV and IgM anti HEV for the detection of HAV and HEV, respectively using commercially available ELISA kits.

Results: The prevalence of HAV and HEV co-infection in patients with acute viral hepatitis was 32.5% (65 cases). HAV and HEV were most prevalent between 20 to 35years age group. Hepatitis A samples only 60 were positive and Hepatitis E samples only 5 were positive.

Conclusion: Almost all HAV and HEV infectious are spread by feco-oral route. The best means of reducing the spread of infection is by promoting simple measures of personal and community hygiene such as hand washing before eating and after defecation, the sanitary disposal of excreta which will prevent contamination of water, food and milk, during epidemics, boiled water should be advocated for drinking purposes.

Key words: Acute viral hepatitis, co-infection, Hepatitis A virus, Hepatitis E virus, prevalence

INTRODUCTION

Hepatitis A viruses (HAV) and Hepatitis E virus (HEV) are the leading causes of acute viral hepatitis worldwide. Hepatitis A virus (HAV) and Hepatitis E virus (HEV) is transmitted via the faeco-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 (antiHAV) can be detected during acute illness when serum aminotransferase activity is elevated and faecal HAV shedding is still occurring.² 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 diseases.³

Hepatitis E virus (HEV) is also an enterically transmitted virus that occurs primarily in Asia, Africa and Central America. HEV is a non-enveloped virus with a single stranded positive sense RNA in the genus Hepavirus of the family

caliciviridae. 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 after 6 months.

Current trend shows an increase in the prevalence of HAV and HEV co-infection, hence this study was conducted to determine the prevalence of HAV and HEV and their co-infection in patients presenting with AVH.

AIMS AND OBJECTIVES

1. Prevalence of hepatitis A and hepatitis E in patients with acute viral hepatitis.
2. Prevalence of co-infection with HEV and HAV.

MATERIAL AND METHODS

This cross sectional study was conducted from JUNE 2017 to JUNE 2019 at department of Microbiology SMCH Silchar after obtaining clearance from institutional ethical committee. A total 200 serum samples from patients of both sexes and all age groups of suspected acute viral hepatitis cases from both indoor and outdoor patients attending Silchar Medical College were included in the study.

Viral Serology

On the basis of clinical history serum samples were collected and analyzed

for the detection of anti HAV IgM and anti HEV IgM respectively using commercially available ELISA kits (Dia Pro Diagnostic Bioprobes) supplied by IDSP. All tests were carried out as per the manufacturer's instructions. Relevant data regarding age, sex, vaccination status, sanitation status, drinking water supply and occupational history also collected.

RESULTS

A total of 200 serum samples were processed for HAV and HEV IgM. In the age group of <18 years, 4 cases; age group of 19-45, 170 cases and age group of > 45 years, 26 cases were studied. Among the total samples, 150 samples were of males and 50 samples were of females. Out of 200 samples, 60 samples were only HAV IgM positive, 5 samples were only HEV IgM positive and 37 samples were found positive for both HAV and HEV IgM. The overall prevalence of HAV and HEV infection was found 32.5%. The prevalence of HAV infection was found to be 30%, HEV infection 2.5% and HAV-HEV co-infection 18.5%.

Table 1. Sex Distribution of HAV and HEV IgM Positive cases

	TOTAL	MALE	FEMALE
	200	150	50
HAV	60 (30%)	45 (75%)	15 (25%)
HEV	5 (2.5%)	3 (60%)	2 (40%)
HAV + HEV	37 (18.5%)	31 (83.79%)	6 (16.21%)

Table 2. Age wise Distribution of HAV and HEV positive cases

Age group (years)	Total Cases	Only HAV Cases(male)	Only HAV Cases(female)	Only HEV Cases(male)	Only HEV Cases(female)
2-17	4	3	1	2	1
19-45	170	38	11	1	0
>45	26	4	3	1	0

HAV infection in males and females was found to be 75% and 25%, respectively. In case of HEV infection, in males and females, it was found to be 60% and 40% respectively (Table 1).

This study found both HAV and HEV infection to be prevalent all around the year with predominance seen towards the end of monsoons and beginning of winters and more so even the co-infection showed a similar seasonal distribution. A peak in

HEV was also noted in the beginning of rainy season.

DISCUSSION

Globally HAV is considered as the common cause of viral hepatitis³ and in our study HAV (30%) was identified as the major cause of acute viral hepatitis and more common than HEV (2.5%), which is similar with the results of other studies from different regions of the country.⁴ It is

believed that HAV infection is a disease of adult the same was found in our study with 85% of total HAV positivity between 19-45 years. On the other side, HEV was found maximum positive in population of 2-17 age group with slightly more frequent in males than females. Co infection with HAV and HEV was found in 37 cases with the seroprevalence of 18.5%. It is similar in various studies.^{5,6,7}

In our study, co-infection was found more common in age group 3-18 years and is in conjunction with other studies.^{5,8} Co infection with HAV and HEV does not affect the prognosis of the patient much as these cases usually resolve with conservative treatment but in rare cases may lead to acute liver failure.^{7,8} Diagnosis of HAV –HEV co infection is difficult by clinical presentation and biochemical analysis; serology and PCR may help in timely diagnosis and identification of causative agent and support in prevention and management of acute liver failure in children and adults.

Cases were reported throughout the year as these infections are endemic in India, with the peak number in June - September, i.e. the rainy season. It is possibly due to cross contamination of drinking water with sewage during the rainy season.⁶ Both HAV and HEV prevalence was detected higher in males than in females. Outdoor and social activities of males may make them more vulnerable for exposure than females. Infection usually resolves without any sequel but in rare cases may lead to fulminant liver failure. No specific treatment is available, complete rest following infection is important for recovery. HAV and HEV infections are transmitted enterically and have similar risk factors; therefore, the most effective method to prevent infection is to interrupt the route of transmission and focus on proper sanitary conditions, hygiene and public education. Simultaneously vaccines can be used as a preventive strategy. Although HAV vaccine is in the market but it is not easily accessible and is less cost effective due to

high prevalence of anti HAV antibody in the general population in a country like India. HAV vaccine can be used in high risk population like chronic liver disease patients, travellers visiting endemic areas, and during onset of epidemics.⁸ As HAV infection is common in younger children, inclusion of single dose inactivated HAV vaccine in immunization schedule of children can be useful in prevention of infection⁹.

CONCLUSION

The high prevalence of HAV mandates the screening for HEV because it may lead to grave consequences, especially in pregnant women. Improving levels of personal and food hygiene and proper sanitary conditions are of immense public health value in prevention of feco-orally transmitted Hepatitis A and E viruses.

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How to cite this article: Swagata R, Debadatta CD, Namrata S. Prevalence of HAV and HEV in patients presenting with acute viral hepatitis in Silchar Medical College & Hospital. *International Journal of Research and Review*. 2021; 8(2): 193-196.
