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A Two Year Prevalence Study Of Enterically Transmitted *Hepatitis A & E* Viruses In A Tertiary Care Hospital In South India

Mukherjee Raja[1], Chattopadhyay Saswati[2], P. Srilatha[3], B.Anuradha[4], P. Arvinth Jothi[5], N. Srinivas[6]

[1]*Medical Officer, Dept. of Pathology, Chandannagore Sub-divisional Hospital, Hooghly, West Bengal,India.*
[2]*Assistant Professor, Department of Microbiology, Burdwan Medical College, Burdwan. West Bengal. India.*
[3]*Professor, Department of Microbiology, Mamata Medical College & Hospital, Khammam, Telengana.*
[4]*Professor& HOD, Department of Microbiology, Mamata Medical College & Hospital, Khammam, Telengana.*
[5]*Assistant Professor, Department of Community Medicine, Villupuram Medical College & Hospital, Tamil Nadu.*
[6]*Chief Assistant Surgeon, Narketpally PHC, Nalgonda District, Telengana.*
Corresponding Author:- Dr. Saswati Chattopadhyay

Abstract:
Background: *Worldwide, viral hepatitis causes substantial morbidity and mortality. Hepatitis A & E viruses are important causes.* ***Objectives:*** *To assess prevalence of both the viruses in AVH patients.* ***Materials and Methods:*** *A 2-years study was conducted (April 2011-March, 2013) on 191 AVH patients of all ages and belonging to both the sexes. The serum samples were analyzed for IgM anti-HAV and IgM anti-HEV by ELISA.* ***Results:*** *Seroprevalence of HAV- and HEV- were 27.23% and 6.81%; HAV was predominant in the age group of 0-10 years (18/52-34.61%). HEV infection was seen in all the age groups with maximum prevalence in age group 21-30 years.* ***Conclusion:*** *Screening for HAV and HEV is of immense importance for vaccination and sanitation programmes.*
Key Words: *- Hepatitis A, Hepatitis E, AVH-acute viral hepatitis, ELISA.*

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I. Introduction

Worldwide, acute viral hepatitis is a major problem and HAV and HEV are the main causes [1] responsible for substantial morbidity and mortality in both developed and developing countries. [2]

Hepatitis A virus (HAV) is a 27nm non-enveloped single stranded RNA virus of genus Hepatovirus, family Picornaviridae transmitted fecal-orally and is favored by inappropriate sanitary conditions. [3] In India exact incidence is not known because of the high proportion of asymptomatic cases. [4]

Hepatitis E virus (HEV) is another enterically transmitted virus. It is a spherical, non-enveloped, single-stranded positive-sense RNA virus of genus Hepevirus family Hepeviridae. In pregnant women, HEV infection is fatal leading to approximately 80% mortality. [5]

The study was conducted in the Department of Microbiology of a tertiary care hospital in South India to determine the prevalence of HAV and HEV in AVH (acute viral hepatitis) patients.

II. Materials And Methods

A 2-year community based cross-sectional study was conducted, after obtaining clearance from institutional ethics committee, on the sera of 191 patients of both sexes and of all age groups, presenting with acute viral hepatitis in a tertiary care centre in South India from April 2011 to March 2013. About 2 c.c. blood was collected from the patients. Serum was separated from the clotted blood samples and stored in aliquots at −20°C.

The serum samples were tested serologically to detect IgM anti-HAV and IgM anti-HEV respectively using commercially available ELISA kits (Immuno LISA for HAV IgM ELISA and for Immuno LISA HEV IgM ELISA from ORGENICS ltd). Hepatitis B &C positive sera were excluded from the study.

III. Results

The prevalence of HAV and HEV infection in patients with acute viral hepatitis was found to be 52/191cases (27.23%) [39--males and 13—females] and 13/191 cases (6.81%) [4-- males and females--9]

respectively (Table 1). Liver enzymes like alanine amino transferase, aspartate amino transferase were all found to be deranged in all the cases but there was no mortality.

Table1: Sero-Prevalence of *HAV and HEV*

Total no.of Cases	Anti-*HAV* IgM positive	MALE	FEMALE	Anti-*HEV* IgM positive	MALE	FEMALE
191	52	39	13	13	04	09
%	27.23	75	25	6.81	30.77	69.23

The highest prevalence rate of HAV infection was in the age group of 0-10 years (18/52).HEV infection was seen in all the age groups, maximum in the age group 21-30 years (Table 2). No mortality occurred during the study period.

Table2: Age wise Prevalence of *HAV and HEV*

AGE(years)	No.of Cases	*HAV* positive	*HEV* positive
0-10	52	18	1
11-20	30	10	2
21-30	78	15	8
31-40	12	6	1
41-50	11	1	1
51-60	5	1	0
61 & above	3	1	0
TOTAL	191	52	13

Both HAV and HEV were seen to be prevalent all around the year with predominance towards the end of monsoons in the months of July- August in both the years. (Table 3).

Table 3: Monthwise Prevalence of *HAV and HEV* ---2011-2013.

MONTH-2011-2013	No.of cases	HAV +ve	HEV+ve
January	9	1	0
February	7	1	0
March	8	2	1
April	9	3	1
May	17	5	1
June	15	8	2
July	64	19	4
August	26	11	3
September	12	1	1
October	7	1	0
November	9	0	0
December	8	0	0
TOTAL	**191**	**52**	**13**

The commonest symptoms complained by the patients were anorexia (96.59%), malaise (95.45%), hepatic enlargement (96.59%) and jaundice (75%). The least common symptom was abdominal distension (38.64%) and liver tenderness (36.36%).

Co-infection of HAV-HEV was, however, not observed in any of the patients.

IV. Discussion

The study showed a sero-positivity of 27.23 % for HAV & 6.81% for HEV in patients with acute hepatitis but study by Radhakrishnan S et al in 2000 from CMC, Vellore reported a prevalence of HAV lgM in 13.3% cases &HEV IgM in 17.3% in acute hepatitis patients.[6] Our study showed highest prevalence of HAV infection (18/51= 35.29%) in the age group 0-10 yrs similar to the study conducted by Hussian E et al in 2006 who also concluded that the mean age of hepatitis A infection was 8.6 ± 3.8 years. [7]

Our study showed that Hepatitis E infection showed no age specific prevalence like Murhekar MV et al who in'88-'89 also observed an even distribution in all age groups.[8] In our study males had a higher prevalence of HAV (39/52 cases) whereas females showed higher prevalence of HEV (09/13cases). But Joon et al in 2000 found both sexes equally susceptible to enterically transmitted hepatitis A and E infections. [9]

Our study showed the prevalence of both the infections was more common towards the end of monsoons similar to the study by Joon et al in 2015. [9] But the study by Kaur H et al[10] in 2002 and Waheed-uz ZT et al in 2006 [11] found that both the infections occurred throughout the year with no preponderance following the monsoons.

V. Conclusion

Though the prevalence of HAV is much higher than that of HEV (sero-prevalence of 27.23%), the screening for HEV is mandatory because of the fatal consequences it leads to especially in pregnant women. Periodic surveillance of HAV/HEV exposure pattern is of public health importance as both viruses have similar faeco-oral mode of transmission and these data are essential for planning of future vaccination strategies and better sanitation.

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