Research Paper

Volume : 3 | Issue : 9 | September 2014 • ISSN No 2277 - 8179

Prevalence of HAV and HEV in The Patients Presenting with Acute Viral Hepatitis

Medical Science

KEYWORDS : Hepatitis A virus, Hepatitis E virus, Co-infection, viral hepatitis

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ABSTRACT

Viral hepatitis due to hepatitis A virus and hepatitis E virus is a major public health problem due to poor sanitation and is an important cause of morbidity and mortality.[1,2] This study is carried out at tertiary care centre at Ahmedabad, India. 1768 samples were tested from suspected cases of viral hepatitis for Anti-HAV IgM antibody and Anti-HEV IgM antibody by ELISA. 275(16 %) were positive for HAV and 464(27%) were positive for HEV. In pediatric age group HAV infection(44.2%) is more common and in adults HEV infection is more common (29%). Co-infection were present in 97(5.64%). Co-infection was more common in <12 years age group(10.5%) than >12 years age group(4.5%). Co-infection and super-infection usually cause complications leading to high morbidity and mortality.[11]

Introduction

Every year about 1.5 million symptomatic cases of HAV infection and 20 million of HEV infection occurs in the world. HAV is more common in regions of the world with poor sanitation and not enough safe water.[1,2] In the developing world about 90% of children have been infected by age 10 and thus are immune by adulthood.[1] It often occurs in outbreaks in moderately developed countries where children are not exposed when young and there is not widespread vaccination.[1] HEV is a major cause of illness and of death in the developing world and disproportionate cause of deaths among pregnant women.

Due to poor sanitation, feco-oral transmission of Hepatitis A & E viral acute viral hepatitis is a major public health problem in India.[3] So this study was carried out to know prevalence of HAV & HEV infection and co-infection caused by them. So that appropriate management of cases as well as preventive strategies and planning for vaccination for this part of the country could be planned.

Materials and Methods

From January 2014 to July 2014, total 1768 blood samples were tested from suspected cases of acute viral hepatitis. Acute viral hepatitis case was defined as a person having an acute illness of <15 days duration with a discrete onset of any sign or symptom (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhoea and abdominal pain) and either a) jaundice or b) elevated serum alanine aminotransferase (ALT) levels > 100 IU/L documented at least twice at a 1-week interval without any history of pre-existing liver disease.[4] Patients who developed encephalopathy after the onset of icterus were considered to have acute hepatic failure.[5]

Blood samples were collected from such patients and all these samples were tested for Anti-HAV IgM antibody (DSI, SRL Italy) and Anti-HEV IgM antibody (DSI, SRL Italy) by ELISA as per kit literature and quality of testing was controlled by using in-house QCs.

Results

Of 1768 samples collected, 323 samples were collected from children and 1395 samples were collected from adults. Males (64.84%) were more in number than females (35.15%) in suspected cases of viral hepatitis.The viral etiology was confirmed in 739 (41.79%) cases and rest of the samples were negative for Anti-HAV IgM antibody and Anti-HEV IgM antibody.

Hepatitis E virus was found in the maximum number of cases 464 (26.24% cases), followed by HAV 275 (15.55%) cases. Males (43%) and females were(42.88%) equally affected. In males HAV infection was 16.42 % and HEV infection is 26.66 %. In females, HAV infection was 15.23% and HEV infection was 27.64%. [Table-1]

Table-1 Distribution of HAV- HEV in male and females

Group	Total	HAV +ve	HEV +ve	BOTH HAV & HEV +ve
Male	1114	183	297	62
Female	604	92	167	35
Total	1768	275	464	97

Table-2 Distribution of HAV- HEV in different age groups

Group	Total	HAV +ve	HEV +ve	BOTH HAV & HEV +ve
Pediatric	323	143	51	34
Adult	1395	132	413	63
Total	1768	275	464	97

143 of children were positive for anti-HAV IgM (44.2%) and 132 of adults (9.46%). On the other hand, 413 adults were positive for anti-HEV IgM (29.6%) and 51 children were positive for anti-HEV IgM (15.78%). [Table-2]

Co-infection of HAV & HEV was detected in 97 cases (5.64%) and no significant difference was noted in male and female group in relation to co-infection. However, co-infection was found more common in pediatric age group (34 cases, 10.52 %) than in adult group (63 cases,4.51%)

Discussion

Different studies on acute viral hepatitis caused by HAV & HEV have reported varying prevalence of these viruses, HAV (1.7-67 %) and HEV (16.3-66.3 %).[3,6,7] In the present study, HEV (26.24%) was identified to be the most common cause of acute hepatitis followed by HAV (15.55% cases). The overall prevalence of hepatitis viruses is in accordance with that of other studies.[8,9,10]

In pediatric age group HAV infection is more common as compared to HEV infection as this virus is more affecting children as they are lacking immunity against it and due to poor sanitation

and contamination of water, they are easily affected. However, HEV infection is more common in adult age group as HEV .

Co-infection of HAV & HEV is more common in pediatric age group as compared to adult age group. The reason for this may be pediatric group are not immune to HAV and also due to poor sanitation and contamination of water, they are exposed to HEV too, so they develop simultaneous infection by both the viruses. Adult group also showed about 5% co-infection, that may be due to simultaneous presence of both viruses in water supply due to contamination and these patients are also lacking immunity. [11]

In our study, the HEV prevalence in children (15.78%) is comparable with that reported by other studies (16.3-66.3%).

It could not be determined whether these were co-infections or super-infections. But, it is known that both co-infection and super-infection usually cause complications leading to high morbidity and mortality.[12]

HAV and HEV infections are endemic in India and infections occur throughout the year. The main source of water contamination is due to poor sanitation, contamination of drinking water and lack of knowledge of community regarding the prevention. [13]

Thus HAV & HEV infection are very common infection transmitted by feco-oral route, leading to increased morbidity and mortality. Co-infection plays a major role especially in children as about 10% of children suffered from co-infection, leading to severe infection and leading to severe liver damage.[11] As children are easily infected by both the viruses, vaccination and better sanitation plan should be employed.

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