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CLINICAL PROFILE OF SERO-POSITIVE HEPATITIS A AND CO-INFECTION WITH HEPATITIS E IN HOSPITALIZED CHILDREN

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ABSTRACT

Introduction: Hepatitis A and hepatitis E both are enterically transmitted disease and a burden to developing countries like India. Both follow a similar course of disease and have a high chance of occurring together. Co-infection may lead to increased morbidity and mortality.

Aims: To study the clinical profile of hospitalized Hepatitis A patients and to compare clinical profile of co-infection (Hepatitis A virus and Hepatitis E virus).

Materials and methods: Cross sectional were observational study of 100 Hepatitis A patients admitted in pediatric ward of tertiary care hospital of age between 1 year and 12 years of age.

Results: Out of 100 patients, 83 infected with HAV only while 17 had co-infection with HEV. HAV mostly affects preschool children while co-infection was reported in early adolescents. There was increased hospitalization of co-infected patients. On correlation of liver function tests, mean SGPT on admission and mean Bilirubin on admission both were higher in co-infected patients. Clinically, coinfection of HAV and HEV infection, though runs a more complicated and prolonged course does not affect the prognosis of patients.

Conclusion: Even though hepatitis A and hepatitis
s E infections are a self-limiting disease in pediatric age group and runs a relatively uncomplicated and benign course, it is the most common cause of fulminant hepatic failure in children. Thus, efforts have to be taken to curb the spread of disease in the community.

KEYWORDS : Viral Hepatitis, Hepatitis A, Hepatitis E, HAV, HEV, Co-infection

INTRODUCTION

Viral hepatitis continues to be a major health problem in both developing and developed countries[1]. Although awareness about the disease and ways to prevent it has been increasing during the last decade, it continues to be a major cause of morbidity from both its acute infection and its chronic sequelae.

Hepatitis is a systemic viral infection marked by hepatic cell necrosis and hepatic inflammation that leads to a characteristic constellation of clinical, biochemical and histological changes. This disorder is caused by at least 5 pathogenic hepatotropic viruses – A, B, C, D and E[1], but HAV and HEV are of great concern in developing countries due to its burden of illness.

Hepatitis A is an acute infectious disease caused by hepatitis A virus. HAV infection is the most prevalent hepatotropic virus and accounts for 50% of all clinically apparent acute viral hepatitis[1]. It is transmitted through the fecal-oral route, due to ingestion of food and water[2]. The incubation period of hepatitis A is usually 14-28 days[3]. Almost everyone recovers fully from hepatitis A with lifelong immunity, however rarely people could die due to fulminant hepatitis[3]. 290,000 cases reported every year in India. It generally runs a benign course with a low mortality[4].

Hepatitis E is the epidemic form of what was formerly called non-A, non-B hepatitis[1]. It is found worldwide but the prevalence is highest in East and South Asia[5]. Transmission is fecal-oral route. Its incubation period is 3 to 8 weeks with mean of 40 days[4]. The clinical illness is similar to that of HAV but is often more severe[1].

HAV and HEV are both enterically transmitted and both do not cause chronic hepatitis. Both have similar prodromal phase and icteric phase. Fulminant course can be due to super added infections or co-infections. In India, HAV is still the major cause of sporadic hepatitis and HEV is the major agent for epidemics. HAV and HEV infection is inversely related to socio-economic status. HAV and HEV are the most common co-infection which may lead to serious complications, increased duration of hospitalization and increased mortality. It is always difficult to differentiate HAV and HEV clinically and biochemical test are always required.

The study was done to determine the proportion of HAV and HEV infection admitted for acute viral hepatitis.

METHODS AND METHODOLOGY

This study is a cross sectional observational study conducted over a period of 2 years in the paediatric ward of a tertiary care hospital in Ahmedabad, India. Data were obtained from children with Hepatitis A (IgM HAV antibody) positive patients, hospitalized with clinical hepatitis, unvaccinated against Hepatitis A who were advised viral antibody profile between age of 1 year to 12 years.

Prior informed verbal consent was taken from guardian. Data was taken from hospital records and contained demographic data, clinical and biochemical profile. All investigations were done in same hospital laboratory. Liver Function Tests with enzymes were done on Abbott Architect c4000 clinical chemistry analyzer. Prothrombin Time-International Normalised Ratio was done by coagulometry on ACL Pro Advance. Anti-HAV IgM and anti-HEV IgM testing were done by immunoassay (ELISA) by DIAPRO kit.

All patients were treated as per protocol. Children with pre-existing liver conditions and those on hepatotoxic drugs were excluded from the study. All collected data was analyzed with appropriate statistical tools.

RESULTS

Out of 100 children taken into the study, 83 were only HAV positive while 17 had co-infection with HEV. There was a female predilection for the disease affecting 58% and 53% of HAV and HAV-HEV co-infection respectively. It was also found that while HAV affects mostly pre-school children the co-infection affects early adolescents with median age of presentation being 6 years for HAV and 8 years for coinfection. Co-infection also increases the hospital stay. 83% children infected with HAV required less than 4 days of hospital stay while 77% of co-infection had a hospital stay of 4 or more days. However the presenting complaints for both were almost the same with common symptoms being fever, yellowish discoloration of urine, vomiting, abdominal pain and anorexia.

On correlation of liver enzymes, elevated SGPT on admission as well as on discharge was observed with co-infection. Mean SGPT on admission for HAV and co-infection were 1132 and 1799 respectively and for discharge were 753 and 1095 respectively.

Similarly, elevated serum bilirubin on admission as well as on discharge is observed with co-infection. Mean serum bilirubin on admission in HAV and co-infection is 5.13 and 7.32 while on discharge is 3.58 and 5.1 respectively.

Other manifestation that were observed were altered coagulation profile in 9%, thrombocytopenia in 7%, pleural effusion in 1% and hepatic encephalopathy in 1%. Even though altered PT-INR was observed in 9% patients, bleeding diathesis was observed in only 4% patients. In the study there was only 1 death (1%), which was attributed to fulminant hepatic failure.

TABLE 1: Baseline Data of HAV and Co-infection

	HAV	HAV-HEV COINFECTION	p VALUE
TOTAL PATIENTS	83	17	
GENDER			
MALE	35 (42%)	08 (47%)	
FEMALE	48 (58%)	09 (53%)	0.71
AGE (IN YEARS)			
1-3	14 (17%)	02 (12%)	
4-7	39 (47%)	05 (29%)	
>7	30 (36%)	10 (59%)	0.21
DURATION OF HOSPITALIZATION (IN DAYS)			
1-3	69 (83%)	04 (24%)	
4-7	08 (10%)	11 (64%)	
>7	06 (07%)	02 (12%)	<0.001
COMMON PRESENTING SYMPTOMS			
FEVER	61 (73%)	14 (82%)	
VOMITING	69 (83%)	13 (76%)	
ANOREXIA	51 (61%)	11 (64%)	
ABDOMINAL PAIN	58 (69%)	15 (88%)	
YELLOW URINE	52 (62%)	12 (70%)	
BLEEDING	03 (04%)	02 (11%)	
CONVULSION	01 (01%)	0	
PLEURAL EFFUSION	0	01 (06%)	
FULMINANT HEPATIC FAILURE	02 (02%)	0	
LIVER FUNCTION TEST			
Mean SGPT(IU/DL)			
ON ADMISSION	1132	1799	
ON DISCHARGE	753	1095	0.14
Mean TOTAL BILIRUBIN			
ON ADMISSION	5.13	7.32	
ON DISCHARGE	3.58	5.10	0.98
OTHER INVESTIGATION			
THROMBOCYTOPENIA	06 (07%)	03 (18%)	
ALTERED PT-INR	07 (09%)	04 (24%)	
WITH BLEEDING	03 (04%)	02 (12%)	
WITHOUT BLEEDING	04 (05%)	02 (12%)	
MORTALITY	01(01%)	0	

DISCUSSION

Our study was conducted mainly to determine clinical profile of patients hospitalized with HAV infection and compare it with coinfection with HEV. Studies from other developing countries are consistent with the prevailing pattern in India.

	Current Study		Salahuddin et al	
	HAV	HAV+HEV Coinfection	HAV	HAV+HEV Coinfection
Clinical Pattern:	58 (69%)	15 (88%)	55 (72%)	3 (75%)
Abdominal Pain	51 (61%)	11 (64%)	76 (100%)	4 (100%)
Anorexia	69 (83%)	13 (76%)	68 (89%)	3 (75%)
Nausea/Vomiting	61 (73%)	14 (82%)	48 (63%)	3 (75%)
Fever				
Investigations:				
Total Bilirubin:				
<5	45 (54%)	01 (06%)	42 (55%)	0
5-10	33 (40%)	14 (82%)	29 (38%)	01 (25%)
>10	05 (06%)	02 (12%)	05 (07%)	03 (75%)
SGPT:				
<500	20 (24%)	01 (06%)	38 (50%)	0
500-1000	20 (24%)	04 (23%)	25 (33%)	01 (25%)
>1000	43 (52%)	12 (71%)	13 (17%)	03 (75%)
INR:				
<1.5	76 (91%)	13 (77%)	68 (90%)	02 (50%)
>1.5	07 (09%)	04 (23%)	8 (10%)	02 (50%)

In the present study, the symptomatology is similar to any study in any part of the world. While our study shows a female predilection for the disease, other studies, like Prabhat et al[6] have shown that male are more affected.

Correlating the liver function tests, coinfection of HAV and HEV presents with higher serum bilirubin and SGPT levels on admission than HAV alone in the present study. Altered PT-INR was also observed more in cases with co-infection. Salahuddin et al[7] from Bangladesh observed a near similar result. Our study has also shown that patients with coinfection required longer hospitalization.

No mortality was reported in coinfection. Coinfection clinically does not seem to result in more severe illness. Comparing it with a similar study, Agrawal et al[8] and Arvind Kumar et al[9] have also come with the same conclusion.

In summary, coinfection of HAV and HEV infection, though runs a more complicated and prolonged course does not affect the prognosis of patients.

CONCLUSIONS

HAV infection signifies personal and environmental hygiene. Even though hepatitis A infection is a self-limiting disease and runs a relatively uncomplicated and benign course, it is the most common cause of fulminant hepatic failure in children. Thus, efforts have to be taken to curb the spread of disease in the community. HEV infection follows a similar pattern as HAV infection. Though being one the most common coinfection to occur with HAV, it is under recognized in pediatric age group.

Coinfection may produce a more severe disease leading to high morbidity.

The importance of sanitation, safe food practice, clean drinking water and public education is of utmost importance for prevention of both the diseases.

Vaccination against hepatitis A should be included in the national immunization schedule of high risk developing countries.

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