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Demographic & Clinical Profile Analysis of Acute Viral Hepatitis E Patients in Bangladesh: A Single-Center Study

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Abstract **Original Research Article**

Background: In Bangladesh, Acute hepatitis is seen sporadically round the year. On the other the other hand, the incidence of acute viral hepatitis E increases after floods as this allows sewerage contamination of piped and groundwater. ***Objective:*** In this study our main goal is to evaluate the demographic & Clinical Profile Analysis of Acute Viral Hepatitis E Patients in Bangladesh. ***Method:*** This prospective observational study was conducted in the Department of Gastroenterology, US-Bangla Medical College & Hospital during the period from July 2018 to June 2019, in Bangladesh. A total of 35 patients who were attending the Hepatology unit with acute viral hepatitis were included as the study population for this study. By enzyme-linked immunosorbent assay, all viral markers were tested. ***Results:*** Majority, 34.4% belong to 21-30 year's age group, and 81.3% were male. Positive cases of Anti HAV IgM were 10% followed by Anti HEV IgM seen in 100%, however, none of the Anti HCV IgM seen in patients. Higher serum bilirubin was 8.82±5.65. Followed by Levels of aspartate aminotransferase (AST) was 1141.00±128.69, S.GPT ALT was 1380.75±751.28, S. Creatinine was10.00±18.33. Moreover, Prothrombin Time was seen longer in patients. Which means patient's needs higher blood clotting time than usual. ***Conclusion:*** Acute viral hepatitis E is the leading cause of wide spectrum of liver disease in young male adults ranging from severe acute viral hepatitis, to decompensation of liver in cirrhotic in Bangladesh.

Keywords: Acute Viral Hepatitis E, liver diseases, hepatitis virus.

INTRODUCTION

Acute hepatitis E is a self-limiting inflammation of the liver caused by infection with the hepatitis E virus(*HEV*). HEV is found in the stool of an infected person. It is spread when someone unknowingly ingests the virus even in microscopic amounts. It is a small, non-enveloped RNA virus, icosahedral in shape, and 27-34 nm in diametre. HEV is commonly transmitted through the faecooral route by contaminated water. Bloodborne transmission and zoonotic reservoir of HEV have also been reported. [1-3] HEV has been responsible for major outbreaks of acute infection in developing countries of Asia, Africa, and Latin America over the last 50 years. The first documented epidemic of HEV was reported in New Delhi, India, in 1955-1956, and 29,300 people were affected. [4, 5] Moreover, HEV infection is common in Bangladesh. A previous study in Bangladesh has shown that the prevalence of anti-HEV IgM in our apparently-healthy population was 7.3%. [5, 6] In this study our main goal is to evaluate the demographic & Clinical Profile Analysis of Acute Viral Hepatitis E Patients in Bangladesh.

OBJECTIVE

The objective of the study was to evaluate the demographic & clinical profile analysis of Acute Viral Hepatitis E Patients in Bangladesh.

METHODOLOGY

This prospective observational study was conducted in the Department of *Gastroenterology*, US-Bangla Medical College & Hospital during the period from July 2018 to June 2019, *in Bangladesh. A total of 35* patients who were attending the Hepatology unit with acute viral hepatitis were included as the study population for this study. All viral markers were tested by enzyme-linked immunosorbent assay. The viral markers that were tested included *HBsAg*, anti-HBc IgM, and HBeAg for hepatitis B virus (HBV), anti-HEV IgM for HEV, anti-HAV IgM for hepatitis A virus (HAV), anti-HCV for hepatitis C virus (HCV), and anti-CMV for cytomegalovirus (CMV). In cirrhotics, HBV's DNA was tested by polymerase chain reaction (PCR) having a lower limit of detection of 250 copies/mL. Serum bilirubin, transaminases, and albumin were tested using an auto analyzer and prothrombin time by Quick's method. Complete medical history and all relevant clinical information were obtained for each patient. Data were entered on the excel spreadsheet and analyses were performed with SPSS version 16. Results were expressed in tables and bar charts.

RESULTS

In table-1 shows age distribution where 34.4% belong to 21-30 year's age group, followed by 31.3% belong to>40 years, 21.8% belong to 11-20 years and 12.5% belong to 31-40 year's age group. The following table is given below in detail:

Table 1: Age distribution of patients (N=35)

Characteristics	Hepatitis E n (%)
Gender	
Male	28(80.0%)
Female	7(20.0%)
Age group	
5-10 yrs.	0(0.0%)
11-20 yrs.	1(2.9%)
21-30 yrs.	7(20.0%)
31-40 yrs.	7(20.0%)
>40	20(57.1%)
Mean ±SD	32.74±12.94

In figure-1 showed gender distribution of the patients where 80% were male, 20% were female. The following figure is given below in detail:

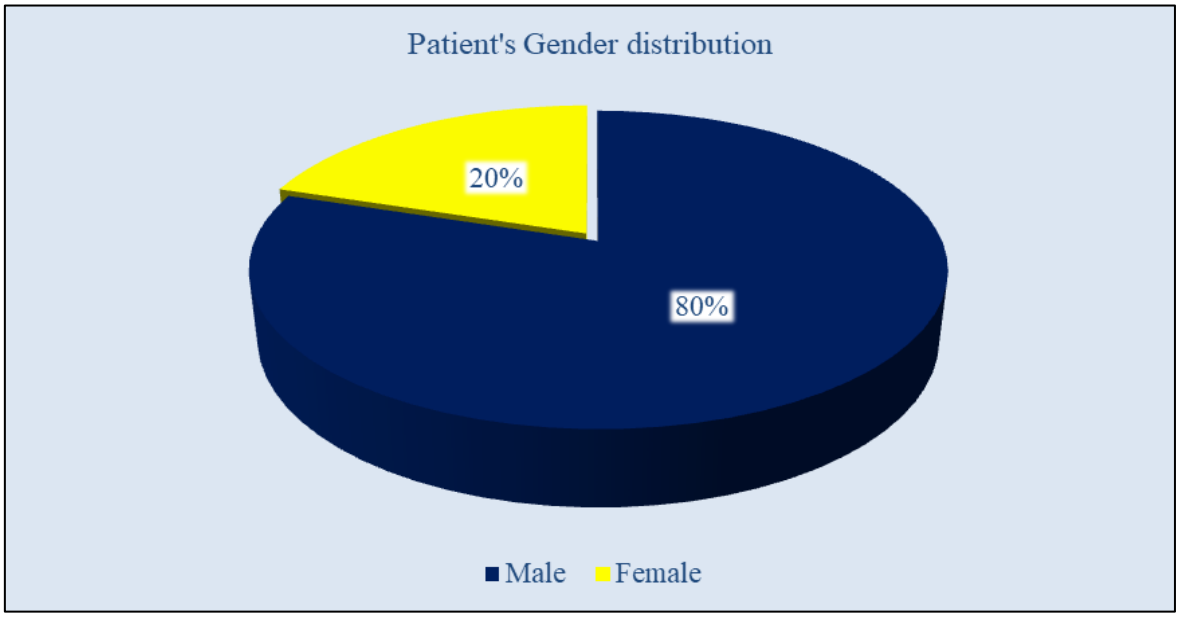

Figure I: Pie chart showed gender wise patients distribution. (N=35)

In figure-2 showed age distribution of the patients where 57.1% highest in age group 31-40 year's age group. The following figure is given below in detail:

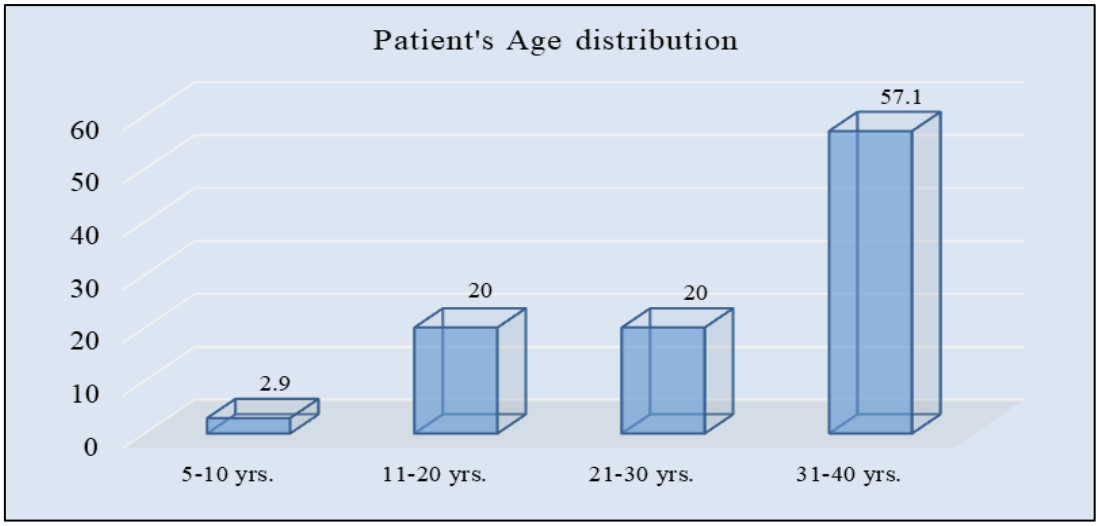

Figure II: Bar chart showed age group wise patients distribution. (N=35)

In table-2 shows Clinical Parameters where positive cases of Anti HAV IgM were 10% followed by Anti HEV IgM seen in 100% in 10 patients, However, none of the Anti HCV IgM seen in patients. The following table is given below in detail.

Table 2: Clinical Parameters of Anti HAV IgM Parameters (N=35)

Parameters	Hepatitis E n (%)
Serum Bilirubin Total	13.21±22.83
SGPT ALT	1016.90±768.56
SGOT AST	1141.00±128.69
Serum Alkaline Phosphatase	284.00±104.86
Serum Creatinine	18.45±39.44

In table-3 shows laboratory profile of the patients where higher serum bilirubin was 8.82±5.65. followed by Levels of aspartate aminotransferase (AST) was 1141.00±128.69, S.GPT ALT was 1380.75±751.28, S. Creatininewas10.00±18.33. Moreover, Prothrombin Time was seen longer in patients. Which means patients' needs higher blood clotting time than usual.

The following table is given below in detail:

Table-3: Laboratory profile of the patients

Characteristics	Hepatitis E n (%)
Hepatitis A with C	0(0.0%)
Hepatitis E with B	3(100.0%)

Table 4: Complaints distribution of patients (N=35)

Complaints	Hepatitis E n (%)
Vomiting	17(54.8%)
Jaundice	19(61.3%)
Fever	6(19.4%)
Upper Abdominal Pain	6(19.4%)
Itching	5(16.1%)
Low abdominal pain	3(9.7%)
Loose stool	1(3.2%)
Cough	1(3.2%)
Oral ulcer	1(3.2%)
Painful urination (dysuria)	1(3.2%)
Constipation	1(3.2%)
Periumbilical Pain	1(3.2%)

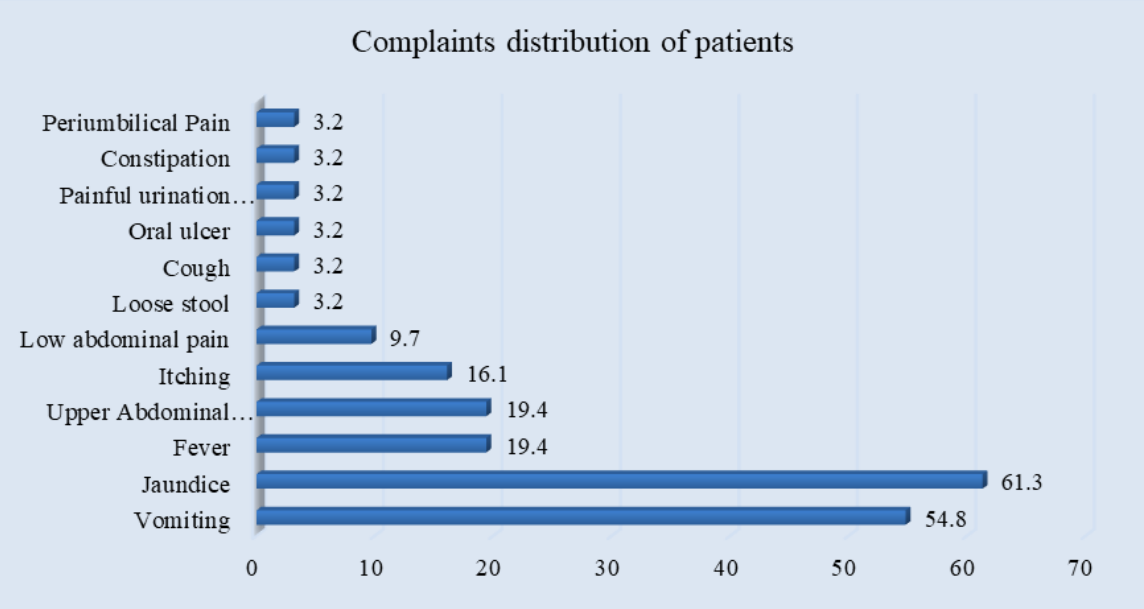

Figure III: Bar chart showed complaints of patients (N=35)

Table 5: Duration of illness of patients (N=35)

Duration of illness (In Weeks))	Hepatitis E n (%)
2-3 weeks	12(34.3%)
4-6 weeks	23(65.7%)
>6 weeks	0(0.0%)
Mean ±SD	27.46±9.02

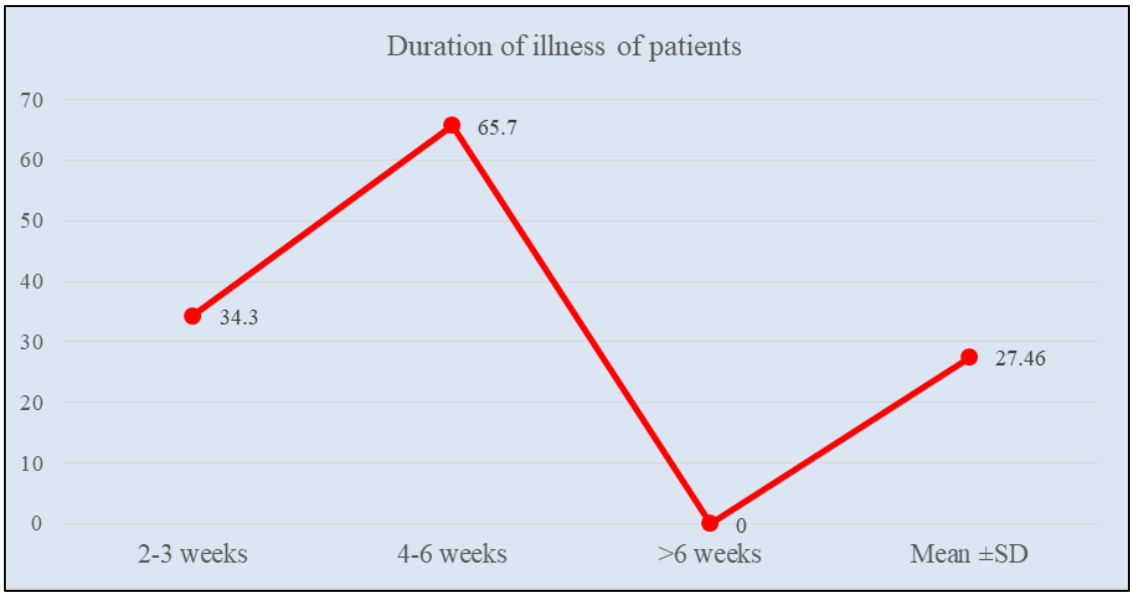

Figure IV: Line chart showed duration of illness of patients (N=35)

DISCUSSION

In our study, 81.3% were male, 18.7% were female. Which was supported by other study where about three-quarters of laboratory-confirmed HEV infected patients were males [7, 8]. One explanation for this may be that males are more involved in outdoor activities than females in low and middle-income countries, putting them at higher risk for exposure to contaminated drinking water [9]. Other reasons for this observation could be due to gender differences in health-seeking behavior and access to health services. A recent study noted that HealthCare expenditure on females is significantly lower than on males in low-income settings [10]. In disease-endemic areas of Asia and Africa, the prevalence rates among healthy populations are much higher than those in non-endemic

areas. In most disease-endemic areas, anti-HEV has been detected in as many as 5% of children less than 10 years of age, and this ratio increases to 10-40% among adults older than 25 years of age [11-14]. These findings suggest that HEV infection, unlike that of other enterically transmitted agents, is infrequent among young children in developing countries. However, in a recent report from India, anti-HEV antibodies were detected in more than 60% of children below the age of 5 years [15]. These differences between different disease-endemic areas may be related to varying epidemiological conditions in different geographical areas, differences in diagnostic techniques used, or both. Which was similar to our study where 34.4% belong to 21-30 year's age group, followed by 31.3% belong to >40 years, 21.8% belong to 11-20 years and 12.5% belong to 31- 40 years' age group. In outbreak settings, one study reported that, IgM anti-HEV has been detected in more than 90% of patient serum samples obtained within 1 week to 2 months after the onset of illness. The IgG response appears shortly after the IgM response, and its titre increases throughout the acute phase into the convalescent phase, remaining high from 1 to 4.5 years after the acute phase of illness [12]. The exact duration of persistence of anti-HEV is not known. In one study, anti-HEV was detected in 47% of persons 14 years after acute HEV infection. Determination of IgM anti-HEV is useful for the diagnosis of acute infection, whereas the presence of IgG anti-HEV indicates HEV infection, not necessarily recent [13]. In this study we also used IgG anti-HEV assay where all cases were positive and in 10% cases positive cases of Anti HAV IgM was also observed. Moreover, in our study higher serum bilirubin was 8.82±5.65. followed by Levels of aspartate aminotransferase (AST) was 1141.00±128.69, S.GPT ALT was 1380.75±751.28, S. Creatinine was10.00±18.33. Moreover, Prothrombin Time was seen longer in patients. Which was supported to other study where it was reported that elevated level of serum bilirubin and S.GPT ALT links chronic liver damage or liver in cirrhotic [11].

CONCLUSION

Acute viral hepatitis E is the leading cause of wide spectrum of liver disease in young male adults ranging from severe acute viral hepatitis, to decompensation of liver in cirrhotic in Bangladesh.

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