OUTBREAK OF ACUTE VIRAL HEPATITIS E IN CHATTOGRAM DISTRICT MANAGED BY BANGLADESH INSTITUTE OF TROPICAL INFECTIOUS DISEASE FROM APRIL 2018 TO AUGUST 2018

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Abstract

Background: Acute Viral Uepatitis (AVH) is a common viral hepatitis occurring in developing countries like Bangladesh. An outbreak of acute hepatitis occurred in Halishahar & adjucent areas of Chattogram city from April 2018 to August 2018.Total 76 cases of acute hepatitis got admitted & received treatment at BITID during this period. No study has been done so far on this subject in BITID. We present here this outbreak management. To find out the etiology, clinical course and outcome.

Materials and methods: Total 76 clinically & biochemically documented cases were screened for the hepatotropic viral marker HAV, HBV, HEV. Cases were studied in terms of epidemiological analysis to find out the cause & mode of spread, laboratory findings, outcome & management.

Results: The predominant age group was (21-30) years which was 43.5%. About 66% (50/76) were male & 34 % (26/76) were female & male female ratio was 1.9:1. HEV was the most common 100% (76/76) etiological factor of acute viral hepatitis. One patient had concomitant HBV infection & no HAV infection was found. Among clinical presentations Jaundice 100% (76/76) Anorexia 63% (48/76) Nausea 63% (48/76) were predominant. About 67% (51/76) patient drank water from WASA source & 68% (52/76) patient practiced boiling water before drinking. Most patients 33% (25/76) came from Halishahar area. 97.3% (74/76) patients were discharged after improvement with recovery, 2.6% (2/76) patient were referred to CMCH where one was due to pregnancy & other was due to acute liver failure& no death occurred.

Conclusion: The acute hepatitis occurred in Chattogram district during outbreak was mostly due to HEV infection where most patients were male & most common clinical features were jaundice, anorexia & nausea. All patients got admitted in hospital & improved after treatment.

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Introduction

Hepatitis E Virus (HEV) is an enterically transmitted virus of public health importance due to its ability to cause sporadic, endemic and epidemic outbreaks mostly associated with sewage contamination of drinking water specially in developing countries.[1] The first major epidemic was reported in New Dilhi in the winter of 1955-1956. After the flooding of Jamuna River, thirty thousand cases of jaundice were described and retrospectively attributed to HEV.[2] China reported one hundred thousand cases of jaundice between 1986-88.[2] In Bangladesh we have no such data. Most of the out breaks of water born hepatitis in India have been attributed to HEV.[3] HEV mostly causes acute hepatitis. HAV and HBV can also cause acute hepatitis in human body. HEV belongs to family hepeviridae genus . Hepeviruses that has about 7.2 Kb long positive sense, single stranded RNA genome.[4] Among 4 genotypes 1 & 2 HEV have been reported from human cases in areas where the disease is highly endemic and type 3 & 4 HEV in non endemic areas like Japan & high income countries of Europe & North America.[5] HEV is uncommon in children younger than 10 years.[6] It affects young to middle aged adults and causes high mortality in pregnant women (20%-30%) as compared to (0.02%-1%) in general population[7]. HEV infection during pregnancy is associated with increased risk of prematurity, abortion, low birth weight. perinatal mortality, fulminant hepatitis and maternal mortality.[8] HEV is an important etiological agent for sporadic fulminant hepatic failure in developing countries. This outbreak was investigated with the objectives of i) Indentifying the etiological agent by serological method. ii) to find out clinical course & outcome.

Materials and methods

It is a descriptive observational study done in Bangladesh Institute of Tropical & Infectious disease (BITID) Fouzderhat, Chattogram, Bangladesh which presents an outbreak occurring from 4th April to 5th August 2018 in Chattogram district. BITID is a national level hospital dealing with different tropical & infectious disease. Most of these patients normally come from Chattogram district mostly from surrounding BITID. Inclusion criteria of AVH case were- acute illness with loss of appetite, nausea, profound general weakness, jaundice yellowish coloration of urine (i.e sign symptoms compatible with AVH). The exclusion criteria were - H/O chronic hepatitis, intake of hepatotoxic drugs/chemicals etc. Total eighty patients came with jaundice in BITID indoor. Seventy six out of eighty who met the inclusion criteria of acute viral hepatitis were taken as study population. Four patients were excluded among whom two were chronic hepatitis, one due to septicemia & one due to Anti TB drug induced hepatitis. Following admission detailed history and clinical examination was carried out. We collected information through a structured questionnaire. Informed consent was obtained from all patients of study population. On the day of admission, blood sample was collected from all patients. Serum was separated and preserved at-80^0c temperature. Serum was screened for hepatotropic viral markers. Anti HAV–IgM was assessed by ELISA method, Hb_sAg screening was done by third generation EIA (Enzyme immune assay) and Anti-HEV IgM by capture EIA (Enzyme Immune Assay). Serum bilirubin, ALT, AST was also done. Since this study was done in response to public health emergency to investigate the outbreak, ethical clearance was not required.

Results

Table I : Distribution of patient by age (n=76).

Age Group	Frequency	Percentage (%)
10-20	15	19.7%
21-30	33	43.5%
31-40	12	15.8%
41-50	9	11.8%
51-60	6	7.9%
>60	1	1.3%

Table-I shows that the most affected age group was between (21-30) years with age incidence of 43.5%.

Table II : Distribution of patient by sex (n=76).

Sex	Frequency	Percentage (%)
Male	50	66%
Female	26	34%

Table-II shows that among total 76 patients studied, male was predominant & male-female ratio was 1:9:1.

Table III : Sign & symptoms of patients (n=76).

Clinical Manifestation	Frequency	Percentage (%)
Yellowish urine	76	100%
Yellowish sclera	76	100%
Jaundice	76	100%
Anorexia	48	63%
Nausea	48	63%
Fever	42	55%
Hepatomegaly	40	53%
Abdominal pain	24	38%
Splenomegaly	0	0%

Table-III shows that predominant symptoms & signs were Yellowish urine, Yellowish sclera, Jaundice and Hepatomegaly.

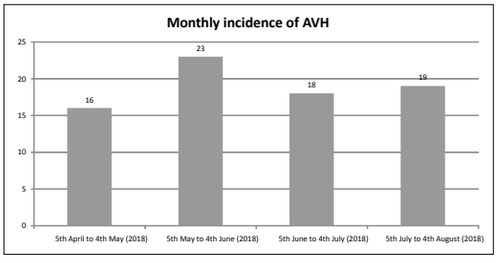

Fig 1 : Bar diagram of Monthly incidence of AVH : (5 April to 4 August 2018) (n=76).

Table V : Viral markers of jaundice patients admitted in BITID (n=76).

Types of hepatitis virus	Frequency	Percentage (%)
Hepatitis E virus	75	98%
Hepatitis B virus	0	0%
Hepatitis A virus	0	0%
Hepatitis E& B virus	1	1.3%
Hepatitis E & A virus	0	0%

Total 76 patient was HEV infected & one patient had co-infection of HEV & HBV.

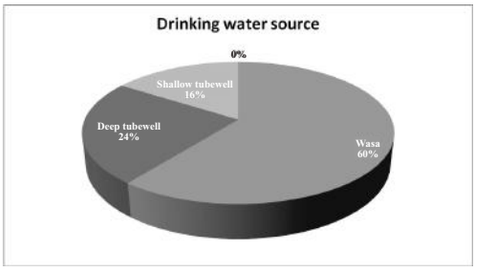

Fig 2 : Source of drinking water (n=76).

Discussion

Our study confirms the HEV as the prime etiological agent of this outbreak of acute hepatitis. HEV is reported as the cause of hepatitis outbreak as early as in 1955-56 from its first detection in delhi.[9] By H. SAMMA et al illustrates that there was an outbreak of hepatitis E also in Bangladesh armed forces personnel of Chattogram area since 09 February 2012 to 08 August 2012. In our study the predominant age group was (21-30) years which is analogous to some other studies.[10,11] Significantly more number of adults in comparison to children was affected due to HEV and this is a hallmark of HEV epidemiology. Higher male positivity (66%) in comparison to female was noticed in this outbreak which is similar to other studies also.[12,13] The clinical findings like icterus, anorexia. pyrexia, abdominal pain, hepatomegaly predominantlywhich were similar as reported in other HEV outbreaks.[14,15] The raised levels of ALT denotes the devastating nature of this virus on hepatocytes. Thus in this outbreaks if the diagnostic and control measures were not initiated timely, it would have resulted in higher mortality. In our study it is seen on an average 16 patient got admitted per month with AVH. The incidence was high during 05 May to 04 June 2018 (23%). The highest number of the patient came from Halishahar, Chattogram (32.8%) . Most of the patient drank WASA supplied water (60%) and 55% patient practiced boiling of water before drinking. We detected one case of co-infection by HEV & HBV, but the patient improved without any complication. Two patients developed hepatic encephalopathy one of which was pregnant with 3rd trimester and another had concomitant uncontrolled diabetes mellitus. Both of them were referred to Chittagong Medical College Hospital for further management. Rest 74 patients were improved after treatment and were discharged.

Limitation

Here we included only symptomatic patients who admitted in BITID hospital. We did not measure markers of Leptospirosis, EBV, CMV or other non–A, non-B, Non-E viral hepatitis. We also did not do genotyping of HEV or did not do environment investigations due to lack of facility in BITID.

Conclusion

The acute viral hepatitis occurred in Chattogram district during outbreak was mostly due to HEV infection where most patients were male & most common clinical features were jaundice, anorexia & nausea.

Recommendation

Taking safe food, drinking safe water & maintenance of proper sanitation is recommended for prevention of HEV infection.

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Contributionof authors

MMR: Conception, design, acquisition of data, drafting & final approval

MAHC: Design, interpretation of data, critical revision & final approval

MHRC: Acquisition of data, data analysis, drafting & final approval

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