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Original Article

A Documentation of Hepatitis Outbreak in Chittagong

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Abstract

Introduction: Hepatitis E Virus (HEV) causes outbreaks of jaundice and it is associated with morbidity and higher maternal mortality. There is a recent outbreak of hepatitis in the Chittagong city and present study is aimed to observe the clinical and serological trends along with outcome of hepatitis cases visiting two tertiary care hospitals Chittagong, Bangladesh. **Methods:** It was an observational study done in two tertiary care hospital of Chittagong in a period of 3 months (May, June & July 2018) among 230 patients of hepatitis. After inclusion with written informed consent patients were introduced a questionnaire. Their demographic data, risk behaviors were noted, history related to hepatitis were recorded. Examination was done and evaluation regarding presence of hepatic encephalopathy at bed site was noted. Later serological findings were evaluated. After collection of all data it were compiled and analyzed by SPSS- 20. **Results:** Among 230 cases age group, gender and locality of the study patients were analyzed where younger age groups specially 21-30 years 114(49.6%) and 31-40 years 38(16.5%) were the most affected group. Gender distribution was found mostly same. Halishahar area which is located in western part of the Chittagong city was found mostly affected 196(85.2%). Use of water from WASA (Water and Sewerage Authority) supply was 168(73%) and deep tubewel water was 56(24.3%). Among them 80(34.8%) subjects do not boil water Anorexia (74.8%) nausea (77.4%) vomiting (83.5%) history of fever (89.6%) passage of dark color urine (99.1%) and weakness (97.4%) were some common presenting complaints. Family history of jaundice was found in 40.9% of cases. Among all 216(93.91%) had clinical jaundice, 91(39.56%) had right upper quadrant of the abdomen pain, 41(17.8%) had hepatomegally, 14(6.1%) had spleenomegally, 24(10.4%) had signs of hepatic failure and 34(14.8%) female were pregnant. Anti HEV was found positive in 164(71.3%) cases, 12(5.2%) were positive for anti HAV, 6(2.6%) were positive for HBsAg. None was found anti HCV positive. Among all 4(1.8%) cases died due to hepatic failure or multi-organ failure with AKI. All of them were pregnant. Two pregnant lady had missed abortion. Among all 11(4.7%) cases loosed follow and 213(92.60%) cases had uneventful recovery. **Conclusion:** This outbreak of HEV was of usual pattern of morbidity and mortality, and therefore points to water supply and sanitation issues.

Key words : Hepatitis; Hepatitis E; Outbreak; Chittagong.

INTRODUCTION

Viral hepatitis are common infectious disease in Bangladesh. Hepatitis A, B, C, and E are the common viruses responsible for it. Viral hepatitis constitutes huge burden to the health care delivery system and it has an economic impact in Bangladesh. Hepatitis E virus is the leading cause of acute hepatitis in this country. For chronic liver disease, hepatitis B virus is one of the main cause and its prevalence is 5-6% in our country and next to it is hepatitis C and its prevalence is 1%[1,2].

In a common setting of the developing country with significant poverty and poor food and sanitation, not unexpectedly Bangladesh offers favorable conditions for nurturing Hepatitis E Virus (HEV) infection[3]. HEV infection occurs as seasonal, sporadic and non-seasonal HEV outbreaks with significant mortality have been reported from Bangladesh. HEV remains the leading cause of acute hepatitis and in pregnancy it is more fatal. It is also one of the rare cause of Acute Chronic Liver Failure (ACLF) in this country[3]. Most recent outbreak of hepatitis is observed in western part of Chittagong City for last 5 months. Chattagram Maa Shishu-O-General Hospital (CMSOGH) and Bangabandhu Memorial Hospital (BBMH) are two hospitals present around the focal outbreak. Maximum patients are admitted or visit the out patient department of these two centers for the management of hepatitis. So an observational study is designed to find out the clinic-pathological features of hepatitis among the affected community.

MATERIALS AND METHODS

It was an observational study done in two tertiary care hospital of Chittagong in a period of 3 months (May, June & July 2018) among 230 patients of hepatitis. Case definition of hepatitis was patients visiting with history suggestive of hepatitis (Anorexia/nausea/vomiting/yellow eye/dark urine) with past history of short duration fever, if researchers clinically suspects the patients as a case of acute hepatitis in the background of history and examination and hospital admitted patients with clinically documented acute hepatitis biochemically of serologically. Patients unwilling to be included in the study and to do the blood tests were excluded. All patients were recruited as per the case definition of the hepatitis. A data collection form were used after informed written consent for collection of information. Demographic, clinical and laboratory data were collected from each patients. Examination was done and evaluation regarding presence of hepatic encephalopathy at bed site was noted. Hepatitis serology for HAV anti HAV, for HBV HBsAg, for HCV anti HCV and for HEV and anti HEV were done. After collection of all data it were compiled and analyzed by SPSS 20.

RESULTS

Table 1 : Demography of the study patients

Parameters		n(%)
Age Group	<20 Years	44(19.1%)
	21-30 Years	114(49.6%)
	31-40 Years	38(16.5%)
	41-50 Years	16(7.0%)
	51-60 Years	14(6.1%)
	>60 Years	4(1.7%)
Gender	Male	120(52.2%)
	Female	110(47.8%)
Locality	Halishahar	196(85.2%)
	Chittagong City (Other than Halishahar)	24(10.4%)
	Outside Chittagong city	10(4.3%)
Total		230(100.0%)

Table 1 revealed age group, gender and locality of the study patients where it was noted that younger age groups specially 21-30 years 114(49.6%) and 31-40 years 38(16.5%) were the most affected group. Sex distribution was found similar. Halishahar area which is located in western part of the Chittagong city was found mostly affected 196(85.2%)

Table 2 : Category of drinking water and practice of boiling water used in household

Parameters		n (%)
Type drinking water	WASA supply	168(73.0%)
Deep tubewel		56(24.3%)
Shallow tubewell		6(2.6%)
Boiling of water	Yes	150(65.2%)
	No	80(34.8%)
	Total	230(100.0%)

Table 2 revealed mostly used household water from WASA supply 168(73%). Some others were using deep tubewel water 56(24.3%). Among them 80(34.8%) subjects do not boil water.

Table 3 : Presenting features

Parameters	n (%)
Anorexia	172(74.8%)
Nausea	178(77.4%)
Vomiting	192(83.5%)
Presence of foul smell in taking food	158(68.7%)
H/O fever	206(89.6%)
Past history of jaundice	56(24.3%)
Family history of jaundice	94(40.9%)
Abdominal pain	140(60.9%)
Passage of dark colored urine	228(99.1%)
Constipation	141(61.3%)
Weakness	224(97.4%)
Itching of the body	117(50.9%)
Comorbid conditions (DM, HTN, IHD, CLD etc)	26(11.3%)

Table 3 explored anorexia (74.8%) Nausea (77.4%) Vomiting (83.5%) History of fever (89.6%) passage of dark color urine (99.1%) and weakness (97.4%) were some common presenting complaints. Family history of jaundice was found in 40.9% of cases.

Table 4 : Physical features

Parameters	n (%)
Jaundice	216(93.91%)
RUQ tenderness	91(39.56%)
Hepatomegaly	41(17.8%)
Spleenomegaly	14(6.1%)
Presence of signs of hepatic failure	24(10.4%)
Number of pregnant women	34(14.8%)

Table 4 describing examination findings where 216(93.91%) had clinical jaundice, 91(39.56%) had right upper quadrant of the abdomen pain, 41(17.8%) had hepatomegaly, 14(6.1%) had spleenomegaly, 24(10.4%) had signs of hepatic failure and 34(14.8%) female were pregnant.

Table 5 : Hepatitis sero profile

Parameters		n (%)
Anti HAV	Positive	12(5.2%)
	Negative	64(27.8%)
	Not done	15467.0%)
Anti HEV	Positive	164(71.3%)
	Negative	23(10.0%)
	Not done	43(18.7%)
HBsAg	Positive	6(2.6%)
	Negative	128(55.7%)
	Not done	96(41.7%)
Anti HCV	Negative	34(14.8%)
	Not done	196(85.2%)

Table 5 explored, among 187 test for anti HEV done, 164(71.3%) were positive for anti HEV, 12(5.2%) were positive for anti HAV, 6(2.6%) were positive for HBsAg. None was found anti HCV positive among 34 tests done.

Table 6 : Outcome

Outcome	n (%)
Death due to hepatic failure	2(0.9%)
Death due to MOF with AKI	2(0.9%)
Missed abortion	2(0.9%)
Uneventful recovery	213(92%)
Loosed follow	11(4.7%)

Table 6 showing 4(1.8%) cases died due to hepatic failure or multi-organ failure with AKI. All of them were pregnant. Two pregnant lady had missed abortion. Among all 11(4.7%) cases loosed follow and 213(92.60%) cases had uneventful recovery.

DISCUSSION

In this study among 230 cases of acute hepatitis, 187 patients were tested for hepatitis sero profiles. Among then 164(71.3%) were positive for anti HEV. Also 12(5.2%) were found positive for anti HAV, 6(2.6%) were found positive for HBsAg. None was found anti HCV positive. Acute hepatitis is seen sporadically round the year in Bangladesh[3]. Outbreaks of acute infectious hepatitis have been attributed to Hepatitis E Virus (HEV) since the 1950s[4]. Large HEV outbreaks reported from Asia and Africa have been associated with fecally contaminated drinking water.[5-9] Although persons with HEV disease usually fully recover, clinical studies report that pregnant women who become infected with HEV, and their newborns, often die and this has also been observed during HEV outbreaks[10,11]. In our study 4(1.8%) case fatality occurred due to hepatic failure or multi-organ failure with AKI. All of them were pregnant. Two pregnant lady had missed abortion. There is no surveillance for HEV in Bangladesh,although limited studies suggest that it is the commonest cause of fulminant hepatitis[12].

Bangladesh is considered to be a country where hepatitis A infection is hyperendemic with 100% of children ≤6 years of age exposed and immune to HAV[13]. As a South East Asian country Bangladesh is considered endemic for hepatitis B virus (HBV) infection[14]. In the general population, HEV carries alow mortality of 0.5-4%. However, this figure approaches >75% in developing countries, such as Bangladesh, in the second/third trimester of pregnancy and in patients with fulminant hepaticfailure[3]. Hepatitis E virus was called a leading cause of acute-on-chronic liver disease in a retrospective study conducted by Mahtab et al In Bangladesh, information about prevalence of HBV infection is very meager and there is no available data on HDV infection[3].

In this study we found that younger age groups specially 21-30 years 114(49.6%) and 31-40 years 38(16.5%) were the most affected group. Gender distribution was found same. Halishahar area which is located in western part of the Chittagong city was found mostly affected 196(85.2%). WASA supply was the main household source of water in 168(73%) cases and others were using deep tubewel water 56(24.3%). Among them 80(34.8%) subjects do not boil water. This is a large outbreak of hepatitis in a densely populated area like Halishahar, low to middle income, urban community was due to HEV. Evidence from this investigation suggests that it might be spread through fecal contamination of the municipal water system. Although the highest risk of illness was among men who worked outside the home, most deaths occurred in women with confirmed pregnancies was found and casual relation was unconfirmed. Drinking from the municipal supply water outside the home was highly associated with HEV disease in a dose response manner.

In our study anorexia (74.8%), nausea (77.4%), vomiting (83.5%) history of fever(89.6%) passage of dark color urine (99.1%) itching (50.4%) and weakness (97.4%) were some common presenting complaints. Family history of jaundice was found in 40.9% of cases. Regarding examination findings 216(93.91%) had clinical jaundice, 91(39.56%) had right upper quadrant of the abdomen pain, 41(17.8%) had hepatomegaly, 14(6.1%) had spleenomegaly, 24(10.4%) had signs of hepatic failure and 34(14.8%) female were pregnant.In a study done by Batta found the sign and symptoms developed by the hepatitis affected patients were classical sign and symptoms[15]. They found Jaundice (28.57%) and weight loss (28.57%) were most common with loss of appetite (10.71%). It was an interesting observation that 5.71 % of patients reported to have itchy skin. Itchiness is developed in particularly hepatitis A patients as a result of cholestasis. These are some common history and examination findings among the patients of hepatitis and these are as expected.

CONCLUSION

HEV induced hepatitis is a preventable disease with provision of clean drinking water; although effective vaccines have been

developed but none are currently available in our country[16]. Fatality was low among the patients but pregnant mothers were the main victim found in this study. Interventions to prevent HEV in the low-income countries like Bangladesh where HEV is endemic will require redistribution of scarce health resources, pure water supply and appropriate sewerage systems. Given that maternal mortality is a painful feature of HEV outbreaks, existing maternal health programs in HEV prone country like Bangladesh needs up-gradation with proper care.

DISCLOSER

All the authors declared no competing interest.

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