Clinical Profile of Hepatitis E Patients During an Outbreak in Kangra Town of Sub-Himalayan Region

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Abstract

Introduction: Hepatitis E is the most common cause of acute viral hepatitis in adult population. It is a self-limiting disease. Epidemics of HEV related acute viral hepatitis usually occurs all around the year but there is pooling of cases around rainy season. There occurred a recent epidemic of Hep E in and around state capital of HP. During same period in the month of June and July a number of cases of acute Viral hepatitis presented in medicine OPD of civil hospital Kangra.

Materials and methods: We conducted a prospective study of 83 patients with jaundice (IgM Anti HEV positive) which presented during this period and analyzed their parameters for age, sex, laboratory, duration of illness outcome and genotype of the virus.

Results: We found that two third (77%) patients were in age group 20 to 50 yrs. Male female ratio was 2:1. Most common presenting symptom was jaundice (100%). Mean duration of recovery was 4-5 wks. SGPT levels were more than SGPT levels in all patients. Mean PT levels were more in males than females (p=0.005). Mean total bilirubin levels were more in females both at presentation and at first week. Complications were more in males than females (p=0.005). Patients with diabetes had more complications. There was single mortality. Genotype studied in twelve patients was type 3.

Conclusion: In 83 patients studied males were more affected and diabetics had more prolonged illness as well as complications. HEV genotype 3 was responsible for the epidemic. There was point source for the epidemic.

Keywords: Hepatitis E; Diabetes; Genotype; Complications

Introduction

Hepatitis E is the most common cause of acute viral hepatitis in adults in India. It is a self-limiting disease. It occurs both as endemic and sporadic infection. It is water borne disease that usually occurs due to consumption of fecal contaminated water. It has a low case fatality (<1%). Fatality rate is higher in pregnant females (20-30%) than general population (0.2-1%). Many studies on profiling and prevalence of Hepatitis E virus have been conducted in various regions of India except in our region. This study was conducted as a recent epidemic of acute E viral hepatitis occurred in HP state capital and during same period a number of cases also presented in medicine OPD at civil hospital kangra which is located near to a tertiary care institute (medical college).

Along with profiling and outcome of patients the viral genotyping was also done since the population studied was different and there was no case mortality.

Materials and Methods

This study was conducted at civil hospital Kangra Himachal Pradesh in the months of June and July in the year 2016. Eight three patients who presented with clinical jaundice and were positive for IgM anti HEV ELISA were included in the study. Informed and written consent were taken from all patients. Case histories of all patients were recorded. Parameters included were age, sex, biochemical values, total duration of illness, presenting complaints, clinical hepatomegaly, co morbidities (diabetes and pregnancy), complications (coagulopathy, encephalopathy and fulminant hepatic failure, cholestasis) and outcome(mortality) were recorded. Blood samples collected were tested for total serum bilirubin, serum AST, serum ALT, SAP, prothrombin time and INR. These were repeated every weekly till normalization. IgM anti HEV was done using ELISA. Genotypes of twelve patients were also studied by using RNA PCR. Duration of illness was defined as time from initial presentation to normalization of bilirubin levels. All the patients were treated symptomatically and the patients who had complications were admitted and monitored. All the patients were followed up at regular
intervals. One patient went into acute liver failure who was referred to higher tertiary care center where he expired.

Results

Demographic profile of all patients showed that there were 56 (68%) males and 26 (32%) females in the study. Male female ratio was 2:1. Age of the patients ranged from 4 to 62 years. Highest cases belonged to age group between 20 and 50 yrs (77%). There was only one pregnant female and 10 patients were having diabetes. All patients presented with jaundice (100%). Other associated symptoms were anorexia (77%), nausea and vomiting (66%) and pain abdomen (65%). The average duration from prodrome to jaundice was 5 days. Clinically hepatomegaly was found in 13% patients (Table 1).

Table 1 Showing clinical symptoms and signs.

<table>
<thead>
<tr>
<th>Symptoms and Signs</th>
<th>Total Number (n)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaundice</td>
<td>82</td>
<td>100</td>
</tr>
<tr>
<td>Anorexia</td>
<td>63</td>
<td>77</td>
</tr>
<tr>
<td>Nausea vomiting</td>
<td>54</td>
<td>66</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>53</td>
<td>65</td>
</tr>
<tr>
<td>Hepatomegaly</td>
<td>11</td>
<td>13</td>
</tr>
</tbody>
</table>

Overall complications were present in 12% patients. Coagulopathy was present in 9% patients and encephalopathy. Most of the patients had average bilirubin levels less than 3 mg/dl (range 1.3-15 mg/dl). In all patients ALT levels were higher than AST levels average being in the range of 700-800 mg/dl. ALT and AST levels were higher in males than in females. There were only three patients whose SGPT levels were more than 3000. The most common comorbidity found was diabetes and complications (p=0.001). There was one mortality in the studied group due to acute liver failure. The most common complication was coagulopathy (n=10), however no bleed was seen in the studied patients (Table 2). Males were found to be more prone to complications than females (p=0.005). 73% complications occurred in males and only 27% in females. Females had higher bilirubin levels than males at presentation and after one week average being 6.3 and 3.8 respectively. Mean duration of illness defined as the return of bilirubin to normal levels was equal in both males and females and was 33 ± 3 days. AST normalized in approximately 33 days. In diabetics the return of AST was 9 days delayed than the normal population. The genotype was also done in twelve patients. All were found to have genotype of 3 of HEV virus. There was no clustering of cases in the families. The area from which most of the cases reported were from old Kangra region (ward 3 and 4) having water supply from common source. On visiting the source the common tank of water source was cleaned with the help of the authorities after which there were no cases reported, indirectly linking the causal relationship thus exhibiting point source epidemic.

Table 2 Showing complications.

<table>
<thead>
<tr>
<th>Name of complication</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coagulopathy</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Encephalopathy</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>FHF</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mortality</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Discussion

Acute hepatitis E is responsible for 30-70% cases of acute sporadic hepatitis [1]. Genotype 1 is found in developing countries in Asia and Africa, genotype 2 is isolated in Mexico and Africa, genotype 3 is distributed worldwide including developed countries, and genotype 4 is reported in Asia [2]. Genotype 1 is found in developing countries in Asia and Africa, genotype 2 is isolated in Mexico and Africa, genotype 3 is distributed worldwide including developed countries, and genotype 4 is reported in Asia [2]. The epidemiological studies by Viswanathan [3] and recent serological studies by Khuroo et al. [1], Modi et al. [4], Wong et al. [5] have convincingly demonstrated that HEV is an important cause of non-A non-B viral hepatitis. The age group studied in our study corresponds to other studies in which in which 70% patients belonged to age group of 20-50 yrs. In our study male female ratio was 2:1 which was different from other studies [4]. Jaundice was the presentation in 100% cases as in the other study groups. Nausea and vomiting were present in only 66% patients in our population which was much less than in other epidemiological studies (88%). Complications such as coagulopathy and encephalopathy were much less (10%, 3% respectively) in our population than the other studies in which it was 10- 16%. Chandra et al. [6] showed that the average duration of illness was 3-4 weeks in comparison to 4-5 weeks in our study. Other studies showed average duration of illness of 8 weeks. In our study the main genotype found was genotype 3 of HEV which has low mortality in comparison to other genotypes [2]. Single mortality and very less complication rates can be explained on the presence of genotype 3 in our study. In our study other concomitant hepato-trophic viruses could not be studied which can cause comorbid illness. However none of the patients followed went into chronic phase. The distribution of cases within the tributaries of common water supply affecting young adults and pregnant women with HEV IgM RNA positivity suggests the classic, common source waterborne epidemic of HEV. The zoonotic transmission of HEV, especially genotypes 3 and 4, was proposed because non-human primates, swine, sheep, cows, goats and rodents may serve as reservoirs for HEV [7]. Because the water may be polluted by the domestic animals since the common use of water is common problem in India. Thus this study highlights a major disease outbreak that occurred due to contamination of sewerage water with the common source of drinking water and piped drinking water supply. The common tank of the...
water supply was closely in proximity with the sewerage line and due to leakage in the sewerage line the fecally contaminated water was sucked into the water supply system. In the absence of effective antiviral therapy, control measures for HEV outbreak should focus on ensuring a safe water supply. Water at the source of distribution and at the consumer end should therefore be regularly examined for fecal/sewerage contamination and preventive measures thereof. Prior case of zoonotic transmission of HEV genotype 4 was reported in a patient with severe hepatitis and a history of travel to India [8]. This is the first kind of epidemiological study of HEV in this region which explicitly shows the factors, presentation, complications and duration of illness and genotype of such sporadic outbursts of HEV. This study is also different as in our study genotype 3 predominated. However, in India genotype 1 HEV is mainly circulating in humans and genotype 4 HEV in swine in this region [9,10]. Further large studies can be conducted to see for the point source of such epidemics.

Conclusion

Thus, this study highlights a major disease outbreak that occurred due to contamination of sewerage water with the common source of drinking water and piped drinking water supply. The common tank of the water supply was closely in proximity with the sewerage line and due to leakage in the sewerage line the fecally contaminated water was sucked into the water supply system. In the absence of effective antiviral therapy, control measures for HEV outbreak should focus on ensuring a safe water supply. Water at the source of distribution and at the consumer end should therefore be regularly examined for fecal/sewerage contamination and preventive measures thereof. This is the first kind of epidemiological study of HEV in this region which explicitly shows the factors, presentation, complications and duration of illness and genotype of such sporadic outbursts of HEV.

Further large studies can be conducted to see for the point source of such epidemics.

References