A number of mini epidemics have been reported in 1995 that were all considered to be due to faecal-contaminated water supply. This hospital-based study was carried out in referred patients with no serological evidence of hepatitis B and C infection. The immunoglobulin (Ig) M and G (IgG) respectively were used as markers of the acute and the convalescent phase of HEV infection.

Materials and Methods

The patients included in this study were screened from the subjects (n = 157) attending the Centre for Nuclear Medicine (CENUM), Mayo Hospital, during June 2007 through August 2007 for diagnosis of hepatitis B and C by enzyme-linked immunosorbant assay technique. Among them five patients (5.4%) were positive for HEV IgG and IgM, with an average age of 30.95 ± 15.35 years. Hepatitis E infection was independent of the sex. Liver function tests of hepatitis E-positive IgG and IgM patients showed increased values of serum glutamate oxaloacetate transaminase, serum glutamate pyruvate transaminase, alkaline phosphatase and bilirubin that indicate damaged hepatocytes and malfunctioning of the liver.

Key words: Enzyme-linked immunosorbant assay technique, Hepatitis E virus, immunoglobulin G, immunoglobulin M, liver function test

Hepatitis E is an enterically transmitted self-limiting infection that is transmitted by the oral-faecal route primarily due to an unhygienic lifestyle, mainly consumption of contaminated food and water. This form of non-A, non-B hepatitis came to be known as enterically transmitted non-A non-B hepatitis.[1,2] Hepatitis E virus (HEV) is an RNA virus.[3] Its genome consists of a single-stranded, positive-sense RNA of approximately 7.2 kb size.[4] Morphologically, HEV shows resemblance to Norwalk virus but its sequence most closely resembles to that of Rubella virus. The incubation period of HEV ranges from 3 to 9 weeks. HEV is present in the blood, bile secretions and faeces of the patients.[5] The disease primarily affects young adults between the ages of 15 and 40 and reportedly has a mortality rate of up to 25% in pregnant women.[6] Symptomatic HEV infection is common in young adults whereas it is asymptomatic in children. The clinical presentation of hepatitis E is comparable to hepatitis A as there is very close similarity between both these types of hepatitis.[7]

In Asia, HEV infection is more commonly seen in adults and children, irrespective of the sex, and the monsoon season acts as the one of the most important risk factor in the spread of the disease.[8] In Pakistan, HEV infection remains highly endemic, mainly affecting the adult population.[9]

A number of mini epidemics have been reported in 1995 that were all considered to be due to faecal-contaminated water supply.[10] This hospital-based study was carried out in referred patients with no serological evidence of hepatitis B and C infection. The immunoglobulin (Ig) M and G (IgG) against HEV respectively were used as markers of the acute and the convalescent phase of HEV infection.[11]

Materials and Methods

The patients included in this study were screened from the subjects (n = 157) attending the Centre for Nuclear Medicine (CENUM), Mayo Hospital, during June 2007 through August 2007 for diagnosis of hepatitis B and C by enzyme-linked immunosorbant assay (ELISA). Five millilitres of blood sample was collected from each patient and serum was obtained by keeping the blood sample in an incubator at 37°C for 1-2 hours. The patients negative for hepatitis B and C (n = 93) were selected for this study. Their average age was 30.95 ± 15.35 years. Among them, 52% of the patients were male and 48% were female.

Seroprevalence of hepatitis E was studied in 93 patients. An ELISA-based kit provided by Messer KEHUA (KEHUA, China; Cat. No. KH-HE-01) was used for the detection of IgG and IgM antibodies of hepatitis E in the serum. The liver function tests of HEV-positive and -negative patients (controls) were performed by spectrophotometer techniques. The kits used for liver function test determination were provided by Messer Merck Inc. (Merck KGaA, Darmstadt, Germany).

Results

Seroprevalence of hepatitis E was studied in 93 patients. Among them, five (5.4%) patients had serological evidence of hepatitis E infection. Among the five positive patients,
IgM antibody was detected in all the patients whereas HEV IgG antibody was detected in four (80%) patients.

Analysis of risk factors for HEV infection revealed that all positive patients were residing in crowded areas. Signs and symptoms of the positive patients showed that 80% had malaise, anorexia and abdominal pain, 60% had arthralgia, 40% had fever and jaundice and 20% had vomiting and diarrhoea while no patient reported nausea, puritus and urticarial rash [Figure 1]. Liver function tests of HEV-infected patients were compared with 20 randomly selected negative patients (controls). The values of alkaline phosphatase (ALP), serum glutamate pyruvate transaminase (SGPT), serum glutamate oxaloacetate transaminase (SGOT) and bilirubin were increased in positive patients as compared with the control group whereas there was no affect on albumin and total protein [Figure 2].

Discussion

In this hospital-based study of HEV infection, 93 patients of both sexes and negative for hepatitis B and C were included. The age range of patients was 12-70 years and the samples were collected in the monsoon season. Only 5.4% of the patients showed serological evidence of hepatitis E infection.

Our results showed that HEV infection was in a transition state in most of the positive patients. However, a noteworthy observation was that signs and symptoms of positive patients showed resemblance to those of other types of hepatitis. The study for risk factors, which play an important role in the spread of the disease, showed that all the positive patients belonged to the overcrowded area, which reflects the poor sanitation conditions and low standard of lifestyle.

The HEV affects the hepatocytes resulting in an abnormal function of the liver. The development of jaundice is a characteristic feature of viral infection. A comparison of liver function tests in HEV seropositive and seronegative patients revealed that liver enzymes were raised in hepatitis E patients indicating the malfunctioning of the liver. SGPT and SGOT are important liver enzymes that help to process proteins. They might be raised if the liver is inflamed or injured. ALP enzymes might be raised when there is a blockage in the liver or bile duct. It has been reported in a case study that the function of the liver shows abnormal values for SGPT, SGOT and ALP due to HEV.[12]

The mortality rate for hepatitis E is reported to be 1-3% compared with only 0.2% for hepatitis A. Unlike hepatitis B and C, hepatitis E does not progress to a chronic state and recovery is always complete.[13] At present, no commercially available vaccines exist for the prevention of hepatitis E. However, several studies for the development of an effective vaccine against hepatitis E are in progress.

This study needs to be carried out at large scale in the rural population of Pakistan that do not have awareness of this disease and where lifestyle of most of the people is unhygienic.

References


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