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Original Article

Frequency of Hepatitis E in Children

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KEY WORDS:

Hepatitis E, Virus, Epidemics, Fecal-oral transmission

ABSTRACT

Objective: Data obtained through high throughput technologies is increasing our current understanding of the fact that like the hepatitis viruses, hepatitis E virus (HEV) has been difficult to study because of limitations in cell culture systems and small animal models. The objective of this study was to determine the frequency of hepatitis E virus infection in pediatric patients reporting to a tertiary care hospital. **Materials and Methods:** Six months (1-04-08 to 31-10-08) study was conducted at Department of Pediatrics, Services Hospital Lahore. One hundred and sixty patients and sampling technique used was Non probability (Purposive sampling). Both genders were included in the study. **Results:** Hepatitis E was seen in 20 patients, constituting a total of 12.5% of all the patients. **Conclusion:** Hepatitis E is a fairly common and under diagnosed cause of acute hepatitis in pediatrics patients and introducing adequate preventive measures can reduce the morbidity.

Introduction

Hepatitis E is very common in Pakistan and also known to be a cause of acute hepatitis in patients hospitalized with jaundice in Pakistan[1]. The infection can occur either in large epidemics or in sporadic forms.In the past decade or so, progress has been made in understanding the epidemiology, natural history, animal reservoirs, pathogenesis, structure, and molecular biology of HEV infection. HEV infection is caused by a small non-enveloped RNA virus. The virus is icosahedral and nonenveloped. It has a diameter of approximately 34 nanometers, and it contains a single strand of RNA approximately 7.5 kilobases in length. It is temporally classified as a member of the Calicivirus family, although its genomic composition is unique.The virus has four genotypes with one serotype: genotypes 1 and 2 exclusively infect humans, whereas genotypes 3 and 4 also infect other animals, particularly pigs. In endemic areas, the cases are usually due to genotype 1 or 2 HEV and are predominantly caused by fecal-oral transmission, usually through contamination of drinking water; contaminated food, materno-fetal (vertical spread) and parenteral routes are less common modes of infection[2, 3]. However, in recent years, an increasing number of cases, mostly due to genotype 3 or 4 HEV, have been recognized.Hepatitis E causes more severe disease associated with significant morbidity and mortality. It is frequently complicated by protracted coagulopathy and cholestasis. No specific treatment is available, and the most effective mode of preventing this disease is proper sanitation, which consists of proper treatment and disposal of human waste, higher standards for public water supplies, improved personal hygiene procedures and sanitary food preparation. Unfortunately most population based studies are of adults with very few on pediatric patients. As HEV infection is not very uncommon and can be fatal; so it should be considered in every child presenting with acute hepatitis[4]. The reason for selecting this topic is that Hepatitis E is under diagnosed in children and adequate preventive measures can be introduced in advance to reduce morbidity among children.

Materials and Methods

A total of one hundred and sixty patients with acute hepatitis were included in the study. Eighty two of them were male and seventy eight were female patients. The gender distribution is shown in figure 1.Thirty patients

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were below three years of age, thirty were between four to six years, forty six were between seven and nine years, and fifty four were from ten to twelve years of age. Their mean age was 8.34± 2.81 years with an almost equal gender distribution.

Data Analysis Procedure

Data was analyzed using SPSS 10.0. Mean and standard deviations were calculated for all quantitative variables like age, total leukocyte count, differential leukocyte count etc; while qualitative variables such as anorexia, vomiting, fever, jaundice, abdominal pain, anti HEV antibodies etc, were expressed as frequency and percentages.

Results

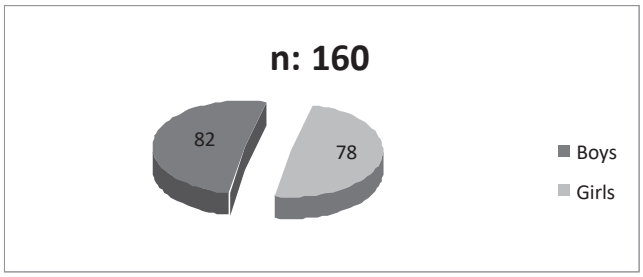

Fig 1: Gender Distribution of patients

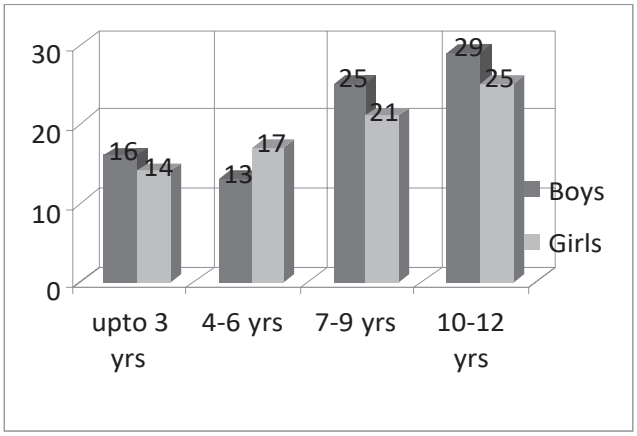

Fig 2: Age Distribution of patients n=160

Table 1: Frequency and percentages of Symptoms (n=160)

Symptom	Frequency	Percentage
Jaundice	157	98.12
Anorexia	146	91.88
Vomiting	122	76.25
Abdominal pain	80	50
Fever	42	26.25
Contact with hepatitis patient	1	0.625
Surgical intervention in past	0	0
Blood transfusion in past	0	0
Family history	0	0

Table 2: Frequency and percentages of Physical Findings (n=160)

Sign	Frequency	Percentage
Jaundice	157	98.12
Hepatomegaly	58	36.25
Splenomegaly	3	1.8
Ascites	0	0

The age distribution is depicted in Fig 2. The frequency of various symptoms and other important aspects covered in history is shown in table 1. Yellowish discoloration of eyes (98.12%) and loss of appetite (91.88%) were the most common complaints. Most of the patients had vomiting (76.25%) and abdominal pain (50%) while a few had fever (26.25%) and .625% of them had positive history of contact (table 1). While none of them had positive family history, history of any surgical intervention, or blood transfusion in the past (table 1). 98.12% were icteric. Out of these, 36.25% had hepatomegaly and 1.8% had splenomegaly. None of the patients had ascites. These important physical findings are summarized in table 2. The results of different baseline investigations are depicted in table 3. Hemoglobin level, total leukocyte count, blood sugar level, serum urea, serum creatinine, serum sodium, serum potassium, serum billirubin, prothrombin time, and serum proteins were within reference range (table 3). While liver enzymes (aminotransferease, aspartate aminotransferase, alkaline phosphatase) were raised in patients (table 3). It is important to note that these results were of the samples drawn at the time of admission in the ward. Hepatitis E was seen in 20 patients, constituting 12.5% of the total study population. Twelve of these were boys and the rest of the eight were girls.

Discussion

Hepatitis E, is a world-wide health problem and is a major cause of outbreaks and sporadic cases of viral hepatitis in tropical and subtropical countries but is infrequent in industrialized countries. A total of 160 diagnosed cases of acute hepatitis were included in the study. The diagnosis was based on clinical grounds and proved by laboratory investigation.

In this study, hepatitis E has been found out to be a fairly common cause of acute viral hepatitis. It was seen in 12.5% of cases which is comparable to one of the Indian study conducted by Mishra et al which showed almost similar results with hepatitis E seen, in 18.8% of patients[5]. Such a high proportion of acute viral hepatitis E has been consistent with other studies, done in North India, Tandon et al[6]. In a previous study done in Egypt in children with unexplained acute hepatitis, reported positive status for anti HEV IgM antibodies was 17.2%[7].The age group most commonly affected by acute hepatitis was between 10 to 12 years with a

gender distribution of 29 boys and 25 girls. In contrast, previous studies have shown that in most disease-endemic areas, the rate of anti-HEV detection has ranged from 5% of children younger than 10 years of age to as high as 60% of children younger than 5 years of age[8]. All age groups are equally susceptible but in this study increasing frequency was seen with growing age. Several studies have shown that increasing age is associated with an increasing prevalence of HEV[9, 10]. Male preponderance was note though no identifiable risk factor for this variation was found in the study. The most frequent symptoms were jaundice (98.12%), anorexia (91.88%), and abdominal pain (50%). This is in synchrony with study done by kaur et al[11]. Most of the patients had hepatomegaly(36.25%) while some of them had splenomegaly(1.8%).This is also comparable to one of the studies, in which it was shown that the commonest clinical findings were icterus which was present in 93.06% cases, followed by hepatomegaly in 38.61%. Splenomegaly was seen in 1.8% whereas Lednar et al (1985) found splenomegaly in 15% of the cases[12]. All the patients in the present study recovered completely hence indicating that HEV infection in childhood is mild and has a benign course. The findings are consistent with earlier reports [13, 14, 15]. The most important limitation of this study is the small sample size of just 160 patients. This may have distorted the results to some extent. It is hoped that a similar study would be carried out on this subject in the future with more number of patients including screening of hepatitis A. Similarly, it is possible that some of the patients may have been dealt with by emergency medical officers in hospital and not referred to pediatricians considering the benign nature of this easily diagnosable disease. Moreover, no specific treatment is required so that referral bias could exist. History of contact with hepatitis patient was present in one of the study participants. This was a 2-year-old boy who acquired the disease from his mother. This needs special emphasis since the morbidity could have easily been avoided. Illiteracy and myths are the major barriers in prevention of the disease transmission. There should be public lectures for awareness about the modes of spread and to adopt preventive measures. GPs have an important role in this regard. We need to activate our media to highlight these steps especially in summers, when the burden of the disease is the highest. As HEV continues to gain recognition as an important contributor to the global burden of infection and illness, not only in the developing world, continued research in this field is warranted and necessary to prevent death and morbidity.

Conclusion

Hepatitis E is a fairly common and under diagnosed cause of acute hepatitis in pediatrics patients and introducing adequate preventive measures can reduce the morbidity.

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