Exposer Rate of Hepatitis E (IgG) in a Selected Population of Children and Adults in Karachi

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Abstract

Aims: To see exposure rate of hepatitis E (IgG) in 100 apparently healthy children and adults.
Subjects and Methods: Sera from 100 healthy children aged 1 day to 10 years and too healthy adults aged 1.8-45 years were analysed for exposure to hepatitis B (lgG) using ELISA.
Results: Two samples from children were excluded from the study due to improper storage leaving 98 samples for analysis. Of 98 sera from children 19.4% were positive for lgG indicating previous exposure to hepatitis B. ihe exposure rate increased with age and was 10% in children below 1 year of age, 14% at 2 years, 19% at 3 years and 28% at 1.0 years. In adults overall exposure was 16%. There was no predominance of either sex in both the groups and all individuals belonged to middle to lower socioeconomic strata.
Conclusion: An exposure of 19% in children and 16% in adults indicates high faecal contamination of drinking water and re-addressing of the issue of use of boiled water on individual level, supply of potable water on the government level and a need to produce a vaccine on international level (JPMA 50:352, 2000).

Introduction

Hepatitis F virus is one of the major causes of water borne epidemics of lion A non B (NANB) hepatitis. The predominant mode oftransmission is through the faeco-oral route. Large epidemics have been reported from India[1-3], Nepal[4], Burma[5]. Algeria[6] and Soviet Union[7]. Two major and multiple mini epidemics have been reported from Pakistan[8-14]. The clinical disease occurs either as epidemic or sporadic. The diagnosis is made using ELISA kits which has both 1gM and IgG antibodies either separately or combined as total test. Both 1gM and lgG antibodies appear 10-15 days after 1-1EV infection, the 1gM in majority becomes undetectable after 40-50 days but Ig persists for 10-15 years[15]. Seroprevalence studies of HEV infection are based on the presence of IgG antibodies in the healthy population.
The seropositivity is low in developed countries where it varies from 2% in IJSA, 3% in UK and Europe to less than 1% in Japan and Australia[16,17]. In developing countries like Burma[5]. Nepal[18], India[1-3], China[19,20]. Sudan[21], the figures are as high as 10-45%. Intermediate prevalence rate of 2-10% is reported from Indonesia, Korea, Taiwan and some Latin American and African countries[22,23], advancement seropositivity.
Seroposi tivity increases with the of age. A Chinese study reported a of 7.2% in preschool children, 18.9% in adults to 33% in older age amongst adolescents 24.5% group[24]. In Sudan 70% exposure rate was reported in children and 20% in adults[21]. In Pakistan 17% children and 29% adults are exposed to this virus[25]. In Western India 60% of children showed exposure while only 5% adults were IgG posiive[26]. Both sexes are equally affected but the disease is more in rural areas. The present study was done to determine the seropositivity of HEV in healthy population using IgG antibodies.

Subjects, Methods and Results

Sera from well baby clinics and school going children, whose ages ranged from 1-10 years were collected. Adults included voluntary blood donors whose ages ranged from 1 8-45 years. Preliminary

work included a filling of Performa containing baseline information on age, sex, place of residence and socioeconomic status. Individuals having a past history of jaundice were excluded. Sera were labelled and stored at -70°C till analyzed. All blood samples were initially tested for the presence of IgG antibodies to HEV (Abbott HEV EIA, Abbot Laboratories, Chicago, USA). All initially reactive samples were tested in repeat and no supplemental test was done to verify the resu Its.
During 1999 a total of 98 sera from children and 100 from adults were collected. Of the 98 sera of children 19.4% were IgG positive. The exposure rate increased with the age and was 10% in children under 1 year age to 14% at 2 years, 19% at 3 years and 28% at 10 years. Overall exposure in children was 19.4% and in adults the exposure rate was 16%. There was no sex predeliction and all individuals belonged to the urban setting of low to middle socioeconomic group.

Comments

The exposure rate to hepatitis E virus (HEV) in healthy population varied from 19% in children to 16% in adults. This high exposure rate is an under-estimation of the actual figures, because this study included only those subjects who had no previous exposure to jaundice. Had the patients with history of jaundice in the past been included, the figures might have been much higher. The high exposure rate also indicates the extent of faeco-oral contamination and thus shows the quality of the potable water. High faeco-oral contamination is also confirmed by an almost 97% exposure to hepatitis A virus in our country[27,28]. Although mini epidemics of hepatitis E have been reported in our country but the virus runs a sporadic course all the year round.
High maternal mortality has been reported in the third trimester in infected females, during epidemics from Kashmir[29], Ahmedabad[30], Azamgarh[31], New Delhi[32], Kirzighiztan[33], Burma[34], Indonesia[35] and China[36]. The risk to mother varies from acute liver failure, fulminant hepatitis to encephalopathy with or without coagulopathy within 4 weeks of onset of jaundice without previous evidence of chronic liver disease. Foetal outcome also varies froni abortion, still birth, intrauterine growth retardation, teratogenic effect to normal progression of pregnancy. In a study done in Karachi on 13 fulminant hcpatic failure cases admitted during endemic season, foetal loss was 50% with 16.6% maternal loss[37]. As maternal loss is over 40% during epidemics therefore it has been suggested by Khurro that in all high endemic areas pregnant women should be given immune gloulin during epidemics[38].
Although HEV infection has low mortality but its morbidity is very high causing lot of stress on individual plus government funds. It is therefore suggested that a joint venture needs to be initiated at the local level, government level and internationally. Boiling of water needs to be stressed at local level, supply of potable water is to be made a priority on the government level and development of vaccine to be stressed internationally.

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