
Occurrence of an Outbreak of Acute Hepatitis E Infection in Baquba City

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Abstract:

Objective: Document the occurrence of an outbreak of hepatitis E infection in Baquba city, the center of Diyala province.

Patients & Methods: During Jun 2002, 44 patients presented with signs of acute viral hepatitis were referred from the outpatient clinic of Baquba general hospital to the public health laboratory for viral investigations. They were 25 males with mean age 15.3 ± 7.8 years and 19 females with mean age 15.4 ± 10.2 years. Viral markers including, hepatitis B surface antigen (HBsAg), anti-hepatitis C virus (anti-HCV) antibody, anti-hepatitis A virus (anti-HAV IgM) antibody and anti-hepatitis E virus (anti-HEV IgM) antibody were performed using immunoenzymatic assays. Additionally, some demographic information including age, sex and residence were recorded.

Results: Viral marker investigations revealed that 18 (40.9%) patients were positive for anti-HEV IgM, with mean age 20.3 ± 8.3 years. Two (4.5%) of anti-HEV positive patients were also positive for anti-HAV IgM, and 1 (2.27%) patient was positive for both anti-HEV IgM and anti-HCV antibody. Eleven (25%) of patients were positive for anti-HAV IgM, with mean age 5.6 ± 4.9 years. The HBsAg was detected in 2 (4.5%) of patients. The remaining 12 (27.3%) patients were negative for all viral markers. All anti-HEV IgM positive patients were from Al-Mufraq and Al-Muialemen squares in Baquba city.

Conclusion: Serologically confirmed outbreak of acute hepatitis E virus infection occurred in Baquba city, the center of Diyala province.

Key words: Acute viral hepatitis, Hepatitis E virus infection, Diyala.

Introduction:

Hepatitis E, previously known as enterically transmitted non-A non-B hepatitis, is an infectious viral disease with clinical and morphologic features of acute hepatitis [1,2]. HEV consist of small 27-34 nm diameter, icosahedral nonenveloped particles with positive single-stranded RNA genome [3]. HEV is responsible for large epidemics of acute hepatitis and proportion of sporadic cases in India, Southeast and central Asia, the Middle East, part of Africa and Mexico [4-7]. The virus is excreted in feces and is transmitted predominantly by feco-oral route, usually through contaminated water, person-person transmission is uncommon [8,9]. The clinical attack rates are highest among young adults [10]. Diagnosis of hepatitis E infection is usually made by detection of specific IgM antibody, which disappears rapidly over a few months; Gig anti-HEV persists at least a few years [11, 12]. Clinical illness is similar to other forms of acute viral hepatitis except in pregnant women, in whom illness is particularly severe with high mortality [13]. Subclinical and unapparent infection may occur. It has been suggested that humans with subclinical HEV infection and animals may represent reservoirs of HEV [14, 15]. The present study documents the occurrence of serologically confirmed outbreak of acute HEV infection in Baquba city.

Patients & methods:

In Jun 2002, 44 patients complaining acute jaundice were referred from the outpatient clinic of Baquba general hospital to the public health laboratory for viral investigations. The patients were 25 males with mean age 15.3 ± 7.8 years and 19 females with mean age 15.4 ± 10.2 years. Some demographic information including sex, age and residence were recorded. Viral markers of HBsAg, anti-HCV antibody, anti-HAV IgM antibody and anti-HEV IgM antibody were done using immunoenzymatic assays.

Results:

The Viral marker investigations revealed that 18 (40.9%) of patients were positive for anti-HEV IgM. The mean age of HEV positive patients was 20.3 ± 8.4 years. 2 (4.5%) of HEV positive patients were also positive for anti-HAV IgM antibody, and one (2.27%) patient was positive for both anti-HCV and anti-HEV IgM antibodies. 11 (25%) of patients were anti-HAV IgM positive. The mean age of HAV positive patients was 5.6 ± 4.9 years. The HBsAg was detected in two (4.5%) of patients. The remaining 12 (27.3%) patients were negative for all viral markers, table (1 and 2).

Among the HEV positive patients, 10 (55.5%) were males with mean age 19.4 ± 7.1 years, and eight (44.5%) females with mean age 21.5 ± 10.3 years. The age range was 3 to 35 years. The male female ratio was 1:0.8, table (3).

Table (1): The positive viral markers of acute icteric patients

Viral markers	No. positive	%
Anti-HEV IgM	18	40.9
Anti-HAV IgM	11	25
HBsAg	2	4.5
Anti-HCV	1	2.27
Non	12	27.3
Total	44	100

Table (2): rates of coinfection among HEV positive patients

Coinfection	No.	%
HEV / HAV	2	4.5
HEV / HCV	1	2.3

Table (3): sex and mean age of HEV positive cases

Sex	No. infected	%	Mean age (years)
Male	10	55.5	19.4 ± 7.1
Female	8	44.5	21.5 ± 10.3
Total	18	100	20.3 ± 8.4

Concerning the residence of HEV positive patients, the results showed that 15 (83.3 %) were from Al-Mafraq square, and the remaining 3 cases (16.7%) were from Al-Mualemen square.

Discussion:

The present study documents the occurrence of laboratory confirmed outbreak of acute hepatitis E infection in Baquba city. The bulk of these cases were arising in Al-Mafraq square. Similar outbreaks of hepatitis E infection from different parts of the world had been linked to contaminated water supply [2, 7, and 16]. Furthermore, hepatitis E epidemics were usually associated with heavy rainfall and major fecal contamination of the water supply [4, 5, 17, 18]. In this outbreak, fecal contamination of water supply seems to be the most

likely source of infection, since the affected areas are highly liable for spreading of the virus due to the lack of sewage disposal, intermittent shortage of safe water supply, and most inhabitants are belong to low socioeconomic status, and they used to bred domestic animals indoors. It has been suggested that humans with subclinical hepatitis E infection and animals may acts as main reservoirs for the virus. [9, 14, 15, 19]

Regarding the age of infected, our results found that the young adults (mean age 20.3 ± 8.4 years) were more affected. Actually this is another feature characterized the hepatitis E epidemics, yet controversial explanations had been proposed. ^{1, 10, 11} Nevertheless, the wide ages range (3-35 years) of infected in this study, suggesting that the size of

infected inoculums and probably other factors may play a role.

The infection rate in males and females in this study is almost the same (M: F ratio is 1:0.8). This may be due to equal exposure of both sexes to the source of infection.

Although the possibility of coinfection by two or more of hepatotropic viruses, is well-recognized [20, 21]. This study adds other possibilities of coinfection by hepatitis E virus, hepatitis A virus and hepatitis C virus. Thus, we recommend that hepatitis E infection should be considered in the differential diagnosis of acute viral hepatitis. Proper management of patients particularly women, and since there is no convenient treatment, health education should be directed toward the precautions that minimize the risk of infection in such communities.

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