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Short Communication

Hepatitis E Virus, Pathogenesis and Management

Ibrahim Ali, A.[1*], Mazin Abdalla, S.[2] & Wala Elfatih Mahgoub, M.[3]

[1]*Department of Physiology, Faculty of Medicine, The National Ribat University, Khartoum, Sudan*

[2]*Department of Physiology, Faculty of Medicine, Napata College, Khartoum, Sudan*

[3]*Department of Anatomy, Faculty of Medicine, The National Ribat University, Sudan*

[*]**Correspondence to:** Dr. Ibrahim Ali, A., Department of Physiology, Faculty of Medicine, The National Ribat University, Khartoum, Sudan.

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Short Communication

Hepatitis E virus (HEV) was discovered in 1983 and cloned in 1991. The mode of the transmission is mainly by enteral routes and it is the cause water-borne epidemics in South-East Asia and the India [1-3]. Human to human transmission is the exception. It is worth noting that cases of mother-to-child and blood transfusion transmission have been reported [4,5]. HEV, gnomically, is an RNA virus, which has five major genotypes, all belong to the same serotype. All of five genotypes are different in regards to host species as well as the epidemiology. Genotypes 1 and 2 infect only humans and are endemic in many parts of Asia, Africa and South America. However, genotypes 3 and 4 infect humans, among other animals. Sporadic cases are caused by genotype 3 especially in North and South America. Genotype 4 appears to be restricted to Asia. Genotype 5 infects avian species [5,6]. HEV is considered a safety threat to procedures involving blood after several cases of transmission by transfusion or transplantation have been described [7-9].

The substandard sanitation reported in developing countries has paved the way to higher anti-HEV sero prevalence among population, which is giving way for the transmission by blood. Despite the fact that HEV was described to be a self-limiting acute infection, reports of persistent HEV infection have been registered in immune-compromised patients, even to the progression of liver inflammation and fibrosis and an eventual cirrhosis [10,11]. HEV related mortality skyrocketed up to 20% in pregnant category, and the course severity also increased [12] and in patients with underlying liver disease, it may reach up to 60% [13]. In the meantime, blood donors in screening for HEV in India is not a routine.

HEV is capable of sporadic as well as epidemic course of infection [14], As an acute infection, immunoglobulin M (IgM) dominate for the first 4 weeks, followed by IgGs at week 5 [15]. IgM antibodies may stay for as long as 3 months. The window of viremia appears during acute HEV infection at week 2 and lasts for 2 to 3 weeks and it may extend up to 112 days [16].

An estimation of the acute infection using the prevalence of IgM anti-HEV followed by rise of IgG levels is about 4% per year and asymptomatic course of viremia is approximately 0.3% [17].

The levels of anti HEV IgG and IgM were tested using commercial enzyme- linked immune sorbent assay (ELISA).

Serological screening (as a preventive measure) of anti-HEV IgM of donors should be introduced to minimize the transmission risk associated with transfusion, especially true in immune-compromised cases.

New routes of transmission have been discovered. Zoonotic source is an example, and namely genotypes 3 and 4 infecting pigs and other mammals. Viral RNA has been detected in pig livers sold commercially [18]. Undercooked pork as well as other meat products is now the subject of importance of transmission [4]. Farmers and other professionals dealing with animals are at risk HEV infection. Age (older populations) and male gender are considered as well. Hemodialysis patients, injecting drug users and prisoners also fall in the category of risk [19].

Although HEV infection is often asymptomatic, it but can induce a self-limited acute hepatitis, similar to hepatitis A. In pregnant women, HEV severity is increased with mortality rates up to 20%. HEV infection can also be severe in individuals with underlying liver disease in whom mortality rate may reach up to 60% [5,13]. Cases of chronic HEV infection have been documented in immunosuppressed patients (solid organ transplant recipients, patients treated for malignancies or those infected with HIV [9,20]. There are no recent data regarding HEV seroprevalence in Switzerland. In 1994 reported a seroprevalence of 3.2% among 94 blood donors [21] In the light of the recent high HEV seroprevalence reported in various European countries, we aimed to assess the current HEV. Extra-hepatic manifestations can also occur in patients with acute or chronic HEV infection. These include a range of neurological symptoms and impaired kidney function associated with cryoglobulinemia.

Neurological disorders are the most widely documented, with descriptions of Guillain-Barré syndrome, neuralgic amyotrophy, and encephalitis / meningoencephalitis / myositis [22].

The pathogenesis of hepatitis E is not fully understood. Since HEV is presumably transmitted by the fecal-oral route, it is unclear how the virus reaches the liver. Perhaps there is an extra-hepatic site of virus replication. The virus could replicate in the intestinal tract before reaching the liver. Negative strands of HEV RNA, indicating virus replication, have been detected in the small intestine, lymph nodes and colon indicating extra- hepatic HEV replication [23]. HEV then replicates in the cytoplasm of hepatocytes and is released into both blood and bile. The liver damage induced by HEV infection may be immune-mediated by cytotoxic T cell and natural killer (NK) cells since HEV is not cytopathic [24] The virus is shed in the stool [25].

Hepatitis E Diagnosis and Treatment

Due to the fact that cases of Hepatitis E are quite similar (clinically) to other types of acute viral hepatitis, diagnosis can be confirmed only by testing for the presence of antibody against HEV or HEV RNA.

No serologic tests to diagnose HEV infection have been approved by FDA for use in the United States. Several tests are available for research purposes and some commercial laboratories use commercially available assays from other countries. HEV infection should be considered in any person with symptoms of viral hepatitis who has traveled to a hepatitis E endemic region, recently travelled from an endemic area, or from an outbreak afflicted region and who is negative for serologic markers of Hepatitis A, B, C, and other hepatotropic viruses. A detailed history regarding sources of drinking water, uncooked food, and contact with jaundiced persons should be obtained to aid in diagnosis. There are increasing numbers of domestically acquired cases of hepatitis E and diagnosis should be suspected when no etiology can be identified on thorough evaluation. Hepatitis E induced infection usually requires no treatment. There is no specific antiviral therapy for acute Hepatitis E. Physicians should offer supportive therapy. Patients are typically advised to rest, get adequate nutrition and fluids, avoid alcohol, and check with their physician before taking any medications that can damage the liver, especially acetaminophen. Hospitalization is sometimes required in severe cases and should be considered for pregnant women.

Few case reports and case series have indicated that modification of immunosuppressive medication and/or use of antiviral drugs may result in spontaneous viral clearance in immune compromised patients with chronic hepatitis E.

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