Case Report

A case of Hepatitis E in a blood donor

Anita A. Tendulkar, Sneha A. Shah, Rohini A. Kelkar[1]

Departments of Transfusion Medicine and [1]Microbiology, Tata Memorial Hospital, Mumbai, Maharashtra, India

Abstract:

The threat of hepatitis E is being felt in blood banks in recent times. The disease is usually self-limiting, but may progress to a fulminant fatal form. We report a unique case of a hepatitis E virus (HEV)-positive asymptomatic blood donor who later developed jaundice and informed the blood bank. A blood donor passed all eligibility criteria tests and donated blood. After 20 days, the blood bank was informed by the donor that he had developed vomiting and jaundice 1 day postdonation. He was investigated by a local laboratory 1 day postdonation for liver profile, which was high. There had been a major outbreak in his community of similar symptoms during the same period. HEV IgM antibody by enzyme-linked immunosorbent assay was positive. Silent infections may be lurking in apparently healthy donors. Donors need to be encouraged to revert in case of any significant developments after donation and maintain open channels of communication.

Key words:

Blood donor, hepatitis E, screening

Introduction

Hepatitis E virus (HEV) is an emerging infectious threat to blood safety.[1] We report a unique case wherein the donor initiated a callback and helped us to diagnose HEV and curb the viral transmission. There are documented cases from Japan, the United Kingdom, Saudi Arabia and France on the transmissibility of HEV via blood transfusions in patients.[2-5]

HEV is a nonenveloped, single-stranded RNA virus, 27-34 nm in diameter. The virus may be transmitted enterically, via blood transfusions or a zoonotic spread by consumption of uncooked meat. Four genotypes of HEV have been identified. Genotypes 1 and 2 are human viruses causing epidemic hepatitis and are associated with waterborne and fecal — oral transmission. Genotypes 3 and 4 are swine viruses that are common in domestic and wild pigs. The extent of transmission and its clinical relevance are issues under debate. At present, there is little evidence to advocate universal screening for this virus. However, considering that there is no definitive treatment for HEV-induced hepatitis, selective screening should be advocated in blood products for high-risk recipients in endemic areas.[1]

Case Report

An apparently healthy, 27-year-old Indian male donor passed all eligibility criteria tests and donated blood (triple bag) at a tertiary cancer hospital. After 20 days, the donor informed the blood bank that he had developed vomiting and jaundice 1 day postdonation, for which he had visited a physician and was investigated in a local laboratory, wherein the liver function tests were found to be elevated [Table 1].

The donor contacted our blood bank 20 days after donation and conveyed about an outbreak of similar symptoms in his residential community during the same period. Accordingly, we investigated him for hepatitis A and E virus in the microbiology laboratory of our hospital. Hepatitis E IgM antibody by enzyme-linked immunosorbent assay (ELISA) was found to be positive. The hepatitis A IgM antibody by chemiluminiscent microparticle immunoassay was negative. There was improvement in the liver profile as compared to prior reports [Table 2].

The donor's packed cells had already been issued during this interim period of 20 days as all mandatory TTI tests had been negative. The patient receiving the implicated packed cells was symptom free 35 days posttransfusion. Laboratory investigations could not be performed as he had already been discharged and was a resident of another state. The cryoprecipitate unit and factor VIII-deficient plasma were discarded immediately to prevent the possibility of HEV transmission.

Discussion

There are widespread endemic zones of hepatitis E [Figure 1]. HEV seroprevalence in blood donors reported from various countries ranges from 1% to 52% [Table 3].

The disease manifests as malaise, fever, gastrointestinal symptoms and jaundice, and is

Access this article online
Website: www.ajts.org
DOI: 10.4103/0973-6247.150959
Quick Response Code:

Correspondence to:
Dr. Anita A. Tendulkar,
6th Floor, Service Block, Tata Memorial Hospital, E Borges Road, Parel, Mumbai - 400 012, Maharashtra, India.
E-mail: anitatendulkar@gmail.com

Table 1: Tests performed 1 day postdonation

Test	Values
Bilirubin (mg/dL)	Total: 5.2 (n=0.3-1.2) Direct: 2.5 (n=0-0.2) Indirect: 2.7 (n=0.3-1.0)
AST (IU/L)	688 (n=up to 40)
ALT (IU/L)	680 (n=up to 40)
Bile salts and pigment (urine)	Present
Widal	Negative
Malaria	Negative
CBC	Normal

Table 2: Tests performed 20 days postdonation

Test	Values
Hepatitis E (IgM antibody by ELISA)	Positive
Hepatitis A (IgM antibody by chemiluminiscent microparticle immunoassay)	Nonreactive
Bilirubin (mg/dL)	Total: 2.68 (n=0.3-1.2) Direct: 1.07 (n=0-0.2) Indirect: 1.61 (n=0.3-1.0)
AST (IU/L)	47 (n=up to 40)
ALT (IU/L)	68 (n=up to 40)
Total protein (g/dL)	8.2 (n=6.4-8.3)
Serum albumin	4.6 (n=3.5-5.2)
Serum globulin	3.6 (n=1.7-3.5)

Table 3: HEV seroprevalence in blood donors[6,7]

Country	Donor incidence (%)	Published year
Netherlands	1.1	1993
Italy	1.0	1994
Switzerland	3.2	1994
Baltimore	21.3	1997
Spain	2.8	1998
NW Greece	0.23	1998
USA	18.3	2002
Japan	3.7	2002-3
N France	3.2	2007
Denmark	20.6	2008
England	16	2008
SW Britain	15.8	2008
SW Iran	11.5	2008
China	32.6	2010
SW Switzerland	4.9	2011
SW France	52.5	2011
Saudi Arabia	18.7	2013
Germany	6.8	2013
Central Iran	14.3	2013

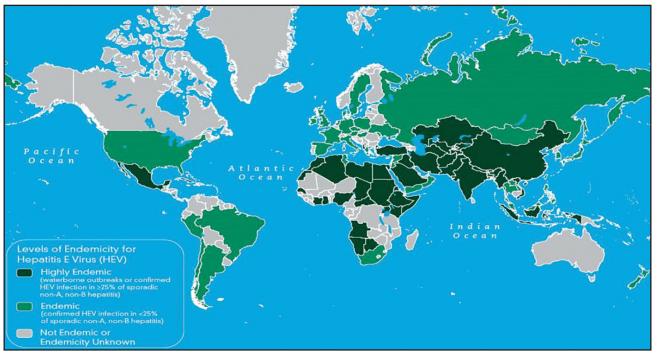

Figure 1: Geographic distribution of hepatitis E infection (2010) (Teo, Chong-Gee, Centres for Disease Control and Prevention, 2012 Yellow Book)

usually self-limiting, resolving within 4-6 weeks. A fulminant hepatitis may develop in susceptible patients like pregnant females, preexisting liver disease and immunocompromised patients with fatal outcomes. Our donor was in the incubation phase during blood donation, but his initiated call back was pivotal in detecting HEV IgM antibodies. The incubation period ranges from 3 to 8 weeks. The subclinical nature of HEV disease has huge implications for blood banks, as a donor may give a negative history for jaundice even though he may be anti-HEV antibody positive. Anti-HEV IgM antibody indicates acute infection [Figure 2]. Anti-HEV IgG titer may remain detectable for up to 15 years.[8]

The currently available anti-HEV antibody (IgG and IgM) assays are not FDA approved, with wide variations in their sensitivity and specificity. Reliable assays for IgG and IgM anti-HEV antibodies and molecular tests for HEV RNA are critically needed.[9] A pedigreed panel of HEV sera from infected patients globally needs to be established to validate assays. Unexplained acute or chronic hepatitis warrants an IgM anti-HEV test to rule out ongoing infection. Molecular tests based on HEV RNA detection in serum and stool may be utilized for confirmation, genotyping and epidemiological studies. Because of the limitations of this technique, IgM ELISA test for detection of clinical and subclinical acute infection would be cost-effective in a blood bank setting.

Hepatitis E is being considered as a re-emerging infectious disease across the world. Routine screening for the virus is presently not performed in blood banks; however, studies performed globally indicate a high HEV seroprevalence (1-52%) in blood donors. Being a referral cancer center, our donor population is a mix of individuals from various Indian states, and may help in understanding the HEV seroprevalance of blood donors in India as there is a dearth of literature on the same. Pilot projects to test donors for HEV would help in gauging the actual seroprevalance and facilitate in hepatitis E screening policy decisions for specific geographical locations. Screening donor blood for HEV may be worthwhile in hyperendemic regions. Because of the absence of definitive treatment and vaccination, HEV is presently creating many challenges to the blood bank community.

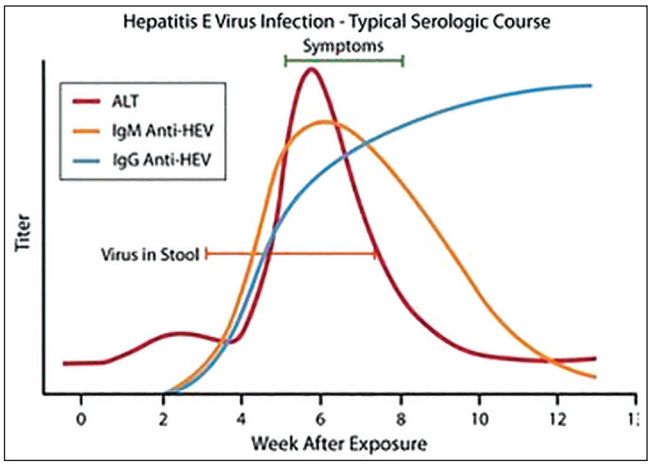

Figure 2: Schematic representation of hepatitis E virus infection: Typical serologic course (Centres for Disease Control and Prevention)

References

1. Bajpai M, Gupta E. Transfusion-transmitted hepatitis E: Is screening warranted? Indian J Med Microbiol 2011;29:353-8.
2. Matsubayashi K, Kang JH, Sakata H, Takahashi K, Shindo M, Kato M, *et al*. A case of transfusion-transmitted hepatitis E caused by blood from a donor infected with hepatitis E virus via zoonotic food-borne route. Transfusion 2008;48:1368-75.
3. Boxall E, Herborn A, Kochethu G, Pratt G, Adams D, Ijaz S, *et al*. Transfusion-transmitted hepatitis E in a 'nonhyperendemic' country. Transfus Med 2006;16:79-83.
4. Colson P, Coze C, Gallian P, Henry M, De Micco P, Tamalet C. Transfusion-associated hepatitis E, France. Emerg Infect Dis 2007;13:648-9.
5. Khuroo MS, Kamili S, Yattoo GN. Hepatitis E virus infection may be transmitted through blood transfusions in an endemic area. J GastroenterolHepatol 2004;19:778-84.
6. Kaufmann A, Kenfak-Foguena A, André C, Canellini G, Bürgisser P, Moradpour D,*et al*. Hepatitis E virus seroprevalence among blood donors in southwest Switzerland. PLoS One 2011;6:e21150.
7. Kumar N, Sarin SK. Hepatitis E- Is it a risk to transfusion safety? Asian J TransfusSci 2013;7:1-3.
8. Dalton HR, Bendall R, Ijaz S, Banks M. Hepatitis E: An emerging infection in developed countries. Lancet Infect Dis 2008;8:698-709.
9. Hoofnagle JH, Nelson K, Purcell RH. Hepatitis E. N Engl J Med 2012;367:1237-44.

Cite this article as: Tendulkar AA, Shah SA, Kelkar RA. A case of Hepatitis E in a blood donor. Asian J Transfus Sci 2015;9:82-4.

Source of Support: Nil, **Conflicting Interest:** None declared.