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Letter to the Editor

Detection of GB virus C/hepatitis G markers in Chinese voluntary blood donors

Dear Editor,

GBV-C or hepatitis G virus (HGV) was discovered by two independent groups of investigators when studying cases of hepatitis non-A, non-B, and non-E.[1,2] HGV is transmitted through blood transfusion and components.[3,4] Up to now, there is no report about detection of GBV-C/HGV RNA by nucleic acid test and serological markers in Chinese voluntary blood donors. Considering the safety of blood transfusion, we cooperated with DAAN GENE to evaluate a research diagnostic kit to screen the GBV-C/HGV RNA. A total of 450 individuals whose ALT level was ≥40 IU/L (mean ± SD: 62.2 ± 25.1 IU/L) and 298 blood donors whose ALT level was within normal levels were enrolled in this study. Age of the donors ranged from 18 to 57 years (mean ± SD: 30 ± 9 years). All blood donors had tested negative for markers of HIV (anti-HIV antibodies), hepatitis B (HBsAg and anti-HBc antibodies), and hepatitis C (anti-HCV) using commercial enzyme immunoassay kits. The study sample was collected at the Beijing Red Cross blood center, Guangzhou blood center, Nanjing Red Cross blood center, Shanxi blood center, Deyang blood station, and Suzhou blood station.

A Q-PCR research diagnostic kit (DAAN Gene, China) for hepatitis G virus was used to detect GBV-C/HGV RNA. The specific probe targeting the 5′-UTR region was FAM-ACCGAGCCCGTTACCCACCTG-TAMRA. The specific primers for amplifying the 5′-UTR region of GBV-C/HGV were as follows: forward primer: 5′-ACGTCAGGCTCGTCGTTA-3′; reverse primer: 5′-TACGTGGGCGTCGTTTG-3′. The plasmids for making standard curve were qualified from 10^7 to 10^2 copies/mL, respectively. The Q-PCR procedure was as follows: reverse transcriptase at 50 °C for 15 min; 95 °C for 15 min; one cycle; 94 °C for 15 s, 55 °C for 45 s, 45 cycles. All Q-PCRs was performed in Stepone plus system (ABI, USA). The product band was recovered and sequenced for final determination. The Q-PCR result indicted that the R^2 of standard curve was 0.998. The result of NAT showed that GBV-C/HGV RNA was found in 1 (0.22%) out of the 450 patients with elevated ALT. The copy number of this sample was 1.07×10^5 copies/mL. Further research was conducted to investigate whether there was coinfection in the GBV-C/HGV RNA positive sample with other viruses. Nucleic acid tests for HAV, HBV, HCV, HEV, and HIV turned out negative; likewise, assays to check for HAV-IgG, HAV-IgM, HEV-IgG, and HEV-IgM antibodies were all negative. It has been reported that 4.3% (12/279) of Chinese paid blood donors had GBV-C/HGV RNA detected by RT-PCR.[5] In contrast, only one HGV-RNA (0.13%) was detected in 748 samples in this study. This finding suggests that the rate of GBV-C/HGV RNA among Chinese voluntary blood donors may be lower than that among paid blood donors. To ban paid blood donation and advocate voluntary blood donation may be an effective way to control the transmission of HGV. The proportion of HGV IgG and HGV IgM antibodies in this research was 11% (82/748) and 10.6% (79/748), respectively. There was no significant difference in the proportion of HGV-IgG and HGV-IgM antibodies among donors with elevated ALT level and those with normal ALT. This study indicates that testing for GBV-C/HGV RNA and serological markers among Chinese blood donors warrants further investigation in the future.

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Conflicts of interest

The authors declare no conflicts of interest.

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