

Molecular Detection of Window Phase Hepatitis C Virus Infection in Voluntary Blood Donors and Health Care Workers in A Cohort from Central India

Sir,
Hepatitis C virus (HCV), with its asymptomatic chronic state and an estimation of 170 million infections, is considered as a global health problem. According to recent reports, approximately 12.5 million of the Indian population is suffering from HCV, among which 25% are at risk of developing cirrhosis or hepatocellular carcinoma.⁽¹⁻³⁾ Transfusion of infected blood is considered as one of the major threats for HCV transmission, which mainly occurs by the percutaneous exposure of virus to the contaminated blood and plasma derivatives. Although the anti-HCV test is widely used for screening of HCV in blood donors, the test does not effectively detects the “window phase” (first 6 weeks) of the infection, in which the antibody response is negative.⁽⁴⁾ Such unidentified HCV-positive individuals are at great risk of transferring the infection to healthy recipients.

The present study aimed at ascertaining such unidentified individuals in a cohort of 1000 voluntary blood donors and 100 health care workers from Central India. All subjects were negative for anti-HCV ELISA (Diasorin S.p.A. Saluggia, Vercelli, Italy), while nucleic acid analysis through Light Cycler 2.0 (Roche Diagnostics, Mannheim, Germany; minimum detection limit 10 copies/mL) using fluorescence resonance energy transfer probes⁽⁵⁾ reported three blood donors to be HCV ribonucleic acid (RNA) positive. Linear array polymerase chain reaction (PCR) genotyping⁽³⁾ of the positive cases showed the presence of genotype 3 [Figure 1] displays linear array genotypic characterization of three identified window phase HCV cases. Table 1 shows the demographic characteristics of these three subjects.

We believe that this is the first documented report identifying the window period (anti-HCV negative) of HCV RNA-positive blood donors in this part of the country. In addition, our study also underscores the necessity and importance of implementing careful screening methods for detection of HCV in blood donors and health care workers. For a developing

economy like India, devising a cost-effective in-house molecular technology for careful screening in mini-pools of donated blood components looks highly imperative.^(2,6) This would not only pave the way for successful translation of our findings from bench to bedside but also curb transmission risk from transfusion-associated infections in areas of high prevalence.

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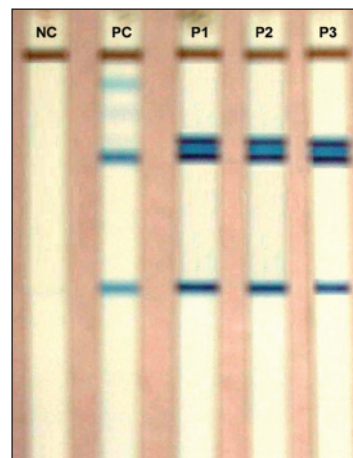


Figure 1: Displays linear array genotypic characterization of three identified window phase HCV cases

Table 1: Clinical background of identified window phase hepatitis C virus cases

Clinical Details	Patient 1	Patient 2	Patient 3
Age (years)	37	39	42
ALT (U/L)	67.52	52.64	86.20
AST (U/L)	48.14	39.72	61.20
Platelet counts (1×10 ⁵ /mm ³)	1.82	2.60	1.46
Bilirubin (g/dL)	1.85	1.13	2.39
Viral load (IU/mL)	68.10	58.10	82.10
Viral genotype	3	3	3

ALT: Alanine aminotransferase, AST: Aspartate aminotransferase, IU: International units

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