Comment on: One window-period donation in two years of individual donor-nucleic acid test screening for hepatitis B, hepatitis C and human immunodeficiency virus

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Since 1999 blood transfusion services around the world have been implementing nucleic acid amplification tests (NAAT) to screen for hepatitis C (HCV) RNA, human immunodeficiency virus (HIV) RNA and hepatitis B (HBV) DNA to improve the safety of the blood supply. Initially HCV RNA and HIV RNA NAAT screening was implemented and more recently HBV DNA NAAT screening commenced. In the beginning mini pools (MP) of 98 were used due to the manual complex systems available which were not suitable for high throughput because of the stringent laboratory requirements[1]. Over the years the pool sizes have decreased to either 16 as used in the USA[2] or even smaller such as 6 as used by many European and Asian countries[3-5]. South Africa, in 2005, was the first country in the world to implement individual donation (ID) screening for all three viruses of all donations[6]. NAAT screening in parallel with serological screening has allowed the classification of HIV positive donations as window period, concordant and elite controller infections. HCV positive donations can be classified as window period, concordant and resolved infections and HBV positive donations can be classified as Window period, HBsAg only, acute concordant, occult and anti-HBc only infections. Since the implementation of NAAT for HBV DNA screening, vaccine breakthrough infections have also been recognized[7].

The article in this issue of the Revista Brasileira de Hematologia e Hemoterapia (RBHH) entitled One window-period donation in two years of individual donor-nucleic acid test screening for hepatitis B, hepatitis C and human immunodeficiency virus by Levi et al. describes the first two years of screening for HIV RNA, HCV RNA and HBV DNA using ID NAAT in a small Brazilian blood center[8]. From a total of 24,441 donations, no additional yield was obtained for HIV and HCV and they showed a 35% clearance rate for HCV and no elite controllers for HIV. The primary objective of the paper is to describe an unusual HBV yield case. This case tested HBsAg and anti-HBc negative and had an anti-HBs titer of 18 IU/mL. On follow up, the anti-HBs rose to 109 IU/mL, however in four samples over seven months no HBsAg or anti-HBc reactivity occurred. Sequencing confirmed the donation as a genotype A2 vaccine breakthrough infection. This is unusual as most documented breakthrough infections have been of the non-A2 genotype due to the vaccine comprising an A2 virus[7].

The authors also showed 19 cases of HBsAg positive with no other HBV marker reactivity. It would be interesting to understand whether the authors viewed these donations as true or false infections in light of the investigations being done in the USA in the context of potentially removing HBsAg screening if HBV NAAT and anti-HBc screening is performed.

Although this paper describes a small number of donations screened by ID-NAAT, if extrapolated to the larger Brazilian donor base and the prevalence and incidence is similar to that presented by Levi et al., then ID-NAAT could have a large impact on the safety of the blood supply particularly for HBV and HIV due to the high prevalence and incidence of the diseases, respectively.

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