Quantitative polymerase chain reaction for detection of human herpesvirus-7 infection in umbilical cord blood donors

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Abstract

Objective

Umbilical cord blood (UCB) has been a reasonable alternative to granulocyte colony-stimulating factor-mobilized peripheral blood or bone marrow, as a source of hematopoietic stem cells with a lower risk of graft-versus-host disease. In immunocompromised hosts after transplantation, the risk of viral infection in adults, especially with beta-herpesviruses such as human herpesvirus-7 (HHV-7), may be increased. This virus in immunocompromised patients can be reactivated from
latency and converted to an active phase. Therefore, light-upon-extension real-time polymerase chain reaction (PCR) was developed to assess the prevalence and load of HHV-7 in the plasma and buffy coat of donors.

**Methods**

About 825 UCB samples under standard protocol from donors were collected. Then, DNA from plasma and buffy coat was extracted and quantitative real-time PCR was performed with light-upon-extension primers.

**Results**

Overall, HHV-7 was detected in 3.64% (30/825) of UCB donors. HHV-7 DNA was detected in 26 (3.2%) buffy coat samples (latent infection), and only 4 (0.48%) of them were positive for HHV-7 DNA in plasma samples (active infection); the mean HHV-7 viral load was $1.31 \times 10^1$ copies/mL in latent infection, and $1.94 \times 10^3$ copies/mL in active infection.

**Conclusions**

We suggest that real-time PCR in plasma and buffy coat could be a useful method to detect active and latent HHV-7 infection in UCB donors and determine its role in subsequent transmission events.