Monitoring of parvovirus B19 infection in recipients after hematopoietic stem cell transplantation

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Introduction

Parvovirus B19 (B19V) has a tropism for human erythrocyte progenitor cells in the bone marrow. B19V is particularly dangerous for patients after bone marrow transplantation and/or chemotherapy. Parvovirus infection in such patients causes transient and chronic anemia, as well as pure red cell aplasia of the bone marrow. Moreover, as it has recently been shown, B19V affects hematopoietic stem cells, disrupting multilinear differentiation and causing pancytopenia. The aim of this study was to evaluate the prevalence and initial time of B19V infection in patients after allogeneic hematopoietic stem cell transplantation (allo-HSCT).

Materials

The work was carried out with 228 DNA bone marrow samples from patients after allo-HSCT who were treated at the Russian National Medical Research Center for Hematology in 2017-2025. A real-time polymerase chain reaction (PCR-RV) with specific primers was used to detect the B19V virus.

Results

Patient bone marrow samples were examined for B19V DNA presence of on 30-th day after allo-HSCT. B19V was revealed in 31 (13.6%) among 228 bone marrow samples. In order to find out the initial time of B19V infection in B19V-positive patients after allo-HSCT we examined their bone marrow DNA before allo-HSCT. B19V infection was found out in 5 recipients (26.3%).
Previously, we examined bone marrow samples from 209 patients in a hematology hospital of various departments for the presence of parvovirus. 20% of positive samples were found. So B19 infection in hematological inpatient facilities is about several times higher than the general population. Moreover, the infection occurs both before and after allo-HSCT.

Conclusions

We suppose that B19V monitoring is important to infection in patients both before and after allo-HSC, because it could be one of the causes of pancytopenia after allo-HSC.