

Correlations between reactivation of herpesviruses and common complications of allo-HSCT

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Abstract

Patients and methods: We studied 145 patients with different hematological malignancies, including ALL (n=51), AML (n=37), CML (n=15), lymphomas (n=9), and MDS (n=6). They underwent allogeneic hematopoietic stem cell transplantation (allo-HSCT). The patients received bone marrow (35%), or peripheral blood stem cells (65%). Allo-HSCT from an unrelated donor occurred in 64% of cases. CMV-, HSV-, and EBV-specific DNA in leukocytes was detected weekly—with commercial PCR kits—up to 100 days after allo-HSCT. Cases of pneumonia, neurological signs, herpetic rashes, gut mucositis, hemorrhagic cystitis, and aGVHD grade were registered.

Results: HSV-, EBV-, and CMV-specific DNAs in post-HSCT blood samples revealed rates of 51%, 57%, and 45%, respectively (2.3 to 2.5-fold exceeding pretransplant rates). Types of underlying malignancy and gender did not influence these ratios. Following myeloablative versus reduced conditioning regimens, HSV positivity (>2 positive findings) was found in 36% and 21% of cases (p=0.02), respectively. Similar differences with CMV and EBV positivity were expressed only as tendencies.

Meanwhile, the incidence of HSV and CMV findings was age-dependent, i.e., minimal frequencies of PCR positivity were observed from 1–4 years of age, followed by increased viral reactivation from the age of 10–20 years. Among young patients (<21 years old), a correlation was found between neurological symptoms and multiple HSV positivity (p=0.002). Similarly, mucositis severity was associated with the persistence of either HSV, or CMV (p values, 0.02 and 0.008, respectively). Risk of intestinal aGVHD proved to correlate with EBV positivity (p=0.008). Similarly, a risk for posttransplant cystitis was dependent on EBV reactivation (p=0.01).

Conclusion: The study suggests that there is a correlation between repeated positivity of HSV, EBV, CMV, and some common complications after allo-HSCT. The significance of herpesvirus infection after allo-HSCT may be tested in further studies.

Keywords: hemopoietic cells, transplantation, complications, herpesviruses, reinfection