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POSTER ABSTRACTS

705.CELLULAR IMMUNOTHERAPIES: LATE PHASE AND COMMERCIALLY AVAILABLE THERAPIES

Adoptive Therapy with Cytomegalovirus-Specific Cytotoxic T Lymphocytes for Refractory Cytomegalovirus Infection and Disease after Allogeneic Hematopoietic Stem Cell Transplantation

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Introduction: Cytomegalovirus (CMV) infection remains a common complication in patients undergoing allogeneic hematopoietic stem cell transplantation (allo-HSCT). The rates of refractory CMV infection are reported in allo-HSCT recipients ranging from 19.0% to 50.6%. Patients with refractory CMV infection have a higher incidence of CMV disease and non-relapse mortality than those without refractory CMV infection, and the antiviral drug has limited efficacy. In this study, we retrospectively compared the efficacy and safety of donor and third-party CMV-specific cytotoxic T lymphocytes (CMV-CTLs) in patients with refractory CMV infection and disease after allo-HSCT in the context of the new definitions.
Methods: This study examined all consecutive patients who received CMV-CTL therapy for refractory CMV infection and disease after allo-HSCT at our center from January 2017 to September 2021. Refractory CMV infection referred to refractory CMV DNAemia, which was defined by a >1 log $_{10}$ increase in CMV DNA levels in blood after at least 2 weeks of appropriately dosed antiviral therapy. Refractory CMV disease referred to refractory CMV end-organ disease, which was defined by a worsening in signs and symptoms or progression into end-organ disease after at least 2 weeks of appropriately dosed antiviral therapy. This study mainly focused on the therapeutic response, overall survival (OS) and safety evaluation. Complete response (CR) was defined as undetectable CMV DNA by quantitative PCR in two consecutive tests coupled with the resolution of clinical signs and symptoms.
Results:A total of 53 patients who received CMV-CTL therapy for refractory CMV DNAemia and disease after allo-HSCT were enrolled in this study, including 40 in the donor CMV-CTL group and 13 in the third-party CMV-CTL group. Of the 40 patients with donor CMV-CTLs, 20 were refractory CMV DNAemia, and 20 were refractory CMV end-organ diseases. Of the 13 patients with third-party CMV-CTLs, 7 were refractory CMV DNAemia, and 6 had refractory CMV end-organ diseases. Within 6 weeks of treatment, 26 (65.0%) patients and 9 (69.2%) patients achieved CR in the donor and third-party groups (P=1.00). The CR rates at 6 weeks after the first CMV-CTL infusion were 65.0% (95% CI 49.5%-77.9%) in the donor group and 69.2% (95% CI 42.4%-87.3%) in the third-party group. At the date of statistical analysis (September 30, 2022), 16 patients died in the donor CMV-CTL group and 6 died in the third-party CMV-CTL group. Causes of death were relapse of the primary diseases (n=3; 3 in the donor group), CMV diseases (n=5; 4 in the donor group and 1 in the third-party group), mixed infections (n=9; 6 in the donor group and 3 in the third-party group), bacterial infection (n=4; 2 in each group), and fungal infection (n=1; 1 in the donor group). The OS at 2 year was 59.6% (95%CI 46.1%-77.1%) in the donor group and 53.8% (95% CI 32.6%-89.1%) in the third-party group (P=0.860).
Conclusion: This study contributes important information regarding the comparable antiviral efficacy and safety of donor or third-party CMV-CTLs for refractory CMV infection and disease after allo-HSCT.

Disclosures No relevant conflicts of interest to declare.

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