Abstract: Posttransplantation lymphoproliferative disease (PTLD) associated with Epstein-Barr virus (EBV) is a life-threatening complication after allogeneic hematopoietic stem cell transplantation. PTLD is efficiently prevented by adoptive transfer of EBV-specific T cells from the donor. To make EBV-specific T cells available in urgent clinical situations, we developed a rapid protocol for their isolation by overnight stimulation of donor blood cells with peptides derived from 11 EBV antigens, interferon-gamma surface capture, and immunomagnetic separation. Six patients with PTLD received 1 transfusion of EBV-specific T cells. No response was seen in 3 patients who had late-stage disease with multiorgan dysfunction at the time of T-cell transfer. In 3 patients who received T cells at an earlier stage of disease, we observed complete and stable remission of PTLD. Two patients have remained free from EBV-associated disease for more than 2 years. CD8(+) T cells specific for EBV early antigens rapidly expanded after T-cell transfer, temporarily constituted greater than 20% of all peripheral blood lymphocytes, and were maintained throughout the observation period. Thus, a rapid and sustained reconstitution of a protective EBV-specific T-cell memory occurred.
after the infusion of small numbers of directly isolated EBV-specific T cells.