

ABSTRACT

Depletion of immune functions in patients after hematopoietic stem cell transplantation (HSCT) results in higher frequencies of several types of opportunistic infections. Especially the reactivation of human cytomegalovirus (CMV) may cause life-threatening infections and require antiviral treatment. Within this diploma thesis we compare the function signatures of CD4⁺ and CD8⁺ T-cells stimulated by CMV antigens, which were obtained from 63 patients after HSCT. Polychromatic flow cytometry measurements of CD154 (CD40L), intracellular cytokines (INF- γ and IL-2) and marker of degranulation (CD107a) allowed us to determine the function status of various T-cells simultaneously. We have discovered, that dual production of INF- γ and IL-2 on CD8⁺ T-cells was present only in patients controlling their CMV reactivations, but was absent in noncontrollers. Single production of INF- γ on CD8⁺ T-cells was the most abundant subtype, but they most probably represent non-protective memory cells. We have further created two tests of NK-cells functionality, one that aims on the detection of their degranulation ability and second, that detects cytotoxic capability of NK-cells.

Key words: transplantation, hematopoietic stem cells, T-lymphocytes, immune system recovery, cytomegalovirus, INF- γ , IL-2