ABSTRACT

MAIT cells, mucosal-associated T lymphocytes, are a group of immune cells that have both innate and adaptive immunity abilities. They are defined by the expression of a semi-invariant TCR chain. They exhibit anti-infective potential with cytotoxic effector functions and immunomodulatory capabilities. The primary activation pathway is through the MR1 molecule of the non-classical MHC Ib class which is exerted in defense against bacteria and mycoses. MAIT cells are also able to TCR-independent activation by proinflammatory cytokines. They are involved in cytokine storms mediated by bacterial superantigens and in antiviral defense. They respond rapidly by producing a wide range of inflammatory mediators, including the repertoire of adaptive immunity Th1, Th2 and Th17 lymphocytes. Recent work shows resistance to some xenobiotics. This dissertation presents the results of an investigation of the phenotype of MAIT cell subpopulations measured by flow cytometry. By stimulation with ionomycin and PMA we analyzed their repertoire of cytotoxic abilities. In the main research project the hypothesis of anti-infective potential and resistance of MAIT cells to xenobiotics is applied to clinical practice in the field of haematooncology. The thesis presents evidence for a protective role of MAIT cells during the cytopenias of the early post-transplant period when febrile neutropenia occurs. Our results indicate earlier dimission and less severe infectious complications (maximum CRP values) in patients with higher MAIT lymphocyte levels. Patients on the BEAM regimen, which is burdened with more complications, showed lower transfusion dependency (erythrocytes, platelets) and fewer febrile days when they had a higher level of MAIT cell population before starting a myeloablative regimen. The results of this study provide new information on the involvement of unconventional lymphocytes in the body's defense and the protective role of MAIT cells during cytopenia of autologous PBSC transplantation.

Keywords: autologous PBSC transplantation, immunity, MAIT cells, unconventional lymphocytes