Immunological profile of multiple sclerosis patients

Abstrakt

Multiple sclerosis is an autoimmune neurodegenerative disease affecting predominantly the white matter of the CNS and the spinal cord. The mechanism of disease progression is not yet fully understood. In this study we focused on a comparison of selected immunological markers between patients with multiple sclerosis who were naïve newly diagnosed, subsequently treated with Avonex (IFNβ1a) and healthy donors. The T cells (particulary cytotoxic CD8+ T cells) are the major population involved in pathogenesis of MS causing the demyelization of axons. Subpopulation of CD161+ Th cells has a potential to be very important in this process. We focused on the role of NK cells phenotype and function in autoimmune response of patients and their changes during the therapeutic intervention. Using flow cytometry we analyzed the distribution of NK, NKT, T cells and monocytes with special regard to the expression of CD161 and NKG2D molecules on their surface. We observed increase counts of CD161+ cells in subpopulations NK $CD56^{bright}$, NK $CD56^{dim}$, Th, Tc $CD8^{bright}$, Tc $CD8^{dim}$ and decrease counts of NKG2D+ cells in subpopulations NK $CD56^{bright}$, NK $CD56^{dim}$, NKT, Th, Tc $CD8^{bright}$, Tc $CD8^{dim}$ and monocytes. The decreased cytotoxic activity of NK cells in naïve MS patients correlated with up regulation of CD161 inhibitory and down modulation of NKG2D activation receptors. After treatment with Avonex drug, the functional activity of NK cells returned to values of healthy donors. The measurement of plasma levels of cytokines between patients and healthy donors revealed a significant increase of IL6 and IL17 concentration. This study extends the knowledge about the pathogenesis of MS and gives an input for further investigation of the involvement of NK cells in this disease.