Aberrations in Functional Activity and Immunophenotype of Monocytes in B – Cell Chronic Lymphocytic Leukemia

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B cell chronic lymphocytic leukaemia (B-CLL) is a lymphoproliferative disease characterised by accumulation of monoclonal CD5+/CD19+/CD23+ lymphocytes in peripheral blood and bone marrow. B-CLL is the most common type of the adult leukemia in the Western countries. Effective treatment of CLL doesn't exist. The most accepted therapeutical approach is chemotherapy using cytotoxic agents, but strong cytotoxic agents together with cancer cells destroy the normal cells as well. As a result development of secondary complications takes place. Considering abovementioned, development of new, alternative therapeutic approaches is a matter of great importance. One possibility is to use anti-tumour potential of monocytes. But to start developing in this direction, first, functional competence of monocytes population in CLL patients should be evaluated.

In our study both the functional capacity and the immunophenotype profile of the monocytes from CLL patients has been investigated. *Ex vivo* phagocytic function of monocytes population from 19 CLL patients and 10 age-matched controls has been studied. For this reason the ability of freshly isolated monocytes to engulf opsonized Staphylococcus aureus particles *in vitro* has been evaluated. Simultaneously, the immunophenotyping for IgG1-binding monocytic Fcγ receptors: FcγRI (CD64), FcγRII (CD32), FcγRIII (CD16) has been performed.

The obtained results revealed that phagocytosis of the opsonised bacteria by monocytic population from CLL patients was decreased in comparison with normal controls (Mean Fluorescence Intensity (MFI)=3619±467 in control group; MFI=1928±503 in CLL patients, $p<0.01$). Simultaneously a decrease in CD64 expression has been detected in CLL patients (MFI=180,9±9,705 in normal controls, while in CLL patients: MFI=29,28±3,974,$p<0.0001$). During the analysis of monocytes' immunophenotype, attention has been paid to the disease stage (Rai classification: 0-4 stages) and it has been revealed that the decrease in CD64 expression level correlates with disease progression: 0-1 stages: MFI=57,01±12,76; 2-4 stages: 16,62±8,85, $p<0.0001$. The diminished expression of CD64 gives a possible explanation of the impaired phagocytic function of CLL monocytes, as FcγRI receptors ability to interact with opsonising IgG1 effects the ability of monocytes to engulf particles and effectively eliminate the pathogen.