**Abstract**

The antigen-specific immunity consists of cells called T and B lymphocytes. These cells together with cells of non-specific (innate) immunity begin their development in fetal liver and later in bone marrow from the common progenitor, the hematopoietic stem cell. Both B and T lymphocyte lineages then undergo differentiation which is regulated by many cytokines and transcriptional factors and leads to very heterogeneous cohort of subsets. Because the immune system is not only protecting the organism from infections and malignant growth but also from itself, lymphocyte differentiation must pass many checkpoints where B and T clones are strictly selected. Cells of both lineages closely communicate with each other and also with cells of innate immunity. If, due to mutation of protein encoding genes, disturbance of differentiation or malfunction of effector activities providing some of these functions occurs, an immune system malfunction called immunodeficiency arises. Multiparametric immunophenotyping followed by flow cytometry examination has been proven one of the most suitable techniques for studying lymphocyte subsets and lymphocyte-associated immunodeficiencies. Here we describe examples of primary lymphocyte-associated immunodeficiencies, how they affect individual lymphocyte subsets, what it means for the health status of the organism and why it is important to study them.