Abstract

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Title of diploma thesis: **Comparison of the immunophenotypes of normal and pathological plasma cells - determination of the rate of risk of progression in patients with MGUS**

Four-color flow cytometry is a necessary part of plasma cell imunophenotypisation today. It allows to define plasma cell count with a high accuracy and to distinguish normal and pathologic cell on the base of surface and cytoplasmatic markers expression. An expression of the following surface markers, CD138, CD38, CD19, CD56, CD45 CD20 and CD27, was monitored in this dissertation. An expression of the cytoplasmatic light chain κ and λ followed which confirmed monoclonality of the plasma cells in patients with multiple myeloma or with monoclonal gammopathy of undetermined significance. In reference group of patients the expression of light chain κ and λ confirmed polyclonality. 47 samples of patients with diagnosed multiple myeloma or with monoclonal gammopathy of undetermined significance and 22 samples from patients with increased count of plasma cell, but without present hematological disease of plasma cells, these were used for comparison differences between normal and patologycal plasma cells, were evaluated. A statistically significant difference between normal and pathological plasma cells was found in expressions of markers CD138, CD38, CD19, CD56, CD45 and CD27. There was not a statistically significant difference in expression CD20 on normal and pathological plasma cells. It is possible to use the rate of expression of markers CD138, CD38, CD19, CD56, CD45 a CD27 to distinguish normality or abnormality of plasma cells in patients with suspected multiple myeloma or monoclonal gammopathy of undetermined significance.

Key words: plasma cells, multiple myeloma, monoclonal gamopathy of undetermined significance, flow cytometry, immunophenotypisation.