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The analyses of influence of platelet membrane fluidity in platelet receptors expression in chronic myeloproliferative neoplasms patients

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Background: Patients with chronic myeloproliferative neoplasms (MPNs) had qualitative and quantitative modifications of platelet membrane receptors that are involved in alteration of platelet function. These modifications of platelet functions determined thrombotic complications. The aim of our study was to determine if changes of platelet membrane fluidity could be correlated with alterations in expression of platelet receptors.

Materials & Methods: This retrospective study included 60 patients with MPNs as well as 10 patients with thrombosis not associated with MPNs. The group of patients with myeloproliferative neoplasms included 12 patients with chronic myeloid leukemia and 38 patients with MPNs Ph negative (essential thrombocythemia, polycythemia vera and idiopathic myelofibrosis). Depending on thrombosis presence in medical history of patients enrolled, we divided the MPNs patients into two groups: patients without thrombosis (50 patients) and patients with thrombosis in their medical history (stroke, myocardial infarction and splanchnic thrombosis). The determination of platelet membrane fluidity was performed by fluorescence anisotropy measurements using as marker 1-(4-trimethylammoniumphenyl)-6-phenyl-1,3,5-hexatriene p-toluenesulfonate (TMA DPH). Fluorescence anisotropy (FA) was analysed depending the expression of platelet membrane receptors measured by flow cytometry analyses. We examined the flow cytometry markers of platelet adhesion (CD42a, CD42b), aggregation (CD41, CD61) and CD36.

Results & Discussion: The expression of CD41 receptor was lower in MPNs group (min 28.58, max 100.75) compared with controls group (min 43.58, max 89.46), p=0.02. We did not obtain statistical difference between expressions of CD61, CD42a, CD42b and CD 36. The fluorescence anisotropy of platelet membrane in MPNs group is higher than control group, p=0.05 The CD36 expression had a positive correlation with value of fluorescence anisotropy in MPNs patients group. (rho=0.75-95%; CI 0.308-0.925; p=0.005). We did not obtain any correlations between the rest of platelet receptors and FA modification

Conclusions: MPNs patients have a lower membrane fluidity corresponding to higher FA. The expression of CD36 is higher in MPNs patients and was direct correlated with FA modifications. Platelet receptor CD36 recognizes oxidized lipids in oxidized low-density lipoprotein (oxLDL) particles, a process that determines the thrombosis process. The direct role of CD36 in thrombosis process has to be determined.

Biography

Viola Maria Popov has completed his PhD from Carol Davila University Bucharest. He is the project Manager of one research project - the role of microparticles in thrombotic complication in chronic myeloproliferative neoplasms patients. He has published more than 10 papers in journals A and B+.

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