Inhibition of collagen receptors: $\alpha_1\beta_1$ and $\alpha_2\beta_1$ integrins decreases eosinophil transmigration, but has no impact on peripheral blood mononuclear cell movement through human microvascular endothelial cell lung monolayer

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Body: Introduction: Recruitment of the inflammatory cells to the airways is mediated by adhesive molecules. Among integrins, the most important in cell trafficking are those containing $\alpha_4$ and $\beta_2$ subunits. We hypothesized that also collagen integrin receptors: $\alpha_1\beta_1$ and $\alpha_2\beta_1$, are involved in asthma pathogenesis. We recently described increased expression of both: $\alpha_1$ and $\alpha_2$ subunits on blood eosinophils and $\alpha_2$ on CD4 T lymphocytes in asthma. The aim of the study was to analyse effect of $\alpha_1\beta_1$ and $\alpha_2\beta_1$ integrin inhibition on transmigration of eosinophils and peripheral blood mononuclear cells (PBMC) through human microvascular endothelial cell lung monolayer in 12 atopic asthmatics and 12 healthy controls. We analysed also CD4/CD8 ratio in PBMC population before and after transmigration assay. Methods: PBMC were separated by gradient centrifugation; eosinophils by gradient centrifugation and negative magnetic separation. For inhibition purposes we used snake venom derived anti-adhesive proteins: viperistatin, VP12, VLO5 and VLO4 (potent and selective inhibitors of $\alpha_1\beta_1$, $\alpha_2\beta_1$, $\alpha_4\beta_1$ and $\alpha_5\beta_1$ integrins, respectively). Results: In both groups of subjects all anti-adhesive proteins inhibited eosinophil, but only VLO5 and VLO4 PBMC transmigration; CD8 T cells migrated better than CD4 in control samples, but their transmigration was decreased after incubation with anti-adhesive proteins. Conclusion: Both collagen receptors: $\alpha_1\beta_1$ and $\alpha_2\beta_1$ integrins are involved in eosinophil transmigration. The role of $\alpha_2\beta_1$ on lymphocyte is probably different.