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Title: Collagen receptors: $\alpha 1\beta 1$ and $\alpha 2\beta 1$ integrins may be involved in asthma pathogenesis

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Body: Introduction: Collagen I (and III) is a major component of extracellular matrix in lungs. We hypothesized that integrin collagen receptors: $\alpha 1\beta 1$ and $\alpha 2\beta 1$ may be involved in airway remodelling. Recently we have shown that $\alpha 2\beta 1$ integrin is up-regulated on peripheral blood CD4 T cells in patients with mild to moderate persistent asthma, while $\alpha 1\beta 1$ integrin was not. Aims: The aim of this study was to analyze expression of $\alpha 1\beta 1$ and $\alpha 2\beta 1$ integrin collagen receptors on blood T cells in patients with severe asthma and persistent airway obstruction and to correlate it with bronchial wall thickness measured by lung CT. Methods: In 31 severe asthma subjects with persistent airway obstruction and 40 mild to moderate asthmatics with normal spirometry expression of the integrin subunits: $\alpha 1$, $\alpha 2$, $\alpha 4$ and $\alpha 5$ was assessed by flow cytometry. Chest CT was performed in patients with airway obstruction to measure bronchial wall thickness. Results: Studied groups differed in age and asthma duration. Expression of $\alpha 1$ subunit was significantly higher in the group of patients with airway obstruction; such difference was not observed for $\alpha 2$. Surprisingly, we found significant negative correlation between $\alpha 2$ expression on CD4+ and CD8+ T cells and bronchial wall thickness. In contrast, $\alpha 4$ and $\alpha 5$ subunits correlated positively. Conclusions: Increased expression of $\alpha 1\beta 1$ integrin on blood T cells in severe asthma suggests its possible role in asthma pathology. On the other hand, airway remodeling is associated with decreased $\alpha 2\beta 1$ expression on T lymphocytes. Significance of this finding requires further study.