



CD44 on blood eosinophils as a novel marker of bronchial asthma management

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Bronchial asthma (BA) is characterized by infiltration of the respiratory tracts by eosinophils. A wide variety of adhesion molecules is involved in the binding of eosinophils to the vascular endothelium and their subsequent transmigration from the circulation to the airways, while little is known about CD44 expression on eosinophils. In the present study we introduce a novel staining combination with which surface markers on eosinophils can be analyzed without purification prior to staining and examined whether the expression of CD44 on peripheral blood eosinophils could be monitored as a marker of the control of BA. Staining of eosinophils with anti-CD16 and anti-VLA-4 monoclonal antibodies enabled us to delineate eosinophils as VLA-4^{high}CD16⁻ cells from other leukocyte populations in the whole blood. CD44 was constitutively expressed on resting eosinophils and expression increased following cytokine-mediated activation. In all BA patients examined, CD44^{high} eosinophils were enriched in sputum relative to peripheral blood, indicating that eosinophils in sputum were more activated than those in the blood. By comparing the extent of CD44 expression on blood eosinophils from poorly controlled and well-controlled asthma patients, we unexpectedly found that the density of CD44 expression is lower on blood eosinophils from the poorly controlled group. Thus, the extent of CD44 expression on blood eosinophils defined as VLA-4^{high}CD16⁻ cells is a novel marker indicative of the management of BA.

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