

Correspondence

Thrombomodulin: A novel player in allergic asthma

To the Editor:

Yerkovich et al.¹ report a house dust mite (HDM) allergen-mediated upregulation of thrombomodulin (blood dendritic cell antigen 3, CD141) on myeloid dendritic cells (mDCs) that is associated with a T_H2-polarized immune response. In accordance with that study, we previously described the allergen (HDM, birch, and rye)-enhanced expression of thrombomodulin on peripheral blood (PB) and bronchoalveolar lavage (BAL) fluid-derived mDCs using the human asthma model of segmental allergen challenge.² Here we report the allergen-induced upregulation of thrombomodulin on BAL-derived plasmacytoid dendritic cells (pDCs) in this asthma model.

Ten patients with mild allergic asthma (3 female and 7 male patients; median age, 27 years; age range, 20–39 years; median total IgE level, 298 kU/L; IgE range, 57–770 kU/L) were recruited for the study on the basis of previously described criteria.² All patients provided written informed consent, and the study protocol was approved by the local ethics committee. Segmental allergen challenge was performed as previously described.³ Patients were challenged with HDM (n = 6) or birch (n = 4) allergen, and the individual provocation dose was calculated as previously described (median allergen dose, 155.5 allergen units; range, 0.06–2180.0 allergen units).⁴ BAL fluid samples were taken 10 minutes and 24 hours after allergen and saline challenge, respectively, and pDCs were identified by means of flow cytometry as lineage-negative HLA-DR⁺CD123⁺ cells, as previously reported.² Thrombomodulin expression was determined by using a specific allophycocyanin-labeled antibody (clone AD5-14H12; Miltenyi Biotec, Bergisch Gladbach, Germany).

Twenty-four hours after allergen challenge, pDC numbers were significantly decreased in PB, whereas in BAL fluid from allergen-challenged lung segments significantly higher pDC numbers could be detected compared to BAL fluid from saline-challenged control segments (Fig 1, A). No change in thrombomodulin expression on PB pDCs could be detected 24 hours after allergen challenge (Fig 1, B). Ten minutes after allergen challenge, cell numbers in BAL fluid samples were too low to measure thrombomodulin on pDCs. Twenty-four hours after allergen challenge, thrombomodulin expression on BAL fluid pDCs was significantly higher compared with that seen in saline-challenged control segments (Fig 1, B).

Thus our data emphasize the *in vivo* relevance of allergen-enhanced thrombomodulin expression. However, in extending the findings of Yerkovich et al.,¹ this is not restricted to mDCs but also present on pDCs. In addition, we can add to their data by showing that thrombomodulin upregulation is not restricted

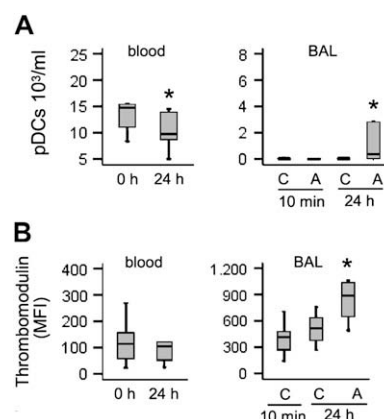


FIG 1. Box plots show pDC numbers in PB and BAL fluid (A), as well as thrombomodulin expression intensity on pDCs (B). Differences between groups were analyzed by using the Wilcoxon signed-rank test. *P values of less than .05 were regarded as significant. C, Saline-challenged lung segment; A, allergen-challenged lung segment; MFI, median fluorescence intensity.

to HDM allergen but also occurs in response to pollen allergens, such as birch and rye.

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