T Helper type 2 cells direct antigen - induced eosinophilic skin inflammation in mice

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Abstrak

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Eosinophilic inflammation in combination with immunoglobulin E (IgE) production is a characteristic feature of atopic dermatitis. Although activated T-helper type (Th) 2 cells play critical roles in the local accumulation and activation of eosinophils, whether they induce eosinophilic skin inflammation, independent of the IgE-mediated pathway has been unclear. To address the functional role of T cells in allergic skin diseases, we herein transferred Th1/Th2-differentiated or naive DO11.10 T cells into unprimed BALB/c mice. Ovalbumin-specific Th2 cells, as well as eosinophils, accumulated in the skin upon antigen challenge, despite the absence of antigen-specific IgE. Neither antigen-specific Th1 nor naive T cells induced eosinophil accumulation, although Th1 cells by themselves migrated into the skin. Interleukin (IL)-4, IL-5, and eotaxin were specifically produced in the skin of antigen-challenged, Th2 cell-transferred mice, whereas interferon (IFN)-γ and regulated on activation, normal T cell expressed and secreted (RANTES) were preferentially produced in Th1 cells-transferred mice. Production of monocyte chemoattractant protein (MCP)-1 and MCP-3 was enhanced by both Th1 and Th2 cells. The accumulation of eosinophils and Th2 cells in the skin was suppressed by both dexamethasone and FK506, indicating an essential role of Th2 cells in eosinophil recruitment. We conclude that Th2 cells can induce eosinophilic infiltration into the skin in the absence of antigen-specific IgE.