Administration of interleukin-12 exerts a therapeutic instead of a long-term preventive effect on mite Der p 1 allergen-induced animal model of airway inflammation

李岳倫

Lee YL;FU CL;Chiang BL

摘要

Abstract

Interleukin-12 (IL-12) is a key cytokine, which promotes T helper type 1 (Th1) cell-mediated immunity and inhibits Th2-type responses. It has been previously shown that IL-12 administration during active immunization following a single allergen exposure can prevent antigen-induced increases in immunoglobulin E (IgE) formation, Th2 cytokine production and bronchoalveolar lavage (BAL) eosinophils in a murine model of allergic airway inflammation. Thus, these studies have now been extended and two IL-12 treatment protocols on this murine model were evaluated. Administration of IL-12 during the active immunization strikingly increased Der p I-specific serum IgG2a and transiently decreased the levels of IgG1 and IgE antibodies following multiple allergen challenges. Such early treatment of IL-12 down-regulated IL-5 production and modestly up-regulated interferon-gamma production but did not effect BAL eosinophilia. These results suggest that repeated exposure to antigen and IL-12 is necessary to maintain a persistent Th1-recall response. Furthermore, administration of IL-12 to actively immunized mice, in which Th2-associated responses were established, had a significant effect on IgG2a synthesis and a modest effect on IgE levels, also down-regulation of IL-5 production, and markedly increased interferon-gamma production and abolished recruitment of eosinophils. Therefore, these data indicate that IL-12 can inhibit antigen-induced eosinophil infiltration into airways, despite the existence of a Th2-associated response. Taken together, these studies suggest that IL-12 may be useful as an immunotherapeutic agent in the treatment of such pulmonary allergic disorders as bronchial asthma