Clinical and Molecular Allergy

BioMed Central

Research

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CCR3, CCR5, CCR8 and CXCR3 expression in memory T helper cells from allergic rhinitis patients, asymptomatically sensitized and healthy individuals

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Published: 19 April 2006

Clinical and Molecular Allergy 2006, **4**:6 doi:10.1186/1476-7961-4-6

Received: 29 November 2005

Accepted: 19 April 2006

This article is available from: http://www.clinicalmolecularallergy.com/content/4/1/6

Abstract

Background: Chemokine receptors have been suggested to be preferentially expressed on CD4+ T cells with CCR3 and CCR8 linked to the T helper (Th) 2 subset and CCR5 and CXCR3 to the Th1 subset, however this remains controversial.

Objective: Our aim was to compare the CCR3, CCR5, CCR8 and CXCR3 expression in memory Th cells from allergic, asymptomatically sensitized and healthy individuals.

Methods: Peripheral blood mononuclear cells from 8 pollen allergic rhinitis patients, 10 asymptomatically sensitized and 10 healthy individuals were stimulated for 7 days with allergen or tetanus toxoid. CCR3, CCR5, CCR8, CXCR3, CD4 and CD45RO were detected by flow cytometry.

Results: No differences in chemokine receptor expression were observed between the three groups on day 0, and seven days of unstimulated culture did not change the expression. Both antigenic stimuli increased the chemokine receptor expression, tetanus toxoid being the most potent. No differences in percentage chemokine receptor positive memory Th cells were observed between the three groups on day 7. Only a change in MFI for CCR5 was significantly different between the three groups after allergen stimulation of the Th cells.

Conclusion: We conclude that even though allergen and antigen induced increased chemokine receptor expression, no differences in profiles were identified in memory Th cells from patient groups with different atopic status.

Introduction

The prevalence of allergy is increasing in the westernized part of the world with estimates suggesting that 20–30% of the population is affected [1]. However, unlike the reaction of most IgE-sensitized individuals who upon re-exposure to the allergen develop symptoms due to activation and release of mediators from various immune cells, some individuals seem to exhibit an IgE positive phenotype without having any allergic symptoms. These individuals have been described in the literature as *asymptomatically sensitized* and are phenotypically considered to be a group between the allergic and the healthy individuals with an increased risk of developing allergy [2,3].