



ORAL PRESENTATION

Open Access

CCR9+ and CD103+ tolerogenic dendritic cell populations in food allergy patients undergoing oral immunotherapy

Marco Garcia¹, Amit Singh², Grace Yu³, Robi Bucayu³, Trevor Longbottom³, Kari Nadeau^{2*}

From Food Allergy and Anaphylaxis Meeting 2011
Venice, Italy. 17-19 February 2011

Rationale

CD103+ DCs (dendritic cells) and CCR9+ pDCs (plasmacytoid DCs) have been implicated in promoting tolerance to antigens through regulatory-T cell induction. We have conducted food oral immunotherapy (OIT) clinical studies for the last 3 years at Stanford University. We hypothesized that subjects with food allergies have low CD103+ and CCR9+ expression on their DCs but that these DC populations change over time while on therapy.

Methods

OIT was conducted and blood samples were drawn at baseline and approximately every 5 months during the study. The study is currently ongoing. PBMCs (peripheral blood mononuclear cells) were purified and flow cytometry was performed on gated DCs (LSRII, BD Biosciences).

Results

DCs expressing CD103 (integrin-alpha E) and CCR9 (CCL25 chemokine receptor) were examined in three cohorts - (1) patients undergoing milk or peanut OIT (n=8), (2) healthy controls (HC) (n=8), and (3) non-OIT food allergy patients (FA) (n=8). PBMCs were incubated for 6 or 18 hours either with or without offending allergen. CCR9+ expression on pDCs was significantly greater in HC versus FA patients (42%±25% vs 11%±10%; p <0.01) while CD103 expression on DCs was comparatively greater in HC versus FA patients (0.19%±0.17% vs 0.07%±0.07%; p=0.16). After offending allergen stimulation for both 6 and 18 hours, CCR9 presence

on pDCs significantly increased more in FA patients than in HC patients (213MFI*-6hr, 188MFI-18hr versus 12MFI for HC; p<0.03). In OIT patients, CCR9 change on pDCs after stimulation was significantly different than their baseline CCR9 MFI shift values (16MFI versus 188MFI; p<0.03) and more in line with the HC profile. *-Median Fluorescent Intensity.

Conclusion

The CCR9 and CD103 DC populations may play an important role for food allergy patients undergoing OIT. These tolerogenic DC changes in OIT may reveal one way that regulatory T-cell mediated tolerance, T-cell anergy, and/ or clonal deletion is induced.

Author details

¹Stanford University, Biology, Stanford, USA. ²Stanford University, Allergy and Immunology, Stanford, USA. ³Stanford University, Pediatrics, Stanford, USA.

Published: 12 August 2011

doi:10.1186/2045-7022-1-S1-O51

Cite this article as: Garcia et al.: CCR9+ and CD103+ tolerogenic dendritic cell populations in food allergy patients undergoing oral immunotherapy. *Clinical and Translational Allergy* 2011 **1**(Suppl 1):O51.

²Stanford University, Allergy and Immunology, Stanford, USA
Full list of author information is available at the end of the article