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Allergen Immunotherapy Increases Suppressive Activity by CD4+CD25-, IL-10 Producing T cells, but does not Affect Suppression by CD4+CD25+ T cells

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Rationale: Allergen immunotherapy (AI) is associated with modulation of Th2-type T cell responses to allergen, and has previously been described as resulting in induction of IL-10 producing T cells. We have previously reported less suppression by CD4+CD25+ regulatory T cells in patients with allergic rhinitis than non-atopics. We asked whether AI- induced regulation of allergen-driven T cell responses resulted from increased activity of naturally occurring CD4+CD25+ or was due to a separate regulatory population of IL-10 producing T cells.

Methods: During the UK pollen season, peripheral blood CD4+CD25+ and CD4+CD25- T cells were isolated by immunomagnetic columns from patients who had received AI for severe summer hay fever for at least one year and from a control group of rhinitic patients who had not received AI. CD4+CD25- T cells were separated after overnight incubation into IL-10 producing cells and non-IL-10 T cells by a further immunomagnetic step. The ability of CD4+CD25+ or CD4+CD25- IL-10+ T cells to suppress grass pollen allergen-driven cultures of CD4+CD25- T cells was compared between groups.

Results: Suppression of grass pollen (whole allergen extract and PhlPV) driven proliferation was greater by CD4+CD25- IL-10 producing T cells from patients who had received AI when compared to those who had not (median percent suppression 75% vs 20%, $p<0.01$). There was no difference between groups in the ability of CD4+CD25+ T cells to suppress grass pollen stimulated T cells.

Conclusions: Allergen immunotherapy induces a population of IL-10 producing regulatory T cells, which are distinct from the naturally occurring CD4+CD25+ subset.