A Correlation Between CD4+CD25+brightestFoxP3+ T Cells and Eczema in Young Children

Kristján Burmeister, Christopher Tisler, Lisa Salazar, Dr. Christine Seroogy, Dr. Robert Lemanske Jr., Dr. James Gern

Rationale. T-regulatory cells (CD4+CD25+FoxP3+ phenotype) are important to establishing tolerance to allergens and may inhibit atopic diseases. To test this theory a cohort of children (n=54, 6 and 7 years old) at risk for developing allergy and asthma was analyzed for the presence of T-regulatory cells by flow cytometry and the results were compared to their RAST scores, biological markers of atopy, and total IgE levels.

Methods. The presence of T-regulatory cells was determined by flow cytometry: PBMC for each patient were stained with antibodies against CD3, CD4, CD25, and FoxP3. These samples were run on a LSR II flow cytometer (Becton-Dickinson). CD25 expression was categorized as any positive, high expression, or brightest (top 2% of cells). Total and specific IgE and were determined by Unicap 100 (Pharmacia and Upjohn Diagnostics). Clinical evidence of atopy were determined by questionnaire.

Results. A statistically significant, positive correlation exists between percent CD4+CD25+brightestFoxP3+ events and subject history of eczema (n=26, p=0.02). This correlation between eczema and FoxP3 expression also exists in the CD4+FoxP3+ (p=0.05) and the CD4+CD25-FoxP3+ (p=0.01) populations. There were no correlations found with wheezing or atopy.

Conclusions. These results indicate an association between atopic dermatitis and high, rather then low, numbers of FoxP3+ T-regulatory cells. This association suggests that either the increased Treg numbers represent a feedback response to skin inflammation, or that Treg cell function may be abnormal in atopic dermatitis.