



ORAL PRESENTATION

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Children who develop allergy have low fecal alpha-defensin levels but high beta-defensin levels in infancy

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

Background

Since early innate immunity responses and the intestinal flora guide adaptive immune responses, we investigated whether fecal defensin levels in infancy were associated with the emergence of allergy.

Methods

In a randomized, double-blind placebo-controlled trial, 1018 infants in high risk for allergy received from birth to 6 months either a mixture of pre- and probiotics, or placebo. They were followed for the emergence of allergic diseases and sensitisation for 5 years. In an unselected group of 48 infants receiving probiotics and 52 receiving placebo, we measured fecal levels of human neutrophil peptide (HNP) 1-3, β -defensin 2 (HBD2) with enzyme linked immunosorbent assays (ELISA) at the age of 3 and 6 months. TNF- α and calprotectin had been measured with ELISA, and α 1-antitrypsin with an immunodiffusion method in a proportion of samples.

Results

Fecal levels of HNP1-3 and HBD2 decreased from 3 to 6 months. Low HNP1-3 and high HBD2 levels at 6 months were associated with allergy and sensitisation by the age of 5 years ($p < 0.05$). HNP1-3 levels correlated negatively with α 1-antitrypsin levels at the age of 3 months (coefficient -0.5; $p < 0.05$) in children who developed sensitisation only or combined with allergic disorders. HBD2 levels correlated positively with TNF- α (0.7; $p < 0.05$) in children with subsequent IgE-mediated allergy. Probiotic treatment tended ($p < 0.06$) to increase fecal HBD2 levels at the age of 6 months compared with placebo.

Conclusions

Early innate immunity responses in the gut are associated with the emergence of allergy later in childhood.

Published: 12 August 2011

doi:10.1186/2045-7022-1-S1-O32

Cite this article as: Savilahti et al.: Children who develop allergy have low fecal alpha-defensin levels but high beta-defensin levels in infancy. *Clinical and Translational Allergy* 2011 1(Suppl 1):O32.

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