Poster Session TPS 5

Allergic immune response

657
The role of Phl p 5 specific IgG antibodies for allergen presentation

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Background: Allergen-specific immunotherapy (AIT) is based on the administration of appropriate concentrations of allergen extracts. A beneficial response in patients has been associated with high productions of IgG_4 and IgG_1 antibodies, which compete with IgE for allergen binding. However, allergen-IgG complexes can also bind to FCγ-receptors expressed on the surface of antigen-presenting cells (APC). This cross-linking may thereby increase allergen-uptake and eventually the number of HLA-peptide-complexes on the surface of these cells which may drive the resulting T cell response towards Th1.
Method and results: We will study the effects on the T cell level induced by the decrease of the IgE/IgG ratio using the major grass pollen allergen, Phl p 5. This recombinant allergen was expressed and characterized and will be incubated with human Phl p 5-specific monoclonal IgG_1, IgG_4 and IgE antibodies with identical paratop. In addition, sera from AIT-treated patients containing high levels of Phl p 5-specific IgG will be used. Professional APCs will be isolated from whole blood samples in order to compare surface binding, internalization and processing of IgE-, IgG-bound and unbound Phl p 5. To asses proliferative and cytokine responses, Phl p 5 specific T cell lines and T cell clones will be produced and stimulated with APCs pulsed with antibody-loaded and unloaded Phl p 5. Finally, these latter aspects will also be investigated by using naïve T cells. Together, this data will show if AIT-induced IgG antibodies may not only block IgE-mediated effects but also modulate allergen-specific T cell responses during the therapy.

658
Early life antibiotic exposure is associated with an increased risk of atopic eczema and hay fever

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Background: Several studies suggested that early life exposure to antibiotics is associated with an increased risk of developing allergies later in life, but results are inconsistent. In this study we aimed to systematically review and quantify the relationship between early life exposure to antibiotics and the risk of atopic eczema (dermatitis) or hay fever (allergic rhinitis).
Method: PubMed and Web of Science databases were searched for observational studies published from January 1966 through November 11, 2015. Studies were included that assessed the association between antibiotic consumption during the first 2 years of life and the risk of eczema or hay fever later in life. Separate meta-analyses were performed to assess the risk estimates for cohort studies, cross sectional studies and case control studies. Furthermore, in subgroup analyses the effect of child's age at the time of antibiotic use/diagnosis of allergies, and the number of courses of antibiotic treatments have been analyzed. Overall pooled estimates of the odds ratios (ORs) were obtained using fixed or random-effects models.
Results: Twenty-two studies (including 394 517 patients) were selected to study the risk of eczema and 23 studies (including 256 609 patients) to study the risk of hay fever. In all separate meta-analyses of the distinct study designs, those who were exposed to antibiotics early in life were found to have a statistically significantly increased risk of eczema and hay fever. The summary OR for risk of eczema were 1.24 (95% CI, 1.09–1.41; I^2: 60.0%) in the meta-analyses of the cohort studies (n = 50 824); 1.41 (95% CI, 1.33–1.49; I^2: 0.0%) in the cross sectional studies (n = 217 752), and 1.15 (95% CI, 1.01–1.42; I^2: 79.5%) in the case control studies (n = 125 941). The summary OR for risk of hay fever were 1.18 (95% CI, 1.01–1.37; I^2: 74.3%) in the cohort studies (n = 46 540); 1.56 (95% CI, 1.29–1.90; I^2: 63.6%) in cross sectional studies (n = 27 608), and 1.14 (95% CI, 1.04–1.26; I^2: 64.8%) in the case control studies (n = 182 461). In subgroup analyses, there was no statistically significant effect of the child's age at time of antibiotic use as well as the time of allergy diagnosis on these associations. The association was stronger if patients had been treated with ≥2 courses compared with one course of antibiotics both for eczema and for hay fever.
Conclusion: Early life exposure to antibiotics is related to an increased risk of both atopic eczema and hay fever later in life.

659
Immunological biomarker predict clinical effects in subcutaneous peptide allergen immunotherapy

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Background: Peptide-allergen-immunotherapy has been shown to be efficacious for treating rhinoconjunctivitis in grass-pollen allergic patients. Using conjunctival allergen challenge as a surrogate parameter of clinical efficacy we studied whether the effects of a short course of peptide immunotherapy are reflected by the immunological parameters of sIgG4 and the functional blocking antibody response measured by facilitated allergen binding (FAB).
Method: This was a DBPC dose-finding study (EudraCT-No:2013-005445-37) in 198 patients eligible to receive either placebo or a peptidase-hydrolysate of grass-pollen peptides at 5 visits over 4 weeks at cumulative doses of up to 370 µg. Conjunctival allergen challenge was performed before, during and after immunotherapy. This parameter has a predictive value for patients' symptoms and medication needs during the pollen season. Serum samples