IMAJ • VOL 18 • AUGUST 2016

Pediatric Allergy Asthma Meeting – PAAM, Berlin, October 2015

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Whenever I return from a conference abroad, my colleagues and patients ask, "did you bring us any sensational new theories, diagnostic tools, treatments for allergy?" and I feel embarrassed because there usually isn't anything very exciting to report. However, at PAAM 2015, a relatively small conference (1300 participants), I did indeed gather some interesting information.

EPIDEMIOLOGY

A presentation from Germany described the first longitudinal community-based study aimed to examine the prevalence of allergic multi-morbidity (coexistence of asthma, allergic rhinitis and eczema) from birth up to age 20. The study comprised 1314 healthy newborns from a German birth cohort recruited in 1990 (MAS study); 38% of the recruited children were at high allergy risk (one or both parents allergic) and 62% were at no or low allergy risk (no parents allergic). The results show that allergic co-morbidity continued during adolescence up to adulthood in males and females alike in 18.5% of children who had one or two allergic parents, and in 6.3% of children with non-allergic parents. Thus, a total of some 25% of children with allergic co-morbidity continue to suffer through adulthood and beyond. This finding challenges the old belief that children mostly "outgrow" their allergies by adolescence.

PATHOGENESIS

In a lecture on shared environmental risk factors for non-communicable diseases, the importance of changes in biodiversity of human gut microbiota due to environmental transition and the modern lifestyle was stressed. These changes are implicated in the increasing propensity of non-communicable diseases such as allergy, asthma and autoimmune diseases observed in the Western world in the last century. Based on this new concept the international scientific community has begun to develop strategies that could reduce the risk for non-communicable diseases by favorably modulating the gut with specific probiotics or fecal microbiota. Ongoing clinical trials show that some of these new strategies are successful and safe but not as efficient as expected. Clearly, more time is needed before they can be implemented on a larger scale for treating allergy and immune system diseases.

DIAGNOSIS

- **Food allergy**

A pilot study from Holland described aberrant metabolites measured with nuclear magnetic resonance (NMR) that appear in the blood and saliva of peanut-allergic patients. These metabolites were observed prior to and after a peanut challenge test. In peanut-tolerant subjects the spectra of metabolites were completely different. The author proposes that NMR of blood and saliva with subsequent multivariate analysis be used as a new biomarker for peanut allergy.

A new approach to food allergy investigation by component-resolved diagnosis was proposed. This means detecting food allergen molecules by single reagents (single plex) or as an array of molecules tested at the same time (multiplex). With this procedure genuine allergens can be distinguished from pan-allergens or crossing allergens that might induce symptoms in the allergic patient. This is necessary not only for a proper diagnosis but also for future extracts used in immunotherapy.

- **Respiratory allergy**

A newly developed mobile allergen exposure chamber for the purpose of provocation tests was presented. This "Allergy Village" looks cozy and inviting, like a real child's room. To be acceptable, this chamber was validated from technical/clinical points of view following a study that documented the high reliability of provoked symptoms in repeated provocation tests (using grass pollen). This chamber is appropriate for multicentral allergen immunotherapy studies.

TREATMENTS

A revolution in allergy treatments has occurred with regard to food allergy. In all my years of pediatric allergy practice the working hypothesis was that prevention of exposure to one's allergen is the best treatment. And now, in the last decade a new approach has emerged in food allergy, namely, inducing desensitization and tolerance by multiple exposures. Encouraging results have been reported on induced desensitization/tolerance to milk, baked milk, eggs and peanuts.

A well-documented study from Australia was presented on the clinical and immunological outcomes after consumption of

baked egg by 35 egg-allergic children aged 1–5 years old. The final analysis after 6 months included 35 children (intervention group n=17, control group n=18) who underwent the raw egg oral food challenge. Ten children from the intervention group and 6 from the control group tolerated raw egg at the end of the study. Tolerance was independent of age and amount of baked egg consumed. Both groups demonstrated a reduction in skin prick testing wheal sizes and in whole egg, egg white, ovalbumin-specific serum IgE titers, and an increase in whole egg IgG4. No difference between the groups was observed in the percentage of naive (CD4+CD45RA+), central (CCR7-CD45RA) or effector (CCR7+ CD45RA-) memory T cells or cytokine excretion after culture of cells with egg allergens. The results suggest that baked egg-tolerant 1–5 year old egg-allergic children are evolving a tolerance to raw egg, which is not hastened by short-term regular inclusion of baked egg.

After a thorough overview of novel concepts in food allergy treatments, Kyrsten Bayer from the Charite in Berlin concluded that desensitization/tolerance to allergenic food can be induced, but the question is: will it last and for how long?

However, as happens with all revolutions, time will tell whether it was justified. In the meantime, this new way of thinking definitely deserves our attention.

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