Cutting edge of mucosal immunology and its clinical application

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ABSTRACT

The aero-digestive tract is continuously exposed to infinite numbers of beneficial (e.g., commensal bacteria) and harmful antigens (e.g., pathogenic microbe), in handling its day-to-day duties. The aero-digestive tissues are thus equipped with the mucosal immune system (MIS) offering the first line of surveillance and defence machinery against invasion of pathogens. The MIS is equipped with sophisticated immune induction machinery originated from nasopharyngeal-and gut-associated lymphoid tissues for the induction of antigen-specific immune responses. Nasal or oral immunisation with an appropriate vaccine delivery vehicle thus resulted in the induction of protective immunity in both systemic and mucosal compartments leading to the double layers of protection against mucosal pathogens. Our efforts have been aiming at the development of mucosal vaccines against aero-digestive infections. For the respiratory infection, a cationic cholesteryl group-bearing pullulan nanogel (cCHP nanogel) containing pneumococcal surface protein A (PspA-cCHP nanogel) has been shown to be a potent adjuvant free nasal vaccine for the induction of PspA-specific protective respiratory IgA and IgG antibodies against pneumococcal infection. For gut pathogen-induced diarrhea, our fusion science between mucosal immunology and agriculture science resulted in the creation of rice transgenic (Tg) vaccine, "MucoRice" as a new generation of cord chain-and needle/syringe-free vaccine system. Tg rice expressing B subunit of cholera toxin (MucoRice-CTB) has been shown to induce antigen-specific IgA-mediated protective immunity against *Vibrio cholera*-induced diarrhea. Both cCHP nanogel and MucoRice are thus attractive mucosal vaccine systems for the control of aero-digestive infectious diseases.

Sensitisation to common allergen in allergic rhinitis children – a retrospective review

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ABSTRACT

Introduction: Allergic rhinitis is common among children in Malaysia. One of the managements of allergic rhinitis is allergen avoidance based on 'Allergy Rhinitis and its Impact on Asthma (ARIA), Clinical and Experimental Allergy Reviews' guidelines. Therefore, patients with allergic diseases need to know the type of allergens that they sensitised to. This study determined the prevalence of sensitisation to common allergens among children with allergic rhinitis seen in a tertiary referral centre in Malaysia. **Materials and Methods:** This was a retrospective study of skin prick test results (SPT) done in the Otorhinolaryngology clinic Universiti Kebangsaan Malaysia Medical Centre (UKMMC) for five years duration. All children aged five to 12 years with symptoms consistent with allergic rhinitis and had a SPT were included in the study. The common allergens that had been used in the SPT were aeroallergens, food allergens and contact allergens. The database of SPT results was collected and reviewed. **Results:** From the total of 580 children that was included in this study, 69.3% showed positive SPT result. A total of 1,515 sensitisations were observed from the positive SPT results with 60.9% sensitised to aeroallergens, 38.6% sensitised to food allergens and 0.6% sensitised to contact allergens. Among the aeroallergens, the house dust mite accounted for more than half of the sensitisations: *Dermatophagoidespteronyssinus* (27.9%), *Dermatophagoidesfarinae* (26.4%), *Blomiatropicalis* (26.0%). The most common food allergen sensitisation was seafood - crab (18.5%), prawn (18.0%) and squid (8.7%). Each of the other food allergens tested accounted for less than five percent of the positive SPT result. The contact allergen tested in this study was latex. **Conclusion:** This study represents a common allergen sensitisation in children with allergic rhinitis residing in urban areas. House dust mites being the most common allergen sensitised in these children.