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Advances in Biotherapy for Eczema

Abstract:

Eczema is the most common chronic skin disease in children, which often marks the start of an atopic march when infants develop features of airway allergies in the next few years of life. Epidemiological studies suggested wide variation in prevalence of eczema globally, and it affects up to one-third of schoolchildren in many Asian populations. Birth cohorts from my group reported that two-fifths of Chinese infants developed eczema at some point during the first year, but nearly half of them resolved beyond infancy. The pathogenesis of eczema involves epidermal barrier defects, dysregulated cutaneous and systemic immunity and microbial dysbiosis on the skin. Specific to the last feature, it has been known for many years that different staphylococci play contrasting roles on healthy versus diseased skin. For example, Staphylococcus epidermidis and S. hominis are prevalent skin commensals in subjects without eczema. On the other hand, eczema flare is classically triggered by expanding growth of S. aureus. Recent in vitro studies suggested that some coagulase-negative staphylococci (CoNS) released lantibiotics that could suppress the growth of S. aureus. A proof-of-concept phase 1 clinical trial revealed possible benefits through topical application of S. hominis A9 strain on S. aureus growth and severity of eczema in the treated patients. In summary, different staphylococci appear to possess diverse regulatory and pathogenic roles in relation to eczema depending on different host factors. There are dynamic interactions among different staphylococci which may be employed to modulate S. aureus abundance and cutaneous inflammation. Further clinical trials are needed to delineate possible clinical benefits of such biotherapeutic strategy for eczema. (funded by Health and Medical Research Fund [reference 06170466] and Health and Medical Research Fund Commissioned Paediatric Research at Hong Kong Children's Hospital [reference PR-CUHK-3] of Health Bureau, Hong Kong SAR Government).

Biography

Leung, a graduate of The Chinese University of Hong Kong (CUHK) in 1992, received subspecialty training in Immunology and Allergy at the Hospital for Sick Children in Toronto (1997–1998) and earned his Doctor of Medicine from CUHK in 2004 for research on the immunogenetics of childhood asthma. A First Fellow in Paediatric Immunology, Allergy, and Infectious Diseases (2012), he has been a professor in CUHK's Department of Paediatrics since 2009 and served as Department Chair from 2014–2020. He is also a visiting professor at Central South University in China. With over 400 publications, Professor Leung has supervised numerous postgraduate and medical students and was nominated for the Research Excellence in Allergic Diseases Award by the Hong Kong Institute of Allergy in 2021.