

GUEST EDITORIAL

THE FINE BALANCE OF THE MICROBIOME, IMMUNOLOGY AND ALLERGY – MAY THE MICROBIOME ALWAYS BE WITH YOU

The human microbiome – the collection of microorganisms (viral, bacterial, fungal, parasitic) living in symbiosis on and in human beings, and disturbances of which may result in an imbalance of immunological forces, leading to a shift in the disease–health balance – has recently become the focus of much scientific endeavour.



Nowadays, almost every meeting or conference about allergy and autoimmunity is likely have a session on the influence of the microbiome on immunology and the development of allergy or autoimmunity. A large body of data on the subject is being generated: some based on experimental evidence in animal models, some using complex molecular techniques such as 16s RNA, and some epidemiological and clinical data that have been formulated into what seems like sometimes competing and sometimes synergistic forces that dictate the propensity of the immune system to tolerance or not. Teasing away the sensationalism and understanding the shifts in the immune response and the mechanisms that the human microbiome has on allergy are critical to proper disease classification and management.

This edition of the journal brings together a collection of excellent articles from otolaryngologists, allergists and pathologists (chemical pathologists, histopathologists, microbiologists and virologists) who are practising at the interface of the microbiological environment. Each article has attempted to examine and review the influences of the human microbiome on immunology and allergy. Drs Justyna Wojno (microbiologist), Fierdoz Omar (chemical pathologist) and Elloise du Toit (medical microbiologist, University of Cape Town) introduce the topic with an excellent review of allergy and the microbiome. Their article has a special emphasis on the gut microbiome and allergic disease and reviews some of the literature highlighting the microbiome in the African context.

Following this is a short review that I have written on the influence of the microbiome on immunology. It is intended to remind us of the fine balance that the human immune response

treads between health and disease and what the bottom line actually is for the influence of microbes and external allergens on the development of a robust tolerance. Drs Allison Glass (virologist) and Sharon Seetharam (microbiologist) focus on the respiratory tract; they present data on respiratory infections in paediatric patients referred from private practice. They reflect on the epidemiology of these respiratory infections and how these influence the microbiome and ultimately affect paediatric health.

A growing area of interest is given an airing in the review article penned by Saloshini Ramsamy together with Dr Vanessa Shahibdeen and Professor Colleen Wright (histopathologist in the Department of Anatomical Pathology, University of the Witwatersrand). They review how inflammation and infection during pregnancy may affect immunity in new-born infants.

Finally, Dr Tamara Jaye, an allergist in private practice, presents insights into inducing tolerance with her up-to-date and insightful review of recent changes in allergy immunotherapy. There are many remaining unknowns with the induction of tolerance to aeroallergens, in particular the impact of antigen-specific tolerance on how well unrelated allergens are tolerated. Does treating house-dust mite allergy result in the control of grass-pollen allergy? And, if so, what is the final pathway that controls the induction and maintenance of tolerance? This is a major insight waiting in the wings, much like the recent revolution in the therapeutic strategy to control food allergy: switching the paradigm from avoidance to understanding and inducing oral tolerance in food allergies. In the words of Yoda: 'Always with you to induce tolerance may the microbiome be.'

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