Book review

New Trends in Allergy and Atopic Eczema

Edited by Johannes Ring, Ulf Darsow and Heidrun Behrendt. Published by Karger, Basel, Switzerland, 2012. 146 pp, price \$ 198 or £104, ISBN 978-3-8055-9894-1, Volume 96 in the 'Chemical Immunology and Allergy' series.

This book is one of the latest in the long and venerable series of monographs on allergy founded in 1939 and originally published as 'Progress in Allergy', then 'Chemical Immunology' and now 'Chemical Immunology and Allergy'. The Editors of this particular volume are well renowned experts in the field, based at the dermatology and allergy polyclinic in the ZAUM (Zentrum Allergie und Umwelt), part of the Technische Universität München.

The book is a collection of summaries of lectures presented by a variety of authors of international renown at an international symposium in Munich in July 2010. For the first time this brought together the 7th Symposium 'New Trends in Allergy' which began in 1980 in Munich and has been held every 5 years ever since, and the 'Georg Rajka Symposium on Atopic Dermatitis' commenced by Professor Rajka in Oslo and originally held in Norway. Since their foundation these symposia have been held all over the world and have brought together clinical and basic research experts. As the editors emphasize, research in allergy has never been more important, with the incidence of allergic diseases still on the increase and the gulf between our knowledge of what regulates the production of specific IgE against allergens on the one hand, and how this or may not lead to symptoms on the other hand still broad. It is becoming increasingly clear that differences in the structure of particular target organs between individuals may govern their susceptibility to allergic disease in ways which we do not yet fully understand. This is nowhere truer than in the case of the skin, where genetic predispositions which govern skin permeability seem to play a critical role in the overt expression of diseases such as atopic dermatitis.

The volume is divided into four sections. The first is devoted to new developments in understanding of environmental factors which may predispose to allergy. This is led by a very interesting overview by Professor Tom Platts-Mills, who also provides an overview of how concepts about the nature of allergy and allergens have evolved over the years, from 1870 to the present day. There is then a section on the role of environmental and climate change in causing allergy followed by a very searching critique of the hygiene hypothesis and an assertion by the authors that it does not apply to the development of atopic eczema in childhood. Finally there is an account of how modern informatics, such as genomics, can improve our

understanding of the genetics of susceptibility to allergic disease, with particular emphasis on studies addressing the genetic regulation of skin barrier function.

The second section of the book is devoted to the pathogenesis of the allergic immune response and contains valuable contributions from world renowned figures such as Cezmi Akdis. There is an account of current understanding of the regulation of T cell development and B cell production of IgE in allergy followed by a variety of dermatitis-focused articles. In particular there is an account of the evidence for a possible role for Th17 and Th22 T cells in dermatological allergy, and an overview of tissue remodelling mechanisms in atopic dermatitis including the possible role of the novel IL-17 family, but Th2-type cytokine IL-25 in regulating inflammation and skin barrier dysfunction, followed by an account of the regulation of angiogenesis and lymphangiogenesis. It is intriguing that many of these mechanisms are common to those observed in asthma and chronic rhinosinusitis. There is a timely account of the possible role of microbial superantigens, under increasing scrutiny as a major drive to chronic inflammation not only in atopic dermatitis but also in chronic sinusitis and asthma. Finally, there is a fascinating article about the phenomenon of canine atopic dermatitis and an argument that it bears many similarities to the human disease, with obvious opportunities for experimentation and investigation of novel therapies.

The third section of the book is devoted to some circumscribed clinical management problems in the field of atopic dermatitis. The first chapter in this section is devoted to the management of troublesome itch in patients with eczema, a daunting task for the clinician as well as a big problem for the sufferer. There is then an up to date account and the management of eczema herpeticum. The final two chapters include an account of bone mineral density changes in patients suffering from atopic dermatitis and finally an account of the immunosuppressive effect of prolactin-induced protein. This molecule has been shown to bind to CD4 T cells and is speculated to block antigen presentation. The authors examine the immunosuppressive effects of prolactin-induced protein in a murine model of chronic atopic dermatitis.

The final section of the book is devoted to new developments in therapy and management of atopic dermatitis. The first chapter addresses the reliability of food allergy

testing in infants and children with atopic dermatitis. The conclusion is that *in vitro* tests are still generally unreliable and the authors question the relevance of these tests particularly to the pathogenesis of a variety of delayed skin symptoms and lesions, including flares of disease or morbiliform rashes appearing late after food ingestion. They posit the alternative hypothesis that, rather than food allergy being a causative factor in eczema, food allergy arises secondary to eczema as a result of excessive transcutaneous absorption of food allergens through the dysfunctional stratum corneum layer that appears to predispose to this disease. The next section deals with how to cope with *Staphylococcus aureus* colonization in patients with atopic dermatitis, particularly in view of the methicillin-resistant epidemic and the emerging importance, mentioned previously, of staphylococcal superantigens as a possible major drive force to the inflammation, particularly in the 'late on', adult disease. The section concludes with preliminary accounts of new biological strategies in atopic dermatitis. There is a brief discussion about targeting IL-4, targeting B cells with anti-CD20 antibody (Rituximab) and targeting T cells with alefacept, a fusion protein composed of the first extracellular domain of LFA-3 (CD58) and the human IgG1 crystallisable Fc domain. This molecule blocks binding and co-stimulation of T cells through CD2/LFA-3 interaction and also, by binding to CD2 and the FcγRIII (CD16) receptor mediates cognate interaction between T cells and natural killer cells, resulting in T cell apoptosis. The authors report preliminary open studies with these biologicals which show promising results. There is also a brief summary of recent studies on the use of omalizumab (anti-IgE) therapy for atopic dermatitis.

In summary, this book will be found to be a concise and authoritative source of reference for senior clinicians and basic researchers at the forefront of managing severe atopic dermatitis and its consequences. It includes brief but up to date summaries of the existing field, as well as pointers to future lines of investigation.

Competing Interests

There are no competing interests to declare.

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