

EDITORIAL

Allergic inflammation: focus on eosinophils

DOI:10.1111/all.12231

In allergic diseases, such as atopic dermatitis (1), bronchial asthma (2, 3), rhinosinusitis (4), or eosinophilic esophagitis (5), eosinophil numbers are usually increased. Therefore, the physiological and pathological roles of eosinophils remain a hot research topic. Recent progress in the understanding of eosinophil biology includes recognizing the capacity of eosinophils to generate different functional subsets under *in vivo* inflammatory conditions (6), as well as extracellular DNA-containing structures able to bind and kill bacteria (7, 8). Furthermore, new pathogenetic insights reveal a molecular link between organismal metabolism and eosinophilic inflammation (9).

The molecular interactions between mast cells and eosinophils in allergic inflammatory responses have evoked an increasing research interest (10, 11). The activation of eosinophils may result in tissue damage; therefore, inhibition of eosinophil effector functions is an important therapeutic strategy in eosinophilic disorders (12). Interestingly, CRTH2 antagonists have been demonstrated to exhibit anti-eosinophilic activities in allergic rhinitis (13) and eosinophilic esophagitis (14). But how can the anti-eosinophilic activity of a given drug be monitored? The results of a recent study suggest that, although reduced blood eosinophil numbers may reflect an anti-eosinophilic efficacy, they do not necessarily indicate a reduced eosinophilic inflammation (15). Thus, the search for and testing of eosinophil biomarkers remain subjects of intense investigation (16).

In this issue of *Allergy*, several original articles report interesting new findings with implications for the diagnosis and treatment of eosinophilic diseases. Simon et al. demonstrate that adult patients suffering from eosinophilic esophagitis are frequently sensitized toward *Candida albicans* (17). It is possible that such patients would benefit from antimycotic therapy. Muniz-Junqueira et al. describe morphological

changes in eosinophils that correlate with the severity of asthma exacerbations in children (18). Ueki et al. observed that retinoic acids increase the functional expression of eotaxin receptors, suggesting that vitamin A derivatives could play an important role in the tissue accumulation of eosinophils (19). Moreover, the molecular events of the eotaxin receptor-mediated signaling pathway have been investigated by Shamri et al., and the reported data are likely relevant for both host defense and immunopathology (20). Gleich et al. reviewed the current opinion with respect to the consequences of eosinophil-depleting treatments (21), and the data collected appear to be of great interest, particularly, because several anti-eosinophilic therapies are still in development.

Taken together, research in the field of eosinophilic diseases continues to be promising. Indeed, several new therapeutic approaches to different allergic conditions have also recently been reported in the Journal (22–24). In spite of this progress, the role of the eosinophil in physiology and disease remains a subject for further research.

Acknowledgement

Work in the laboratory of HUS is supported by the Swiss National Science Foundation and Allergie-Stiftung Ulrich Müller-Gierok, Bern, Switzerland.

Conflict of interest

The author declares no conflict of interest.

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