P001

Crosstalk of keratinocytes and T cells during eczematous skin reactions

S. Förster, K. Eyerich, J. Ring, H. Behrendt and C. Traidl-Hoffmann

Division of Environmental Dermatology and Allergy GSF/TUM, ZAUM-Center for Allergy and Environment, Technische Universität Munich, Munich, Germany

Background: Allergic contact dermatitis (ACD) and atopic eczema (AE) are eczematous skin diseases in which T cells are directly involved in the induction of keratinocytes' death. However, almost nothing is known how keratinocytes influence T cell activity in the course of allergic diseases.

Objective: The aim of this study was to investigate the outcome of keratinocyte-T cell interactions with the focus on T cell functions such as proliferation and cytokine release in an antigen-specific in vitro model of ACD to Nickel and acute AE to Phleum pratense.

Methods: T cell clones were generated of Phleum pratense sensitised ($n = 2$) or non-atopic Nickel-sensitised ($n = 5$) patients. Autologous monocyte-derived dendritic cells (DC) or EBV-transfected B cells (EBV-B) served as antigen-presenting cells (APC). Autologous primary human keratinocytes were generated by the method of suction blister. Crosstalk of keratinocytes and T cells was analysed by coincubation of keratinocytes, T cells and APC with the endpoints T cell proliferation and cytokine production.

Results: Coincubation of keratinocytes, T cells and APC revealed that keratinocytes variably influence the proliferation of T cells with 77% being blocked and 23% being induced in antigen-specific proliferation capacity. Notably, production of the cytokines IL-4 and IL-10 was regulated independently from the proliferation showing always a reduction in IL-4 and IL-10 release. IFNγ was not constantly regulated. Coincubation experiments with Phleum pratense-specific T cell clones show similar results with T cells being regulated in proliferation and cytokine release by keratinocytes. Differentiation and preincubation of keratinocytes with IFNγ did not alter the effect on T cells. However, fixation with paraformaldehyde (PFA) abrogates this immune-modulating effect.

Conclusion: Keratinocytes influence actively the effector phase of eczematous reactions. The immune-modulating effect on T cell cytokine production seems to be modified by soluble factors. Suppression of IL-4 and IL-10 in T cells could lead to a Th1 micromilieu in the skin favouring the maintenance and chronification of eczematous skin reactions. Thus, keratinocytes seem to be not only the defenceless victim of T cells in eczematous reactions but a modulator of T cell functions.