Pollen Grains Induce a Rapid and Biphasic Eczematous Immune Response in Atopic Eczema Patients

Introduction: Eczematous reactions to type I allergy-inducing antigens are documented in a subgroup of patients with atopic eczema. Yet, the underlying immunological mechanisms are not well understood. Material and Methods: To delineate the effect of native pollen grains on human skin of healthy and atopic individuals we performed patch tests (atopy patch test with native pollen grains, PPT). Nickel patch tests (NPT) served as an established model of contact dermatitis. Skin site biopsies were taken 6–96 h after allergen application and investigated immunohistochemically. Results: Histology of positive patch tests showed an influx of mononuclear cells (predominantly CD4+, CD25+, CD45RO+). This influx was detected earlier in the PPT reaction than in the immune response to nickel. A biphasic cytokine response could be detected in the PPT: IL-5 dominated in the early, IFN-γ in the late phase. The NPT was continuously dominated by IFN-γ. Dendritic cell subpopulations imitated the earlier kinetics of the mononuclear infiltrate. Discussion: Thus, pollen grains induce eczematous reactions in susceptible individuals. This reaction appears clinically and immunohistochemically similar to the contact hypersensitivity reaction to nickel but follows a faster kinetic and a biphasic course: Th2 and IgE in the
early (24 h) and Th1 predominance in the late (96 h) phase.