Toll-like receptor 2 agonist Pam3CSK4 up-regulates Fc?RI receptor expression on monocytes from patients with severe extrinsic atopic dermatitis.

Abstract:
Both microbial antigens and allergens are important factors that can trigger atopic dermatitis (AD). Monocytes from patients with AD have been found to express increased and sustained levels of high-affinity IgE receptor (Fc?RI) and Toll-like receptor 2 (TLR2). We hypothesized that putative interactions exist between TLR2 and Fc?RI on monocytes in the pathogenesis of AD. This study aimed to understand whether activation of TLR2 by Pam3CSK4 would influence the expression of Fc?RI, and whether mitogen-activated protein kinase (MAPK) signalling pathways were involved in such regulation. Peripheral blood monocytes from patients with severe extrinsic AD or healthy control patients were treated with the TLR2 agonist Pam3CSK4. The expression of Fc?RI, intracellular TNF-? and MAPK family members were analysed by real-time quantitative PCR, flow cytometry and western blotting. Monocytes from patients with severe extrinsic AD expressed higher levels of surface Fc?RI? than were found in monocytes from healthy controls. Stimulation of human monocytes from patients with Pam3CSK4, but not lipopolysaccharide (LPS), resulted in the up-regulation of surface Fc?RI expression by inducing p38 phosphorylation. Pretreatment with a specific inhibitor of p38 kinase inhibited the Pam3CSK4-induced up-regulation of Fc?RI?, suggesting
the involvement of the p38 pathway in the regulation of this process. Our findings indicated interactions between TLR2 and Fc\(^2\)RI occurred via the activation of p38 in patients with severe extrinsic AD, which might indicate insights into understanding the mechanisms of how bacterial infection can exacerbate the clinical features of AD.