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Production and Secretion of Interleukin-12 (IL-12) in Patients with Atopic Dermatitis

Key Words

Interleukin-12
Atopic dermatitis
Phosphodiesterase

ABSTRACT

ABS = Th1/Th2 cytokine imbalance has been demonstrated in patients with atopic dermatitis, and phosphodiesterase inhibitors have demonstrated efficacy in treating these patients; however, the pathogenesis of atopic dermatitis is still not clear. This study was performed to detect cytokine expression (IL-4, IL-6, IFN- γ , IL-12, and IL-13) in patients with moderate to severe atopic dermatitis, and the effect of a non-selective phosphodiesterase inhibitor (3-isobutyl-1-methyl-xathine, IBMX) on these cytokines. Seven moderate to severe atopic dermatitis patients without previous medical treatments and 5 normal non-atopic subjects were recruited in this study. Cytokine expression was determined by ELISA from serum samples and by RT-PCR from peripheral blood mononuclear cells (PBMC). The effect of a non-selective phosphodiesterase inhibitor on cytokine expression was determined after a 48-h incubation of PBMCs with IBMX. Among the cytokines analyzed (IL-4, IL-6, IFN- γ , IL-12, and IL-13), only the IL-12 level was significantly increased in atopic dermatitis patients (median = 55.66 ± 17.51 vs. 146.11 ± 49.31 ; $p < 0.05$; student t-test), and its level was significantly reduced by IBMX treatment (median = 351.36 ± 26.34 vs. 42.58 ± 24.82 ; $p < 0.01$; student t-test). The facts that the steady-state IL-12 level is increased in atopic dermatitis and IBMX-treatment abrogates the increased level of IL-12 suggest that IL-12 may be involved in the pathogenesis of atopic dermatitis. This finding may also provide a potential pharmacological application of phosphodiesterase inhibitor in clinical management of atopic dermatitis.

INTRODUCTION

IL-12 is a recently described cytokine,^{1,2} which plays a critical role in the development of Th1-like T

cells.³⁻⁵ IL-12, originally called NK cell-stimulatory factor^{6,7} or cytotoxic lymphocyte maturation factor,⁸ is a heterodimeric molecule consisting of disulphide-linked 35-kD and 40-kD polypeptides.^{2,3} It is secreted

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