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Association of the Expression of IL-4 and IL-13 Genes, IL-4 and IgE Serum Levels with Allergic Asthma

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Abstract:

Immune and inflammatory responses mediated by cytokines, play important roles in the pathophysiology of asthma. These responses are associated with overexpression of Th2 cytokines such as IL-4 and IL-13. These two cytokines use common receptors for signaling that lead to identical immunological effects and regulation of the Th1/Th2 balance. The aim of this study was to determine whether patients with allergic asthma display overexpression of IL-4 and IL-13 genes. Using RT-PCR, we examined the expression of IL-4 and IL-13 genes in twenty asthmatic cases and twenty normal individuals. Total levels of serum IgE and IL-4 were also determined by ELISA method. Expression of IL-13 gene in 70% of patients with allergic asthma was higher than controls ($P=0.01$). There was no correlation between the expression of IL-13 gene and total level of serum IgE ($P=0.07$). Expression of IL-4 gene was detected in 30% of the patients and none of the normal individuals as determined by RT-PCR ($P=0.01$). Mean of serum IgE levels in patients and controls were 84.9 IU/ml and 62.2 IU/ml, respectively. Level of serum IgE was more than 100 IU/ml in 30% of patients ($P=0.03$). Mean of serum IL-4 levels in patients and controls were 15.73 pg/ml and 13.07 pg/ml, respectively. There was a relation between levels of serum IgE and IL-4 in 73% of cases. The results showed that there was a correlation between the expression of IL-4 gene and the level of serum IL-4. Levels of serum IgE and IL-4 were considerably higher in asthmatics than nonasthmatic controls.

Keywords:

Genes : IL-4 , IL-13

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