Production of the Chemokine Eotaxin-1 in Osteoarthritis and its Role in Cartilage Degradation

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摘要

Abstract

The expression of the chemokine, eotaxin-1, and its receptors in normal and osteoarthritic human chondrocytes was examined, and its role in cartilage degradation was elucidated in this study. Results indicated that plasma concentrations of eotaxin-1 as well as the chemokines, RANTES, and MCP-1alpha, were higher in patients with osteoarthritis (OA) than those in normal humans. Stimulation of chondrocytes with IL-1beta or TNF-alpha significantly induced eotaxin-1 expression. The production of eotaxin-1 induced expression of its own receptor of CCR3 and CCR5 on the cell surface of chondrosarcomas, suggesting that an autocrine/paracrine pathway is involved in eotaxin-1's action. In addition, eotaxin-1 markedly increased the expressions of MMP-3 and MMP-13 mRNA, but had no effect on TIMP-1 expression in chondrocytes. However, pretreatment of anti-eotaxin-1 antibody significantly decreased the MMP-3 expression induced by IL-1beta. These results first demonstrate that human chondrocytes express the chemokine, eotaxin-1, and that its expression is induced by treatment with IL-1beta and TNF-alpha. The cytokine-triggered induction of eotaxin-1 further results in enhanced expressions of its own receptor of CCR3, CCR5, and MMPs, suggesting that eotaxin-1 plays an important role in cartilage degradation in OA. (c) 2004 Wiley-Liss, Inc.