CXCL8 and CCL20 Enhance Osteoblast-mediated Osteoclastogenesis

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INTRODUCTION

Osteoporosis is common in rheumatoid arthritis (RA). Osteoblasts express receptors for CXCL8 and CCL20, which are produced by inflammatory cells around the inflamed joints in RA and present in elevated levels in serum in RA. We hypothesized that CXCL8 and CCL20 contribute to generalized osteoporosis in RA by affecting osteoblast proliferation, differentiation and osteoblast-osteoclast communication.

METHODS

- Primary human osteoblasts were cultured in the presence or absence of CXCL8 (2-200 pg/ml) or CCL20 (5-500 pg/ml) for 14 days.
- Osteoblast proliferation and differentiation were analyzed, as well as cytokine gene expression. IL-6 protein production was quantified by ELISA.
- Human peripheral blood mononuclear cells were cultured with CXCL8 and CCL20 or conditioned medium from CXCL8 and CCL20-treated osteoblasts in the presence or absence of IL-6 inhibitor for 21 days.
- The number of tartrate-resistant acid phosphatase-positive osteoclasts was counted, and osteoclast activity was determined by the resorption pit assay.

RESULTS

CXCL8 and CCL20 did not inhibit osteoblast proliferation or differentiation.

CXCL8 and CCL20 enhanced osteoblast-mediated osteoclastogenesis, partly via stimulation of IL-6 production, suggesting that CXCL8 and CCL20 contribute to localized and generalized osteoporosis in rheumatoid arthritis.

CONCLUSIONS

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