

論 文 要 旨

〔 Intercellular Signaling between Ameloblastoma and Osteoblasts 〕

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Ameloblastoma is an odontogenic tumor located in the bone jaw with clinical characteristics of extensive bone resorption. It is a locally invasive tumor with a high recurrence rate despite adequate surgical removal. In bone disease, tumors and other cells including osteoblasts, osteoclasts, and osteocytes in the bone microenvironment contribute to the pathogenesis of tumor growth. However, the effect of osteoblasts on ameloblastoma cells is not well-understood, and there has been limited research on interactions between them.

This study investigated interactions between ameloblastoma cells and osteoblasts using a human ameloblastoma cell line (AM-3 ameloblastoma cells) and a murine pre-osteoblast cell line (MC3T3-E1 cells). We treated each cell type with the conditioned medium by the other cell type. We analyzed the effect on cytokine production by MC3T3-E1 cells and the production of MMPs by AM-3 cells. Treatment with AM-3-conditioned medium induced inflammatory cytokine production of IL-6, MCP-1, and RANTES from MC3T3-E1 cells. The use of an IL-1 receptor antagonist suppressed the production of these inflammatory cytokines by MC3T3-E1 cells stimulated with AM-3-conditioned medium. The MC3T3-E1-conditioned medium triggered the expression of MMP-2 from AM-3 cells. Furthermore, we have shown that the proliferation and migration activity of AM-3 cells were accelerated by MC3T3-E1 conditioned media.

In conclusion, these intercellular signalings between ameloblastoma cells and osteoblasts may play multiple roles in the pathogenesis of ameloblastoma.

Keywords: Ameloblastoma, AM-3; Osteoblast; Tumor bone microenvironment; Cytokine; Intercellular communication