



Pivotal role of microRNA-9 in osteosarcoma tumorigenesis and tumor progression

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ABSTRACT. MicroRNA-9 (miR-9) has a well-established role in various tumors; the clinical significance and potential mechanism of miR-9 in human osteosarcoma (OS) has not been elucidated. The aim of this study was to investigate the mechanism and role of miR-9 expression in osteosarcoma cells. miR-9 expression in the OS cell line MG-63 and OS tissues was compared to that in a human osteoblastic cell line (hFOB 1.19) and adjacent normal tissues, respectively, by reverse transcriptase-polymerase chain reaction. miR-9 expression was downregulated by introducing small interfering RNA against miR-9 (si-miR-9) into the cells, and the proliferative, migratory, and invasive capacities of si-miR-9-transfected MG-63 cells were compared to those of control MG-63 cells. miR-9 was significantly upregulated in OS tissues and cell lines compared to the corresponding non-cancerous bone tissues ($P < 0.05$) and human osteoblastic cell line ($P < 0.05$), respectively. Upregulated miR-9 expression was also associated with increased cell proliferation ($P < 0.05$), migration ($P < 0.05$), and invasion ($P < 0.05$), and decreased apoptotic ability ($P < 0.05$). These results suggest that miR-9 may play a pivotal role in tumorigenesis and tumor progression in osteosarcoma.

Key words: MicroRNA-9; Osteosarcoma; Proliferation; Migration; Invasion; Apoptosis