



Correlation between TRAIL and caspase-8 expression and their relationship with cell proliferation and apoptosis in human osteosarcoma

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ABSTRACT. Osteosarcoma is a common malignant bone tumor that mainly affects children and adolescents. Tumor necrosis factor-related apoptosis-inducing ligand (TRAIL) is a member of the tumor necrosis factor superfamily. Caspase-8 appears in the upstream of apoptosis signaling pathway among caspases. We investigated TRAIL and caspase-8 levels in osteosarcoma patients to determine their correlation with cell proliferation and apoptosis. Osteosarcoma and osteochondroma patients receiving surgery in our hospital were selected. TRAIL and caspase-8 expression levels in tissue were determined by immunohistochemistry, and protein levels in cells were evaluated by western blotting. Human osteosarcoma cell viability was determined by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. The osteosarcoma

and osteochondroma cell cycles and apoptosis were investigated by flow cytometry. Correlation analysis was applied to TRAIL and caspase-8 levels during cell apoptosis. Positive TRAIL and caspase-8 expression rates in osteosarcoma tissue were significantly lower than in the controls ($P < 0.05$). TRAIL (0.114 ± 0.002) and caspase-8 (0.352 ± 0.124) levels in experimental cells were obviously lower than in the controls ($P < 0.05$). Osteosarcoma cells in the experimental group demonstrated higher proliferation and lower apoptosis at 24, 48, and 72 h ($P < 0.05$). The experimental cell number increased in the G1 stage and decreased in the S stage ($P < 0.05$). TRAIL and caspase-8 proteins showed positive correlation with apoptosis in osteosarcoma ($P < 0.05$). Human osteosarcoma presented reduced TRAIL and caspase-8 levels with enhanced cell proliferation and reduced apoptosis. TRAIL and caspase-8 expression levels were positively correlated with apoptosis in osteosarcoma.

Key words: TRAIL; Caspase-8; Osteosarcoma