

Publication

Second and subsequent recurrences of osteosarcoma: presentation, treatment, and outcomes of 249 consecutive cooperative osteosarcoma study group patients

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PURPOSE: To evaluate patient and tumor characteristics, treatment, and outcomes in a large cohort of unselected patients with second and subsequent recurrences of osteosarcoma. **PATIENTS AND METHODS:** Two hundred forty-nine consecutive patients who had originally received combined-modality therapy on neoadjuvant Cooperative Osteosarcoma Study Group protocols and went on to develop a total of 409 second and subsequent osteosarcoma recurrences were analyzed for patient-, tumor-, and treatment-related factors and outcomes. **RESULTS:** Five-year overall and event-free survival rates were 16% and 9% for 249 second, 14% and 0% for 93 third, 13% and 6% for 38 fourth, and 18% and 0% for 14 fifth recurrences, respectively. The proportion of recurrences confined to the lungs decreased and the proportion of those with chest wall involvement increased with increasing numbers of recurrences. The duration of relapse-free intervals and the number of lesions at recurrence correlated with outcomes. While only one of 205 patients with rerecurrence survived past 5 years without surgical remission, 5-year overall and event-free survival rates were 32% and 18% for 119 second, 26% and 0% for 45 third, 28% and 13% for 20 fourth, and 53% and 0% for five fifth recurrences, respectively, in which a renewed surgical remission was achieved. The use of chemotherapy correlated with longer survival in patients without surgical remissions. **CONCLUSION:** To our knowledge, this is the first report of survival estimates derived from large cohorts of unselected patients with second and subsequent osteosarcoma recurrences. It confirms the overwhelming importance of surgical clearance. Prognostic indicators after rerecurrences resemble those known from first recurrence. The exact role of re-treatment with chemotherapy, particularly in the adjuvant situation, remains to be defined.

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