

The treatment of osteosarcoma of the extremities with detectable lung metastases at presentation: the Rizzoli's experience

G. Bacci, P. Picci, A. Briccoli, S. Ferrari, M. Mercuri and M. Cesari
Istituto Ortopedico Rizzoli, Bologna, Italy

In the two past decades, it has been demonstrated that the combination of surgery and chemotherapy improves the prognosis for patients with osteosarcoma of the extremity without detectable metastases at presentation. By contrast, for patients with metastatic disease at diagnosis, the efficacy of chemotherapy coupled with aggressive surgery has not been well established yet. The present study evaluates the efficacy of chemotherapy associated with simultaneous surgery of primary and metastatic lesions in patients with osteosarcoma of the extremity metastatic to the lung at presentation.

Between March 86 and August 95, 76 patients with lung metastases originating from an osteosarcoma of the extremity received chemotherapy according to two different protocols successively activated followed by simultaneous resection of primary and metastatic lesions (when feasible) and further chemotherapy. Both protocols (IOR/OS-2 and IOR/OS-4) included MTX, CDP, ADM and Ifosfamide, but in the first protocol only the first 3 drugs were applied preoperatively. After primary chemotherapy lung metastases disappeared in 12 patients, whereas in 18 patients they remained surgically unresectable. All these 30 patients received surgical treatment of the primary tumor only. In the remaining 46 patients, after chemotherapy, a simultaneous resection of the primary and the metastatic tumor was performed. The resection of metastatic lesions resulted complete in 42 cases and incomplete in 4.

All the 22 patients who never achieved a tumor-free status died in a few months. Of the 54 patients who achieved remission at a 84 month follow-up (34-144 mo), 14 (26%) remained continuously free of disease, 39 relapsed with new metastases and 1 died of toxicity. For these 54 pts the 4-year disease-free survival and overall survival were respectively 28% and 38%. In 30 out of the 42 patients (71%) who had a complete simultaneous resection of the primary and the metastatic lesions a strong correlation between the degree of necrosis of the primary and the metastatic tumor was found.

We conclude that in patients with osteosarcoma of the extremity with lung metastases at presentation, the combination of aggressive chemotherapy with simultaneous resection of the primary and metastatic lesions improves traditionally negative outcomes. Moreover, the strong correlation found between the histological response of the primary and the metastatic tumor supports the strategy, largely used nowadays in the neoadjuvant treatment of osteosarcoma, of tailoring postoperative chemotherapy on the basis of the primary tumor histologic response to preoperative chemotherapy.