

3 weeks from biopsy into the German-Austrian-Swiss multicenter study COSS-86 between 2/86 and 11/88 were considered eligible. Doxorubicin, high-dose methotrexate, and DDP were given to low-risk patients. Patients fulfilling at least one of three defined high-risk criteria received early systemic intensification by adding ifosfamide. High-risk patients received preoperative DDP i.a. or i.v.

**Results:** 7-year event-free/overall survival of 171 eligible patients (128 high-risk; 41 low-risk, 2 dead prior to stratification) was excellent at 68%/76%, superior to that of all our previous studies. When 12 patients with severe protocol violations (5 x no surgery, 7 x major chemotherapy violation) were excluded, event-free/overall 7-year survival of 159 fully evaluable protocol patients was 72%/79%. Treatment results were not influenced favorably by giving DDP i.a. Cumulative treatment toxicity, especially cardio- and ototoxicity, was a significant problem.

**Conclusion:** Early treatment intensification for high-risk patients by adding ifosfamide as the fourth agent to an already intensive three-drug regimen led to excellent long-term outcome in our multicenter trial. No additional benefit was obtained by using the i.a. route to administer DDP. Toxicity was considerable.

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ORAL

### Quality of life in sarcomas treated with limb salvage surgery or amputation

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**Purpose:** In the present study the functional outcome and quality of life after amputation (Amp) was compared with that after limb salvage surgery (LS).

**Method:** The functional outcome (Amp = 58 pts, LS = 89 pts) was evaluated by use of the Enneking System for Functional Evaluation (ES) and quality of life (Amp = 16 pts, LS = 28 pts) by use of the EORTC C-30 questionnaire (QLQ-C30) and the Activity Daily Living Scale (ADL). In the LS group the treatment was surgery alone in 50% and combined surgery and radiotherapy/chemotherapy in 50%. Median age 49 years (14-88). Median tumour diameter 8 cm (1-20). Median follow-up time 3.6 years (1-11). The two groups were comparable according to age, sex, size, location and of tumour and follow-up time.

**Results:** The functional scores were significantly higher after LS as compared to Amp, the median score being 85 and 47, respectively ( $p < 0.001$ ). A similar difference was observed if the ES scores was subdivided into general health related scores and extremity related scores. The correlation between ES and QLQ-C30 was good in the LS group, but poor in the Amp group. In contrast, the correlation between ES and ADL was good in all patients. The reason for the poor correlation in the Amp group could be due to compensation or poor sensitivity of the QLQ C-30 in this group of patients.

**Conclusion:** The data may indicate that limb salvage surgery is associated with a better functional outcome than that observed after amputation, whereas a similar improvement in quality of life was not found. Further quality of life studies are needed in these patients.

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POSTER

### Brachytherapy improves outcome of radiotherapy for soft-tissue sarcoma of the extremities

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**Purpose:** Local control in soft-tissue sarcoma can be improved with adjuvant external-beam radiotherapy (EBRT) or brachytherapy. This analysis was conducted to find if combining the two modalities can lead to further gains.

**Methods:** Of 85 patients with extremity soft-tissue sarcoma treated with adjuvant radiotherapy, 37 had their boost delivered via an interstitial implant. Survival and local relapse were computed using Kaplan-Meier methodology and differences between groups were tested using the log-rank test.

**Results:** With a median follow-up of 4 years, 21 patients (25%) relapsed locally. Five-year local control rates in patients treated with EBRT and EBRT+brachytherapy were 59% and 87%, respectively ( $p = 0.04$ ). This difference was most pronounced in patients with macroscopically positive margins (86% vs. 48%,  $p = 0.04$ ) or with high-grade tumors (83% vs. 60%,  $p = 0.06$ ). Survival, however, was not significantly impacted (68% vs. 61%).

**Conclusions:** Superior local control can be achieved with an interstitial implant boost. This may result in better limb preservation and improved

quality of life. Patients with positive margins or with high-grade tumors stand to gain the most from this technique.

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### Preoperative radiochemotherapy in the treatment of Ewing's sarcoma

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**Purpose:** In the European study EICESS 92 preoperative radiochemotherapy was invented in the treatment of locally advanced Ewing's sarcomas. The feasibility of this modality and the local and systemic control are examined and compared with the standard local treatment.

**Methods:** From April 1991 to July 1995 83 patients with Ewing's sarcoma received simultaneous preoperative radiochemotherapy. The dose was either 44.8 Gy or 54.4 Gy depending on the expected margins of resection. Usually, radiotherapy was given as a hyperfractionated accelerated split course regime. 43 patients in EICESS received radiotherapy, 41 patients operation alone. 34 patients received postoperative irradiation. Chemotherapy consisted of either VAIA or EVAIA. In a subgroup of 52 patients treated at the University of Münster, the complication rate was examined. The median follow up of the study is 21 months.

**Results:** The operative and perioperative morbidity was not increased. Postoperative chemotherapy could be started without delay after a median interval of 17 days. After preoperative irradiation, 16 patients relapsed including 1 local relapse. After radiation alone 15 patients relapsed including 6 local relapses. Of the purely operated patients 4 relapsed with 1 local failure; after postoperative irradiation there were 7 relapses including 1 local failure.

**Conclusion:** Preoperative radiochemotherapy is a well tolerated treatment modality. The local control rate is good, especially considering the usually large primaries. Up to now, no reduction of systemic relapses could be observed.

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POSTER

### Chemotherapy for heavily pretreated patients (pts.) with bone (BS) and soft tissue (STS) sarcomas

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**Introduction:** No second-line chemotherapy is established for bone and soft tissue sarcomas. Some activity has been reported for high-dose ifosfamide (HDI) in STS and carboplatinum plus VP 16 (CV) in BS.

**Methods:** A total of 51 pts. (39 males: median age = 29, 12 females: median age = 38) with BS (24) or STS (27) were treated with HDI (46 pts.) or CV (16 pts.). 11 pts received both therapies consecutively. Treatment consisted of ifosfamide 3.5 g/m<sup>2</sup>/day as a continuous infusion days 1-5 with mesna 2.5 g/m<sup>2</sup>/day and G-CSF days 6-15 or carboplatinum 150 mg/m<sup>2</sup>/day days 1-4 plus VP 16 150 mg/m<sup>2</sup>/day days 1-4.

**Results:** HDI: 3 pts. are still under treatment. So far, a CR/PR was seen in 16/43 pts. (37%), SD in 7/43 and PD in 13/43 pts. Toxicity was severe with 100% grade 3/4 myelotoxicity. In 5 pts. treatment had to be stopped after the first cycle due to CNS- or nephrotoxicity. 2 toxic deaths occurred.

CV: A PR was seen in 2/16 pts. (12%), SD in 1/16 and PD in 10/16 pts. Toxicity was very severe with 100% grade 3/4 myelotoxicity, grade 3/4 nephrotoxicity requiring hemodialysis in 2/16 pts. and septicemia leading to cessation of treatment in 1 and toxic death in 2 pts.

**Conclusions:** HDI shows activity in heavily pretreated pts. with both BS and STS. However, toxicity is substantial and patients selection crucial. CV cannot be recommended due to low activity and very severe toxicity.

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POSTER

### Preoperative radio-chemo-therapy of soft tissue sarcomas – First results

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**Purpose:** Neoadjuvant therapy is a promising new treatment modality for organ preserving therapy of huge soft-tissue sarcomas.