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## Isolated limb perfusion for primary, locally advanced soft tissue sarcomas of the extremities - prognostic factors and outcome

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**Background:** Isolating limb perfusion (ILP) with TNF $\alpha$  and melphalan is an effective neoadjuvant modality for locally advanced, extremity soft tissue sarcoma. The objective of this study was to evaluate the oncological outcome and identify possible prognostic factors.

**Methods:** The files of 63 patients with primary, locally advanced, non-metastatic extremity soft tissue sarcoma, who underwent neoadjuvant ILP followed by delayed surgical resection at our department between 2001 and 2011, were retrospectively analyzed. Mean follow-up amounted to 49 months (range, 8-138 months) for all patients and 58 months (range, 12-138 months) for survivors.

Student's t-test was used to compare means. Survival curves were calculated with the Kaplan-Meier method and compared with the log-rank test. **Results:** Mean tumor size prior to ILP was 10 cm (range, 3-34 cm), compared to 9 cm (range, 0-33 cm) after ILP ( $p=0.015$ ). 23 patients had a good histological response, according to the Salzer-Kuntschik criteria. The mean mitotic rate prior to ILP amounted to 33 mitoses/10 high-power fields (HPF), compared to 15 mitoses/10 HPF after ILP ( $p=0.077$ ). 32 patients underwent a PET or PET-CT prior to and 6 weeks following ILP. The mean SUVmax prior to ILP was significantly higher than after ILP (11.4 vs. 6.9,  $p=0.001$ ).

Overall and metastasis-free survival at 5 years amounted to 62% and 56%, respectively. Histological response according to the Salzer-Kuntschik criteria, SUVmax prior to ILP and the mitotic rate prior to ILP did not correlate with overall or metastasis-free survival. However, a low mitotic rate after ILP, a low SUVmax after ILP, and a small tumor size both before and after ILP were all significantly associated with an improved overall ( $p=0.033$ ,  $p=0.006$ ,  $p=0.015$  and  $p=0.015$ , respectively) and metastasis-free survival ( $p=0.018$ ,  $p=0.005$ ,  $p=0.004$  and  $p=0.002$ ) respectively.

**Conclusion:** Tumor size both before and after ILP, SUVmax following ILP and the mitotic rate in the surgical specimen could be identified as significant prognostic factors for patients with locally advanced extremity soft tissue sarcomas undergoing neoadjuvant ILP with TNF $\alpha$  and melphalan.

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