PET response criteria (PERCIST) predict progression-free survival and time to local or distant progression after chemotherapy with regional hyperthermia for soft-tissue sarcoma

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ABSTRACT

Purpose: We evaluated the prognostic accuracy of established positron emission tomography (PET) and computed tomography (CT) response criteria in patients with soft-tissue sarcoma (STS) after combined chemotherapy plus regional hyperthermia (RHT).

Experimental Design: 73 patients underwent [^{18}F]-2-fluoro-2-deoxy-D-glucose (FDG) PET/CT before and after 2-4 cycles of neoadjuvant chemotherapy with RHT for STS. Progression-free survival (PFS), and time to local and distant progression were among other

factors correlated with response according to PET Response Criteria in Solid Tumors (PERCIST 1.0) and Response Evaluation Criteria in Solid Tumors (RECIST 1.1).

Results: Metabolic response by PERCIST (n = 44/73) was an independent predictor for PFS (p = 0.002; HR 0.35, 95% CI 0.18-0.68), and time to local or distant progression. Other independent predictors for PFS by multivariate analysis were adjuvant radiotherapy (p = 0.010; HR 0.39, 95% CI 0.20-0.80) and baseline tumor size < 5.7 cm (p = 0.012; HR 0.43, 95% CI 0.22-0.83). Response by RECIST 1.1 was seen in a small group of patients (n = 22/73) and allowed prediction of PFS for patients with sarcoma outside the abdomen (p = 0.048; HR 0.13, 95% CI 0.02-0.98).

Conclusion: Metabolic response by FDG PET predicts progression-free survival and time to local and distant progression after 2-4 cycles of neoadjuvant chemotherapy plus RHT for STS.