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# The correlations between (18)F-FDG-PET/CT and histopathological findings in liposarcomas

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**Introduction:** 18F-fluorodeoxyglucose (FDG)-positron emission tomography/computed tomography (PET/CT) imaging is useful for biopsy guidance, staging, and response assessments for treatments in soft tissue sarcoma. However, the correlation between the level of 18F-FDG uptake imaged on PET/CT scan and histopathological findings is unclear. The purpose of this study is to evaluate the correlations between the maximum standardized uptake value (SUVmax) on PET/CT and histopathological findings in liposarcomas (LPS).

**Methods:** A total of 15 patients (7 male and 8 female; mean age, 65.7 years; range, 44-82 years) with LPS were enrolled in this study. All patients were performed PET/CT examination before needle biopsy or operation, and measured SUVmax of tumors. We evaluated the correlations between SUVmax and histological subtype, tumor size, MIB-1 labeling index: index of the cell proliferation, microvessel density (MVD): representation for tumor angiogenesis and clinical outcome.

**Results:** The histological subtypes were 4 atypical lipomatous tumor/well differentiated type (ALT), 4 myxoid type (MLPS), 6 dedifferentiated type (DLPS) and 1 pleomorphic type (PLPS). The SUVmax of all patients had a range of 0-53.1 (mean; 7.2). The mean values of SUVmax were 1.5 in ALT, 3.2 in MLPS, 4.4 in PLPS, 14.0 in DLPS. The mean of SUVmax in DLPS was significantly higher than those in ALT or MLPS. Although there was not the correlation between the SUVmax and tumor size, the higher SUVmax value significantly related to the higher MIB-1 index and MVD. The SUVmax was related to the prognosis. Two cases with SUVmax over 7 at the first examination of PET/CT were dead of disease within 2 years.

**Conclusions:** SUVmax in DLPS significantly shows higher than those in ALT, MLPS and PLPS, and the difference of FDG accumulation might be reflected to the histopathological subtype. Furthermore, the value of SUVmax in LPS is correlated to the tumor angiogenesis and proliferation activity as malignancy marker. The survival of patients with LPS can be predicted by evaluating their SUVmax using FDG-PET/CT. It has potency as an "imaging biomarker" to provide helpful information for the clinical decision-making.