

Utility of FDG-PET in differential diagnosis of benign and malignant fractures in acute to subacute phase

Katsuya KATO,* Jun AOKI* and Keigo ENDO***

*Departments of *Diagnostic Radiology and **Nuclear Medicine, Gunma University School of Medicine*

Objective: To evaluate the usefulness of positron emission tomography with [fluorine-18] 2-deoxy-2-fluoro-D-glucose (FDG-PET) for early differential diagnosis of benign and malignant fractures.

Materials and Methods: Among 1,164 patients who had received FDG-PET between January 1999 and December 2000, 20 patients were found to have an acute fracture on review of clinical charts and/or radiologic images taken within one month before or after FDG-PET examination. The fractures were finally diagnosed by clinical follow up of at least five months duration. Standardized uptake values (SUV) for the benign and malignant bone lesions were calculated and compared.

Results: Ten of the 20 patients were finally diagnosed to have a benign fracture, nine patients to have a malignant fracture, and one patient to have both a benign and a malignant fracture at different locations. A statistically significant difference in the SUV was found between the benign group (SUV: 1.36 ± 0.49) and the malignant group (SUV: 4.46 ± 2.12) ($p = 0.0006$, the nonparametric Mann-Whitney U test). **Conclusions:** FDG-PET can be a useful method for early differentiation between acute benign and metastatic fractures. Our retrospective study indicates that an acute benign fracture itself does not show significant FDG uptake.

Key words: emission CT (ECT); fluorine; fractures; fractures, pathologic; glucose