PET tracers in musculoskeletal disease beyond FDG.

Abstract:

Musculoskeletal tumors comprise a multitude of tumor entities with different grades of malignancy, biological behavior, and therapeutic options. Positron emission tomography (PET) using the glucose analog [18F]fluorodeoxyglucose (FDG) is an established imaging modality for detection and staging of cancer, despite some shortcomings. Numerous studies have evaluated the role of PET imaging musculoskeletal tumors beyond FDG. The use of more specific novel PET radiopharmaceuticals such as the proliferation marker [18F]fluorodeoxythymidine (FLT), the bone-imaging agent [18F]sodium fluoride, amino acid tracers ([11C]methionine, [18F]fluoroethyltyrosine), or biomarkers of neoangiogenesis ([18F]galacto-RGD) can potentially provide insights into the biology of musculoskeletal tumors with focus on tumor grading, treatment monitoring, posttherapy assessment, and estimation of individual prognosis. In this article, we review the potential role of these alternative PET tracers in musculoskeletal disorders with emphasis on oncologic applications.