

The Superiority of ^{18}F -Sodium Fluoride PET/CT for Detecting Bone Metastases in Comparison with Other Bone Diagnostic Imaging Modalities

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Abstract : Bone is the most common metastasis site in some advanced malignancies, such as prostate and breast cancer. Bone metastasis generally indicates fewer prognostic factors in these patients. Different radiological and molecular imaging modalities are used for detecting bone lesions. Molecular imaging including computed tomography, magnetic resonance imaging, planar bone scintigraphy, single-photon emission tomography, and positron emission tomography as noninvasive visualization of the biological occurrences has the potential to exact examination, characterization, risk stratification and comprehension of human being diseases. Also, it is potent to straightly visualize targets, specify clearly cellular pathways and provide precision medicine for molecular targeted therapies. These advantages contribute implement personalized treatment for each patient. Currently, NaF PET/CT has significantly replaced standard bone scintigraphy for the detection of bone metastases. On one hand, ^{68}Ga -PSMA PET/CT has gained high attention for accurate staging of primary prostate cancer and restaging after biochemical recurrence. On the other hand, FDG PET/CT is not commonly used in osseous metastases of prostate and breast cancer as well as its usage is limited to staging patients with aggressive primary tumors or localizing the site of disease. In this article, we examine current studies about FDG, NaF, and PSMA PET/CT images in bone metastases diagnostic utility and assess response to treatment in patients with breast and prostate cancer.

Keywords : skeletal metastases, fluorodeoxyglucose, sodium fluoride, molecular imaging, precision medicine, prostate cancer (^{68}Ga -PSMA-11)

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