

Original Article

^{18}F -Fluorodeoxyglucose positron emission tomography/computed tomography for the detection of recurrent bone and soft tissue sarcoma

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Abstract

BACKGROUND:

The clinical utility of modern hybrid imaging modalities for detecting recurrent bone or soft tissue sarcoma remains to be determined. In this report, the authors present a clinical study on the diagnostic accuracy and incremental value of integrated ^{18}F -fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F -FDG PET/CT) in patients with a history of sarcoma who have clinically suspected disease recurrence.

METHODS:

Forty-three patients who had a history of bone or soft tissue sarcoma and had documented complete remission underwent ^{18}F -FDG PET/CT. Image analysis was performed independently for ^{18}F -FDG PET ($n = 43$) and for contrast-enhanced spiral CT (CE-CT) ($n = 30$) by 2 separate readers, whereas combined ^{18}F -FDG PET/CT ($n = 43$) images were analyzed in consensus by both readers. Imaging findings were rated on a 5-point scale and finally were reported as malignant, benign, or equivocal. Imaging findings were validated either by histopathology ($n = 24$) or by clinical follow-up ($n = 19$).

RESULTS:

^{18}F -FDG PET/CT had greater sensitivity and specificity compared with CE-CT alone (94% and 92% vs 78% and 67%, respectively), resulting in significantly greater accuracy (93% vs 73%; $P = .03$). ^{18}F -FDG PET/CT was particularly superior regarding detection of local recurrence or soft tissue lesions (sensitivity and specificity: 83% and 100% vs 50% and 100%, respectively) or bone metastases (100% and 100% vs 85% and 88%, respectively).

CONCLUSIONS:

^{18}F -FDG PET/CT had greater diagnostic accuracy in the detection of recurrent bone or soft tissue sarcoma compared with CE-CT alone. The detection of local recurrence was the most evident advantage of ^{18}F -FDG PET/CT over CE-CT.

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