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Comparison of MRI, F-18 FDG, and 11C-Choline PET/CT for Their Potentials in Differentiating Brain Tumor Recurrence From Brain Tumor Necrosis Following Radiotherapy.

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Abstract

OBJECTIVE: : To compare potentials of magnetic resonance imaging (MRI), F-18 FDG, and 11C-Choline PET/CT in differentiating brain tumor recurrence from necrosis after radiotherapy.

METHODS: : Fifty-five patients with suspected brain tumor recurrence or necrosis after radiotherapy underwent MRI, F-18 FDG, and 11C-choline PET/CT examinations, and all the patients were followed up for at least 11 months. Lesion diagnoses based on medical imaging were compared with pathology or follow-up outcomes.

RESULTS: : The sensitivities of MRI, F-18 FDG PET/CT, and 11C-Choline PET/CT in lesion diagnosis were 87.2%, 76.9%, and 92.3%, respectively, and their specificities were 81.3%, 62.5%, and 87.5%, respectively.

CONCLUSION: : The results suggest that 11C-Choline PET/CT with higher sensitivity and specificity may be better in distinguishing recurrent brain tumor from radionecrosis compared with F-18 FDG PET/CT and MRI.

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