ORIGINAL ARTICLE

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^{18}F-FDG and ^{11}C-methionine PET for evaluation of treatment response of lung cancer after stereotactic radiotherapy

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This study was performed to investigate the feasibility of FDG- and L-[methyl-^{11}C]methionine (Met)-PET for the follow up of lung cancer after stereotactic radiotherapy (SRT). Nine patients (pt) with solitary lung cancer underwent SRT. Met- and FDG-PET studies were performed one week before SRT and from one week to 8 months after SRT. Responses to SRT were complete in 2 pt and partial in 7 pt. Met- and FDG-PET scan showed high tracer uptake in all tumors before SRT. After SRT, standardized uptake values (SUV) of FDG and Met changed concordantly. Both decreased with time in 5 pt but did not decrease steadily in 4 pt, where 2 pt showed an increase at 1 to 2 weeks after SRT and 2 pt showed an increase at more than 3 months after SRT. The former appears to reflect the acute reaction to SRT and the latter radiation-induced pneumonitis. Although the addition of Met-PET did not provide additional information over FDG-PET, FDG- and Met-PET could be used to evaluate the treatment effect of SRT.

Key words: PET, lung cancer, stereotactic radiotherapy, FDG, methionine