

عنوان مقاله:

The Efficiency of Respiratory-gated 18F-FDG PET/CT in Lung Adenocarcinoma: Amplitude-gating Versus Phase-gating Methods

محل انتشار:

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خلاصه مقاله:

Objective(s): In positron emission tomography (PET) studies, thoracic movement under free-breathing conditions is a cause of image degradation. Respiratory gating (RG) is commonly used to solve this problem. Two different methods, i.e., phase-gating (PG) and amplitude-gating (AG) PET, are available for respiratory gating. It is important to know the strengths and weaknesses of both methods when selecting an RG method for a given patient. We conducted this study to clarify whether AG or PG is preferable for measuring fluorodeoxyglucose (FDG) accumulation in lung adenocarcinoma and to investigate patient conditions which are most suitable for AG and PG methods. **Methods:** A total of 31 patients (11 males, 20 females; average age: 11.6 ± 70.1 yrs) with 44 lung lesions, diagnosed as lung adenocarcinoma between April 2012 and March 2013, were investigated. Whole-body FDG-PET/CT scan was performed with both PG and AG methods in all patients. The maximum standardized uptake value (SUVmax) of PG, AG, and the control data of these two methods were measured, and the increase ratio (IR), calculated as $IR(\%) = (Post - Pre)/Pre \times 100$, was calculated. The diameter and position of lung lesions were also analyzed. We defined an 'effective lesion' of PG (or AG) as a lesion which showed a higher IR compared to AG (or PG). 8 (25.8%) **Results:** The average SUVmax and average IR were 7.94 ± 8.99 and $25.6 \pm 21.4\%$ in PG and 6.70 ± 7.60 and $14.4 \pm 4.0\%$ in AG, respectively. Although there was no significant difference between the average SUVmax of PG and AG ($P=0.09$), the average IR of PG was significantly higher than that of AG ($P<0.01$). The number of PG- and AG-effective lesions was 32 (72.7%) and 12 (28.3%), respectively. There was no significant difference in the average diameter or position of the lesions between the PG- and AG-effective lesions. There were 23 (74.2%) PG-effective and 8 (25.8%) AG-effective patients. No significant difference was observed in sex or age between PG- and AG-effective patients. **Conclusion:** The PG method was more effective for measuring FDG accumulation of lung lesions under free-breathing conditions in comparison with the AG method.

کلمات کلیدی:

FDG-PET/CT, Lung adenocarcinoma, Positron Emission Tomography, Respiratory gating

