

## The clinical efficacy of PET-CT in the differentiation of pulmonary tuberculosis and malignant lesions in oncology patients

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**PURPOSE:** The needs for differentiation between pulmonary tuberculosis and malignancy by perioperative diagnostic imaging of oncology patients are increasing, due to increasing demand of imaging studies. The purpose of this study is to investigate the crucial manifestations of pulmonary tuberculosis mimicking malignant lesions in fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) and chest CT correlation.

**MATERIALS AND METHODS:** Retrospectively twenty-six patients (33 lesions) with pathologically and microbiologically proved as pulmonary tuberculosis were reviewed. Their FDG-PET/CT, routine chest CT images, clinical data, and pathologic findings were investigated. Confirmation was done by biopsy (n = 8), microbiologically (n = 15), and imaging follow up (n = 3). The early and delayed SUV were measured. The PET/CT findings were evaluated with two types, 1) visual grading, classified into five groups and 2) lung appearance was classified into 5 groups. The radiologic impression based by CT findings (analyzed by degree of contrast enhancement, presence of calcifications and satellite nodules, branching linear opacities, associated hilar, mediastinal lymph nodes) was correlated with PET/CT findings.

**RESULTS:** The most common PET/CT findings of visual grading and lung appearance are more than liver and less than brain (14/33, 42%) and multifocal with scattered pattern (24/33, 72%), respectively. The agreement of benign findings suggesting pulmonary tuberculosis is 27 lesions, and the disagreement is 6 lesions. More frequent CT findings are branching linear opacities (14/33, 42.4%) or satellite nodules and consolidations (11/33, 33.3%). The above two findings in CT scan and PET visual scoring has a good correlation in excluding second primary or metastatic lesions.

**CONCLUSION:** In the differentiation of pulmonary tuberculosis and malignant lesions of oncology patients, PET-CT visual grading and lung appearance are good indicators. Though coexistent lymphadenopathy is confusing in the differential diagnosis between two lesions, the branching opacity with satellite nodules in CT scan and visual grading of FDG uptake has promising factors in excluding malignancy. These results suggested that positive FDG PET/CT findings should be correlated with chest CT and should be matched with PET-CT scoring to exclude metastatic or second primary malignant lesions.