

F¹⁸-FDG PET/CT FOR EVALUATION OF MALIGNANCY IN PULMONARY TUMORS: POSITIVE PREDICTIVE VALUE

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Introduction: F¹⁸-FDG PET/CT provides morphologic and metabolic information for diagnosis of malignant disease; however, increased glucose uptake is not exclusive of cancer. Specificity depends on prevalence of inflammatory diseases in the population. We analyzed PET/CT capacity to predict malignancy in pulmonary tumors in Chilean population.

Methods: 83 patients and 132 pulmonary tumors with increased uptake of F¹⁸-FDG were prospectively included in the study, 54 males, mean age 63 years (27-96). Exams were performed in a PET-CT Scanner Siemens Biograph 6. Nineteen patients had extrapulmonary malignant disease; the rest a primary pulmonary tumor. Three patients had history of pneumoconiosis. Fifty nine had only one nodule or mass. Histological study was obtained for all lesions.

Results: Malignancy was demonstrated in 120 of 132 lesions, 4 small cell lung cancers, 77 non small cell lung cancers (NSCLC), 1 sarcoma, 38 metastases. Mean SUV Max was 8.9 g/ml (0.5-35.9), mean size 35 mm (4-110).

Twelve lesions considered malignant were proven benign (3 silicosis, 3 granulomas, 4 pneumonias, 1 abscess, 1 surgical scar). Mean SUV Max was 3.3 g/ml (0.7-9.4), mean size 20 mm (6-43).

Difference on SUV of malignant and benign lesions was significant (P < 0.001, Mann Whitney).

Positive predictive value (PPV) for malignancy was 90.9%.

Twenty tumors with SUV < 2.5 g/ml considered malignant because of its morphology on CT were confirmed by histological findings (6 NSCLC, 14 metastases). Mean SUV Max for these malignant lesions was 1.6 g/ml (0.5-2.4), mean size 13 mm (4-31).

Conclusion: F¹⁸-FDG PET/CT in our population is a good predictor for malignancy of pulmonary tumors, with PPV of 90.9%. False positives are due to inflammatory lesions. Clinical history is necessary for the correct interpretation of studies. Combined analysis of anatomic and metabolic images provides more accurate identification of malignant lesions than both techniques on their own.

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