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Nodal Staging of Esophageal Cancer using ^{18}F-FDG PET: Comparisons with CT and Endoscopic Ultrasonography

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Abstract

We prospectively investigated the accuracy of ^{18}F-fluorodeoxyglucose (FDG) positron emission tomography (PET) in the preoperative nodal staging of esophageal cancer in comparison with CT and endoscopic sonography (EUS). Sixty-one consecutive patients with histologically proven primary esophageal cancer were studied prospectively with ^{18}F-FDG PET. All patients underwent CT and EUS. Thirteen patients treated non-surgically were excluded from data analysis. The remaining 48 patients underwent esophagectomy and lymph node dissection. The accuracy of ^{18}F-FDG PET, CT, and EUS were compared with histological findings. After operation, a total of 382 lymph nodes were dissected in 48 patients, of which 100 nodes in 32 patients were malignant on histological examination. EUS could not be performed in 3 patients due to the patient's refusal, and complete examination was not possible in another 12 patients due to esophageal stenosis. For nodal metastasis, ^{18}F-FDG PET showed 57% sensitivity, 97% specificity and 86% accuracy. However, CT showed lower sensitivity (18%, $p < 0.0001$), higher specificity (99%, $p = 0.033$) and lower accuracy (78%, $p = 0.003$) than ^{18}F-FDG PET did. For N staging, ^{18}F-FDG PET was correct in 83% of patients (40/48), whereas CT and EUS were correct in 60% (29/48, $p = 0.006$) and 58% (26/45, $p = 0.003$), respectively. In conclusion, ^{18}F-FDG PET is more accurate than CT and EUS for evaluating lymph node metastasis and may be helpful in determining the therapeutic plan in patients with esophageal cancer.