

Optimal scan time for evaluating pancreatic disease with positron emission tomography using F-18-fluorodeoxyglucose

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Objective: Image interpretation in positron emission tomography (PET) using F-18-fluoro-2-deoxy-D-glucose (FDG) is usually performed for images obtained at 1 h postinjection (PI) of FDG, but it remains unknown whether this is the optimal time for imaging patients with pancreatic disease. The aim of this study was to assess the optimal scan time for FDG-PET for patients suspected of having pancreatic cancer. **Patients and Methods:** Forty-four patients with suspected pancreatic cancer underwent FDG-PET scans at both 1 h and 2 h PI. Tracer uptake in the pancreatic lesions and possible liver metastasis was interpreted qualitatively, using a 5-point grading system (0 = normal, 1 = probably normal, 2 = equivocal, 3 = probably abnormal, and 4 = definitely abnormal) by 4 nuclear medicine physicians independently, who were blind to all clinical information. Detection performance with each image was compared using receiver operating characteristic (ROC) analysis. An average score of the 4 readers for each patient was also defined as consensus average index (CAI) and compared between the two images. **Results:** ROC results indicated no significant differences in detection performance (Averaged areas under ROC curves of 1 h vs. 2 h were 0.92 vs. 0.90 for primary tumor, and 0.81 vs. 0.85 for liver metastases). There were no significant differences in CAIs between 1 h and 2 h PI images in interpreting primary tumor and positive liver metastases, but a significant difference was observed for cases without liver metastases ($p < 0.05$). **Conclusions:** The certainty of excluding liver metastases was increased when the 2h image was used, although ROC analysis did not establish a difference between 1 h and 2 h imaging for differentiating malignant and benign lesions in primary pancreatic cancer or its liver metastases.

Key words: FDG, PET, pancreatic cancer, optimal scan time