Diagnostic usefulness of FDG PET for pancreatic mass lesions

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The purpose of this study was to investigate the feasibility of [^{18}F]2-deoxy-2-fluoro-D-glucose (FDG) positron emission tomography (PET) in patients with a pancreatic mass by comparing the results with those of X-ray computed tomography (CT) and magnetic resonance (MR) imaging. *Methods:* Eighty-six patients with pancreatic lesions, included 65 malignant tumors and 21 benign masses (55 masses were proven histologically and the others were diagnosed clinically), were studied. The diagnostic factors of CT and MR imaging were evaluated, and those of FDG PET were also evaluated for malignant and benign masses by visual interpretation and quantitative interpretation with the standardized uptake value (SUV) and SUVgluc which was designed to reduce the effects of a high blood sugar level. Visual interpretations were evaluated only in FDG PET images, and quantitative interpretations were evaluated by referring to CT and/or MR imaging. The correlation between SUV and the degree of histological differentiation in pancreatic ductal adenocarcinoma was investigated. *Results:* Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy for CT imaging were 91, 62, 88, 68 and 84%, and for MR imaging 78, 70, 88, 54 and 76%, respectively. In visual interpretation of FDG PET images, the sensitivity, specificity, PPV, NPV and accuracy were 82, 81, 93, 59 and 81%, respectively. Significant differences between malignant and benign lesions existed in SUV and SUVgluc (p < 0.0001, each). With the cutoff value of SUV as 2.1 and SUVgluc as 2.2, the accuracy of diagnosis was maximal. With that cutoff value, the sensitivity, specificity, PPV, NPV and accuracy for SUV were 89, 76, 92, 70 and 86%, and for SUVgluc 91, 76, 92, 73 and 87%, respectively. The sensitivity and NPV of SUVgluc were higher than those of SUV, which suggests that SUVgluc may be more useful in reducing the number of overlooked malignant tumors. The specificity and PPV of FDG PET were superior to those of CT and MR imaging. There were no significant differences between the SUVs of moderately differentiated adenocarcinomas and those of well differentiated adenocarcinomas. *Conclusion:* To improve the diagnostic procedure for classifying masses, FDG PET with not only SUV but also SUV corrected by the blood sugar level is required in addition to morphological diagnosis by CT and/or MR imaging.

Key words: pancreas, FDG PET, blood sugar level, CT, MRI