The role of F-18 fluorodeoxyglucose PET/CT for detecting recurrence in asymptomatic gastric patients after curative resection

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Introduction: F-18 Fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) has been known to be an effective imaging modality in detecting gastric cancer recurrence. However, only a few studies have evaluated the diagnostic performance of FDG PET/CT as a surveillance imaging tool during clinical follow-up in asymptomatic gastric cancer patients after curative resection. This study was aimed to assess the clinical role of surveillance FDG PET/CT for detecting cancer recurrence in asymptomatic gastric cancer patients after curative resection.

Methods: We retrospectively enrolled 245 gastric cancer patients (169 early gastric cancer patients and 76 advanced gastric cancer patients) who underwent 1-year (135 patients) or 2-year (110 patients) post-operative FDG PET/CT surveillance, along with routine follow-up program including serum tumor markers, contrast-enhanced abdominopelvic CT scan, and gastroduodenoscopy, after curative resection. All enrolled patients were asymptomatic and showed no recurrence on follow-up studies performed before PET/CT surveillance. All PET/CT were visually evaluated and all abnormal findings on follow-up examinations including FDG PET/CT were confirmed with histopathological diagnosis or clinical follow-up.

Results: During follow-up, 21 patients (8.5%) experienced cancer recurrence. FDG PET/CT showed abnormal findings in 43 patients (17.6%) of all patients. Among them, 17 patients (6.9%) were diagnosed with gastric cancer recurrence. Of 202 patients without abnormal findings on PET/CT, 4 patients (1.6%) were false-negative and diagnosed as recurrence on other follow-up examinations. The sensitivity, specificity, positive predictive value, and negative predictive value of FDG PET/CT for detecting recurrence was 80.9%, 88.3%, 39.5%, and 98.0%, respectively. Among 169 early gastric cancer patients, PET/CT detected recurrence in 5 patients (3.0%) except 2 patient with local recurrence. Among 76 advanced gastric cancer patients, PET/CT detected recurrence in 12 patients (15.8%), except 2 patients experiencing peritoneal recurrence. In addition, FDG PET/CT detected secondary primary cancer in 8 patients (3.3%) patients among enrolled patients.

Conclusion: Post-operative surveillance FDG PET/CT detected cancer recurrence in 6.9% of asymptomatic gastric cancer patients and showed good diagnostic ability in detecting recurrence. FDG PET/CT could be a useful imaging modality for surveillance of asymptomatic gastric cancer patients, especially advanced gastric cancer patients. However, because of false-negative findings for peritoneal and local recurrence and false-positive findings, further careful evaluations should be performed.