

Original Article

A prospective evaluation of the utility of 2-deoxy-2-[¹⁸F]fluoro-D-glucose positron emission tomography and computed tomography in staging locally advanced gastric cancer

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Abstract

BACKGROUND: The aim of this study was to examine prospectively the utility of adding preoperative [¹⁸F]fluorodeoxyglucose positron emission tomography (FDG-PET)/computed tomography (CT) to routine CT, endoscopic ultrasound (EUS), and laparoscopic staging of localized gastric cancer.

METHODS: Patients with locally advanced gastric/gastroesophageal cancer were screened for 2 institutional review board–approved Memorial Sloan-Kettering Cancer Center neoadjuvant chemotherapy protocols. Locally advanced disease was defined as T3 or T4, or lymph node–positive, based on EUS and high-resolution CT scan. All patients underwent both standard FDG-PET/CT and laparoscopy with cytological examination of washings. The sensitivity and specificity of FDG-PET/CT for the identification of metastatic disease not seen on CT was determined. An economic model using Medicare/Medicaid reimbursement charges was developed to assess the cost-effectiveness of these interventions.

RESULTS: A total of 113 patients were enrolled from 2003 to 2010. All patients were assessed as having locally advanced disease by CT/EUS. FDG uptake in the primary tumor was associated with male sex, proximal tumors, and nondiffuse Lauren's subtype. 31 (27%) patients had occult metastatic disease detected by PET/CT (n = 11, 10%) and/or laparoscopy (n = 21, 19%), with a single overlap. Economic modeling suggests that the addition of FDG-PET/CT to the standard staging evaluation of patients with locally advanced gastric cancer resulted in an estimated cost savings of ~US \$13,000 per patient.

CONCLUSIONS: FDG-PET/CT identifies occult metastatic lesions in approximately 10% of patients with locally advanced gastric cancer. Because of reduced morbidity from fewer futile surgeries and lower patient care costs, PET/CT should be considered as a component of the standard staging algorithm for localized gastric cancer.