

Accurate staging to determine treatment of esophageal cancer

Therapeutic planning of esophageal cancer depends on an accurate evaluation of lymph nodes for metastatic disease.

Although computed tomography (CT) and endoscopic ultrasound (EUS) are standard diagnostic tools for preoperative staging, conventional imaging may not always provide adequate information.

- CT has shown to be less sensitive in the detection of regional nodal and distant metastatic disease compared with positron emission tomography (PET).¹
 - EUS is constrained in locally advanced cases in which passage of the endoscope may not be possible.¹
- PET/CT can significantly impact the course of therapy.
- PET/CT changed the stage group in 40% of patients (56/139) and changed management in 34% of patients (47/139).

Diagnostic value of PET/CT in esophageal staging

	Sensitivity	Specificity	PPV	NPV	Accuracy
PET/CT	46.0% ²	99.4% ²	87.0% ²	95.5% ²	95.1% ²
CT	26.5% ²	97.5% ²	50.1% ²	93.2% ²	91.3% ²

Medicare recognizes the utility of PET and PET/CT in esophageal cancer.³

Initial Treatment Strategy (formerly Diagnosis and Staging)

- To determine whether or not the beneficiary is an appropriate candidate for an invasive diagnostic or therapeutic procedure; or
- To determine the optimal anatomic location for an invasive procedure; or
- To determine the anatomic extent of tumor when the recommended anti-tumor treatment reasonably depends on the extent of the tumor.

Restaging applies to testing after a course of treatment is completed and is covered subject to the conditions above.

Monitoring response to therapy

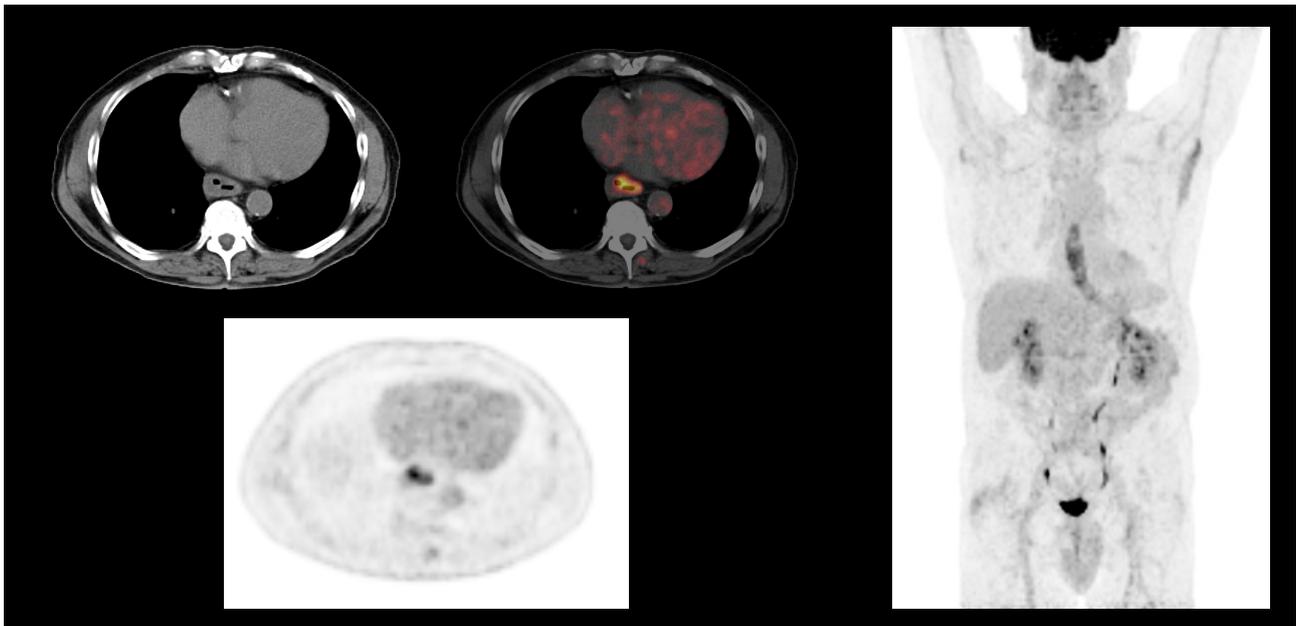
PET and PET/CT are reimbursable for monitoring tumor response to treatment during the planned course of therapy (ie, when a change in therapy is being considered).

The ordering physician is responsible for documenting the medical necessity of the PET scan and that it meets these criteria.

Subsequent Treatment Strategy (formerly Restaging)

- After completion of treatment for the purpose of detecting residual disease; or
- For detecting suspected recurrence or metastasis; or
- If it could potentially replace one or more conventional imaging studies when it is expected that conventional study information is insufficient for the clinical management of the patient.

PET in accurate staging of esophageal cancer



Data courtesy of University of Tennessee Medical Center, Knoxville, Tennessee, USA.

History

A 76-year-old male with history of problems swallowing and digesting food, leading to weight loss, in addition to a 15-year history of smoking. A CT of the chest and abdomen revealed thickening of the distal esophagus. Esophagogastroduodenoscopy (EGD) performed for further evaluation. Pathology revealed adenocarcinoma. A PET/CT scan was ordered for evaluation and extent of disease.

Imaging findings

A PET/CT was ordered for initial treatment strategy (ITS), which revealed wall-thickening and increased metabolic activity affecting at least the distal third of the esophagus consistent with the given diagnosis of esophageal adenocarcinoma. No evidence of local or distant metastasis.

Overall evaluation

PET/CT can be utilized for initial staging of esophageal cancer. In this case, lymph node involvement and distant disease were ruled out.

On diagnosis, at least half of esophageal cancer patients have locally advanced or metastatic disease. According to the American Joint Committee on Cancer (AJCC), CT, PET, and integrated PET/CT are included in the staging techniques to establish the M-stage (if the cancer has spread to distant sites) in esophageal cancer.⁴

¹ Barber, T., et al. 18F-FDG PET/CT has a high impact on patient management and provides powerful prognostic stratification in the primary staging of esophageal cancer: a prospective study with mature survival data. *Journal of Nuclear Medicine*. Vol 53 (2012): 864-871.

² Kato H, et al. The efficacy of FDG-PET for the management of esophageal cancer: review article. *Ann Thorac Cardiovasc Surg*. 2012;18(5):412-9.

³ CMS Publication 100-03, Medicare National Coverage Determinations Manual, Chapter 1, Part 4, Section 220.6). Available at http://www.cms.hhs.gov/manuals/downloads/ncd103c1_part4.pdf

⁴ Blom RL, et al. Therapeutic approaches to gastroesophageal junction adenocarcinomas. *Annals of the New York Academy of Sciences*. Vol 1325 (2014):197-210.

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