

EDITORIAL

Staging work-up of patients with esophageal cancer

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Abstract

Accurate staging of disease in patients with newly diagnosed esophageal cancer is necessary in order to instigate appropriate curative or palliative therapy. The guidelines presented in this paper are suggested for the initial work-up of patients with newly diagnosed esophageal cancer, yet may be varied according to local preferences and availability of imaging technologies.

Keywords: *Staging; esophageal cancer.*

Accurate staging of disease in patients with newly diagnosed esophageal cancer is necessary in order to instigate appropriate curative or palliative therapy. The following guidelines are suggested for the initial work-up of patients with newly diagnosed esophageal cancer, yet may be varied according to local preferences and availability of imaging technologies. All patients should initially undergo a thorough history and physical exam, in order to detect gross evidence of metastatic disease. In addition, complete upper gastrointestinal endoscopy and/or a barium upper gastrointestinal series is indicated to assess for mucosal extent of disease. If these modalities show a large degree of gastric involvement, then the stomach may not be suitable for interposition at the time of esophagectomy; in such patients, a colonic interposition may be necessary.

A computed tomography (CT) scan of the chest and abdomen with bolus administration of intravenous contrast should then be performed. The CT is used to evaluate the primary tumor for invasion of adjacent structures (T4 disease); if the CT shows findings of gross, unequivocal invasion, then surgery is not indicated. Equivocal invasion, however, requires proof before denying the patient surgery. An intervening fat plane between an esophageal tumor and an adjacent structure in the mediastinum (e.g. central airway, aorta, pericardium) accurately indicates lack of invasion. However, in the

majority of cases, the converse is not true: lack of a fat plane does not necessarily indicate invasion, either for cachectic patients or for those with normal body weight. Furthermore, adjacent fat planes may be obscured in patients who have undergone radiation therapy. In addition, minimal invasion of some structures, such as pericardium or aortic adventitia, may be resectable. CT findings suggesting central airway invasion should be proven via bronchoscopy and biopsy, and, in fact, all patients with an upper or middle third esophageal cancer should undergo preoperative bronchoscopy to exclude airway invasion before esophagectomy. Confirmation of suspected pericardial or aortic invasion is more difficult; endoscopic ultrasound (EUS) or intravascular ultrasound (IVUS) may be helpful in this regard, although most often the diagnosis is confirmed only during attempted esophagectomy. Unresectable invasion of the aorta or pericardium is actually very uncommon, and care should be taken not to overdiagnose such findings.

CT is also used to look for evidence of distant metastatic disease to non-regional lymph nodes, lungs, abdominal viscera, and other sites; such distant disease would preclude surgical resection. Positron emission tomography (PET) imaging has been shown to be more accurate than CT in diagnosing distant metastases. Therefore, if CT shows apparently resectable disease,

PET may then be employed to search for previously occult distant metastases; suspicious lesions at PET should be biopsied to obtain tissue proof, whenever possible. Assuming the PET study shows no evidence of distant metastatic disease, a patient may then be examined with EUS for better staging evaluation of the primary tumor (T stage) and regional lymph nodes (N stage); suspicious lymph nodes detected by EUS (regional or celiac axis) should undergo EUS guided fine needle aspiration biopsy.

At some institutions, patients with T1N0 disease at EUS and M0 disease at CT and PET proceed right to surgery; on the other hand, those with deeper penetration of tumor and/or tumor involvement of regional lymph nodes undergo neoadjuvant chemoradiation therapy followed by surgery. Patients with distant metastases (M1 disease) are usually treated non-surgically, with chemoradiotherapy. Laparoscopy is performed at some centers to evaluate for occult abdominal metastases, especially for tumors arising at the gastroesophageal junction, although this is not common practice.

A recently published cost effectiveness study comparing CT, EUS with fine needle aspiration biopsy

(EUS-FNA), PET and thoracoscopy/laparoscopy found that the combination of CT plus EUS-FNA was the most inexpensive strategy and offered more quality adjusted life-years, on average, than all other strategies except for PET plus EUS-FNA^[1]. The latter approach, although slightly more effective, was also more expensive; this strategy was recommended unless resources were scarce or PET was unavailable.

In summary, all patients with a new diagnosis of esophageal cancer need a good quality CT scan of the chest and abdomen for staging purposes. At many institutions, fluorodeoxyglucose (FDG) PET scanning is also performed, primarily to look for occult distant metastases, and EUS is obtained for better evaluation of the primary tumor and regional lymph nodes.

Reference

- [1] Wallace MB, Nietert PJ, Earle C *et al.* An analysis of multiple staging management strategies for carcinoma of the esophagus: computed tomography, endoscopic ultrasound, positron emission tomography, and thoracoscopy/laparoscopy.. *Ann Thorac Surg* 2002; 74: 1026–32.