

ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

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The Use of Endoscopic Ultrasound in Esophageal Disease

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G&H What is the role of endoscopic ultrasound in the diagnosis of esophageal functional disorders?

GZ Endoscopic ultrasound (EUS) offers a characterization of benign versus malignant processes. In the benign category are growths in the wall of the esophagus, which are best detected utilizing EUS because it provides a detailed view of the layers of the esophageal wall. Standard upper endoscopy may detect a bulge in the esophageal wall, but, if the lining of the esophagus looks normal, provides no further information. With EUS, it can be determined whether something outside the esophagus is pushing against it or if there is a growth within the wall. Further, if there is a growth within the wall, EUS illustrates the extent of the growth and whether it is associated with the supportive tissues, the muscle, or some other part of the anatomy. In this way, EUS detects underlying causes of motility disorders, such as achalasia, and can rule out the possibility of cancer, which may affect the musculature and nerves that control the esophagus (so-called “secondary achalasia”).

G&H How is EUS used in the diagnosis and staging of esophageal cancer?

GZ EUS is an excellent tool for assessing the depth of tumor invasion, as well as locating and sampling potentially affected lymph nodes. In addition, examining the esophagus via ultrasound is helpful even in nonesophageal

cancers. Certain lung cancers, depending on their location, may spread to lymph nodes very close to the esophagus. In this setting, EUS can provide visualization and the ability to perform cytologic sampling of those lymph nodes, thus providing a more accurate staging of these lung cancers. With a linear (as opposed to radial) EUS, the aspiration needle can actually be visualized as it goes through the esophageal wall and into the lymph node.

G&H Could you outline the EUS procedure as it is performed by endoscopists?

GZ The procedure is an adjunct to standard endoscopy. The patient is sedated in the same manner as for an endoscopy, with what is characterized as moderate sedation. A standard endoscopy should be performed first to obtain a robust image of the esophageal lining and any visible anatomic features or abnormalities. Subsequently, the standard scope is withdrawn, and the ultrasound scope is passed in the same manner. From this echoendoscope, the ultrasound images are generated. If a fine-needle aspiration is also warranted, a third scope can be passed in the same session. Other variations include smaller ultrasound probes, which can be passed through the accessory channel of a standard scope to provide diagnostic images of reasonable quality. These can be helpful in accessing patients with potentially cancerous strictures. High frequency probes are also helpful for classifying very small superficial cancers.

G&H What are the advantages/disadvantages of EUS versus standard radiologic imaging of the esophagus?

GZ Taking for example a patient with esophageal cancer, standard radiologic imaging would typically consist of a computed tomography (CT) scan, a positron emission tomography (PET) scan, or a combination of both.

Although some good information regarding the local extent of disease can be ascertained, the main advantage of this mode of imaging is that it provides a more “total-body view,” investigating for distant metastases.

EUS provides detailed views of tumor invasion and locoregional extent of disease. For example, enlarged lymph nodes may be detected on CT or PET scan, but this is only an image, whereas with EUS fine-needle aspiration establishes with cytology extension to the nodes. In practice, these are complementary, not competing, tests.

G&H Are there any specific contraindications to the use of EUS?

GZ Contraindications for the use of EUS are similar to those for endoscopy itself. In other words, if a perforation is suspected, or the patient is unstable for any reason that precludes sedation, EUS would be contraindicated. More nuanced decision-making comes into play when deciding how to apply EUS. There remains debate regarding the use of dilation in patients with cancerous strictures in order to study distal tissue. Use of an echo probe is safe and provides acceptable images, and requires no dilation. However, this does not allow fine-needle aspiration of lymph nodes distal to the malignant stricture. Only by dilating the stricture and passing the linear echoendoscope beyond the stricture can fine-needle aspiration of distal lymph nodes be performed. Weighing the pros and cons of information versus procedural safety must be done on a patient-by-patient basis.

G&H Are there any other adjunct technologies that are utilized with EUS?

GZ Currently, EUS is almost exclusively paired with fine-needle aspiration for esophageal disease. Branching out into pancreatic disease, some endoscopists are practicing therapeutic applications with fine-needle injection (FNI), administering various agents into pancreatic tumors in an attempt to slow their growth or as part of some other treatment protocol. There is limited experience with FNI for esophageal tumors. Administering botulinum toxin into the gastroesophageal junction as a treatment for ach-

lasia can be done with EUS guidance, but I believe most clinicians administer this agent with standard endoscopy. FNI for EUS-guided celiac block is commonly performed for patients with chronic pain, but typically of pancreatic rather than esophageal origin. Other adjuncts, such as three-dimensional EUS images of esophageal tumors, can be generated with special probes and software, but their use is not widespread.

G&H Are there newer imaging techniques in development that could conceivably replace EUS as standard practice?

GZ Newer imaging modalities, including optical coherence tomography, confocal laser endomicroscopy, and high-definition with narrow band imaging may be complementary rather than competing with EUS. Their applications are not exactly the same as EUS, and they have not yet reached the stage of widespread practical application.

As an example, an ultimate goal for improved surveillance of Barrett esophagus is detection of dysplasia or early cancer, even before there is a lesion visible on standard endoscopy. Currently this is achieved by taking random biopsies, with the possibility of false-negative results due to sampling error. The new technologies mentioned above may improve surveillance. EUS is not particularly helpful in this regard; its strength is in classifying existing tumors rather than in surveillance per se.

Suggested Reading

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