EUS-guided Tissue Acquisition of Extrapancreatic Lesions: Expanding the Border

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Introduction

Since the first report of EUS guided fine needle aspiration (EUS-FNA) for diagnosis of pancreatic lesions, EUS-FNA has played an important role in diagnosis of pancreatic as well as extra-pancreatic lesions. Still now, the target organs of EUS-FNA have been expanding.

Lymph nodes

1. Mediastinal lymph node

Mediastinal lymph node staging affects the management of patients with both operable and inoperable lung cancer. Recent international lung cancer staging guidelines clearly state that endosonography should be the initial tissue sampling test over surgical staging. Tissue sampling is often indicated for accurate nodal staging. Mediastinal nodes can be sampled from the airways (endobronchial ultrasound combined with transbronchial needle aspiration EBUS-TBNA) or the esophagus (EUS-FNA). EBUS-TBNA and EUS-FNA have a complementary diagnostic yield and in combination virtually all mediastinal lymph nodes can be biopsied. Additionally endosonography has an excellent yield in assessing granulomas in patients suspected of sarcoidosis.

2. Abdominal lesions

EUS-FNA is useful for involvement beyond the regional lymph nodes, namely, distant metastasis. In patients with pancreatobiliary cancer, EUS-FNA had higher sensitivity and specificity for the diagnosis of para-aortic lymph node metastasis (sensitivity, 96.7%; specificity, 100%) than PET/CT. EUS-FNA is superior to PET/CT for preoperative PALN staging in patients with pancreatobiliary cancer.

Subepithelial lesions

Subepithelial masses of the gastrointestinal tract are a frequent source of referral for endosonographic evaluation. Subepithelial tumors most often appear as protuberances in the gastrointestinal tract with normal overlying mucosa. EUS-FNA is superior to imaging in characterizing the subepithelial lesions. Subepithelial lesions in all accessible organs in the gastrointestinal tract can be the target of EUS-FNA including esophagus,
stomach, duodenum, colon and rectum.

Ascites

The evaluation of ascites in patients with known or suspected malignancy is a critical aspect of preoperative staging. Endoscopic evaluation by ultrasound of low volume ascites and sampling of the ascitic fluid by endoscopic ultrasound guided paracentesis is both a sensitive and specific modality for the determination of peritoneal implants, which is not only an important prognostic indicator but a crucial factor in determining treatment strategy. Given the ability of endoscopic ultrasound guided paracentesis to adequately sample even minimal ascites, detecting much smaller volumes than traditional computed tomography or magnetic resonance imaging, endoscopic ultrasound guided paracentesis may be a useful modality for the standard metastatic workup of any newly diagnosed or suspected malignancy.

Lesions in the liver and biliary system

1. Liver lesions

Results obtained by a retrospective questionnaire sent to 130 EUS-FNA centers around the world regarding indications, complications, and findings of EUS-FNA of the liver revealed EUS-FNA should be considered when a liver lesion is poorly accessible to US-, or CT-guided FNA, when US- or CT-guided FNA fail to make a diagnosis, when a liver lesion(s) is detected (de novo) by EUS, and for investigation of possible upper gastrointestinal tract primary tumors in the setting of liver metastases.

2. Biliary lesions

For hilar strictures diagnosed by CT and/or ERCP that were suspicious for hilar cholangiocarcinoma but had inconclusive tissue diagnosis, the sensitivity, accuracy, and specificity of EUS-FNA were 89%, 91%, and 100%, respectively. Moreover, EUS and EUS-FNA changed preplanned surgical approach in about half of these patients. EUS-FNA is a sensitive and safe diagnostic modality for patients with suspected malignant biliary stricture and can be an additional option in cases where endoscopic brush cytology and biopsy have produced negative results. EUS-FNA is also useful for tissue sampling from gallbladder masses.

Other target lesions

EUS-FNA is also useful for diagnosis of lesions in mediastinal lesions, retroperitoneal lesions, adrenal glands, spleen and kidney, as an alternative method in cases of difficulty in their diagnosis with the conventional diagnostic methods.

Conclusions

All the lesions adjacent to as well as in the gastrointestinal tract can be the target of EUS-FNA, including lymph nodes, mediastinal lesions, retroperitoneal lesions, subepithelial lesions, ascites, liver, biliary system, adrenal glands, spleen and kidney. The border for indication of EUS-FNA is still expanding.