Endo-Hepatology: A New Paradigm

Kenneth J. Chang, MD[a,*], Jason B. Samarasena, MD[a], Takuji Iwashita, MD, PhD[b,c], Yosuke Nakai, MD, PhD[a,d], John G. Lee, MD[a]

KEYWORDS

• Endoscopic ultrasound • Fine needle aspiration • Hepatology • Liver disease • Portal hypertension • Liver biopsy • Esophageal varices • Gastric varices

INTRODUCTION

Recent advances in hepatology have included new and effective treatments of viral hepatitis, with an increased need for the assessment of liver function and histology. At the same time, as demonstrated by these articles on interventional endoscopic ultrasound (EUS), there have been a growing number of endoscopic procedures that are pertinent to patients with liver disease. Ironically, although gastroenterology and hepatology are within the same specialty, these trends are not necessarily integrated and perhaps even disparate. Hepatologists increasingly turn to radiologists for liver imaging and interventional radiologists for liver biopsy and management of portal hypertension. However, it would be most ideal if the assessment and treatment of liver disease and portal hypertension could be performed and assimilated by the primary liver/gastrointestinal specialist. This integration among specialists is seen in esophageal and pancreaticobiliary diseases. It should be no different in hepatology. The authors like to consider this area of integration or overlap of endoscopic procedures within the practice of hepatology as endo-hepatology.

Consultant: Cook Medical, Inc, Olympus, Japan.
Research support: Cook Medical, Inc.

[a] Division of Gastroenterology and Hepatology, H.H. Chao Comprehensive Digestive Disease Center, University of California, Irvine, 101 The City Drive, Orange, CA 92868, USA; [b] Division of Gastroenterology and Hepatology, H.H. Chao Comprehensive Digestive Disease Center, University of California, Irvine Medical Center, 101 The City Drive, Building 22C, First Floor, Orange, CA 92868, USA; [c] First Department of Internal Medicine, Gifu University Hospital, Gifu, Japan; [d] Department of Gastroenterology, Graduate School of Medicine, The University of Tokyo, 7-3-1 Hongo Bunkyo-ku, Tokyo 113-8655, Japan
* Corresponding author.
E-mail address: kchang@uci.edu

Gastrointest Endoscopy Clin N Am 22 (2012) 379–385
doi:10.1016/j.giec.2012.04.010 **giendo.theclinics.com**
1052-5157/12/$ – see front matter

CURRENT STATUS

Currently, most hepatologists perform either upper endoscopy[1] or capsule endoscopy[2] for detecting and assessing the severity of esophageal varices. In addition, endoscopic band ligation is the preferred technique for the treatment of active bleeding and for secondary prophylaxis.[3,4] For gastric fundal varices, practice guidelines from our societies (American College of Gastroenterology[5] and American Association for the Study of Liver Diseases[6]) recommend endoscopic-directed intravariceal injection of cyanoacrylate glue as the treatment of choice in the setting of acute bleeding.

POTENTIAL FUTURE ROLE OF EUS

Although the current role of endoscopy in hepatology practice is limited to the assessment and treatment of varices, there is a ground swell of emerging applications of EUS to patients with liver disease. These applications are summarized in the following section.

EUS LIVER ASSESSMENT

Transabdominal ultrasound (TUS) is routinely used in assessing the liver parenchyma for the degree of fibrosis/cirrhosis and detecting occult malignancy in high-risk individuals. Low-frequency gray scale imaging ($\leq$5 MHz) is typically used to assess the liver parenchyma, liver shape and size, spleen size, and hepatic vessel appearance. In contrast, high-frequency linear array gray scale imaging is used to assess the liver surface (>5 MHz). Doppler techniques, such as pulsed wave Doppler, are used to study the portal, hepatic, and splenic veins, and the hepatic artery, with the measurement of maximum or mean velocities. A recent meta-analysis showed that TUS was most useful (highest diagnostic accuracy) in assessing the liver surface as an indicator of chronic liver disease.[7] EUS is able to assess most of the liver parenchyma at frequencies between 5 and 10 MHz. Both the liver surface and parenchyma are well imaged, as well as Doppler studies of the portal vein, splenic vein, superior mesenteric vein, splenic artery, hepatic artery, celiac artery, and superior mesenteric artery. In addition, elastography (see article by Iglesias-Garcia) will likely become a standard option for EUS processors. With various types of elastography (especially transient elastography), the liver parenchymal stiffness can be measured; this has been shown to correlate well with the degree of liver fibrosis.[8–12] Elastography of the spleen may be useful in assessing portal hypertension.[13,14] Another EUS image enhancement is contrast-enhanced harmonic EUS (see article by Kitano).[15–18] This enhancement can also potentially help improve the detection of tumors in the liver.[19–22] Once tumors are detected, EUS-guided radiofrequency ablation (RFA) or cryotherapy may someday be available to treat appropriate lesions.[23,24]

EUS-GUIDED LIVER BIOPSY

Percutaneous liver biopsy is the standard procedure for obtaining hepatic tissue for histopathologic examination and remains an essential tool in the diagnosis and management of parenchymal liver diseases. The use of liver biopsy is increasing with the advent of liver transplantation and the progress being made in antiviral therapeutic agents. Although blind percutaneous needle biopsy has been the traditional technique, the use of ultrasound (US) guidance has increased considerably. A recent review of the literature indicates that the use of US-guided biopsy is superior to blind needle biopsy because of the higher risk for major complications, postbiopsy pain, and biopsy failure in the latter.[25] EUS-guided fine needle aspiration (FNA) has been