EUS-guided hepaticogastrostomy with contrast-enhanced harmonic imaging (with video)

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EUS-guided hepaticogastrostomy (EUS-HGS) is useful for biliary drainage in patients in whom ERCP fails. In performing EUS-HGS, it is important to detect a dilated intrahepatic bile duct (IHBD). However, it may be difficult to detect the IHBD in patients who have bile duct filled with sludge.

Contrast-enhanced harmonic imaging (CHI) has been reported to be useful in determining the borderline between the fluid space and tissue.[1-4] This report describes the usefulness of EUS-HGS with CHI (EUS-HGS-CHI) for the identification of otherwise difficult to detect IHBD [Video 1].

The left hepatic lobe was viewed under fundamental B-mode EUS (FB-EUS). If FB-EUS failed to detect clearly the dilated IHBD [Figure 1a], we used CHI. The monitor was changed to CHI mode. Bolus intravenous administration of Sonazoid enhanced the liver parenchyma but not debris, increasing the contrast between the fluid space in the IHBD and the hepatic parenchyma, which made it easy to puncture the IHBD [Figure 1b]. We punctured the IHBD with a 19-G EUS-FNA needle under CHI and confirmed access to the bile duct after aspiration of bile and injection of contrast medium into the IHBD. After insertion of a 0.025-inch guidewire through the needle into the bile duct, we dilated the puncture site in the gastric wall using a 4-mm balloon dilation catheter and finally deployed a covered metal stent (10 mm × 10 cm, Niti-S Biliary Cover Stent; Taewoong Medical, Seoul, S. Korea) between the IHBD and the gastric wall.

CH-EUS is superior to FB-EUS in detecting dilated IHBD filled with debris. Under FB-EUS, debris

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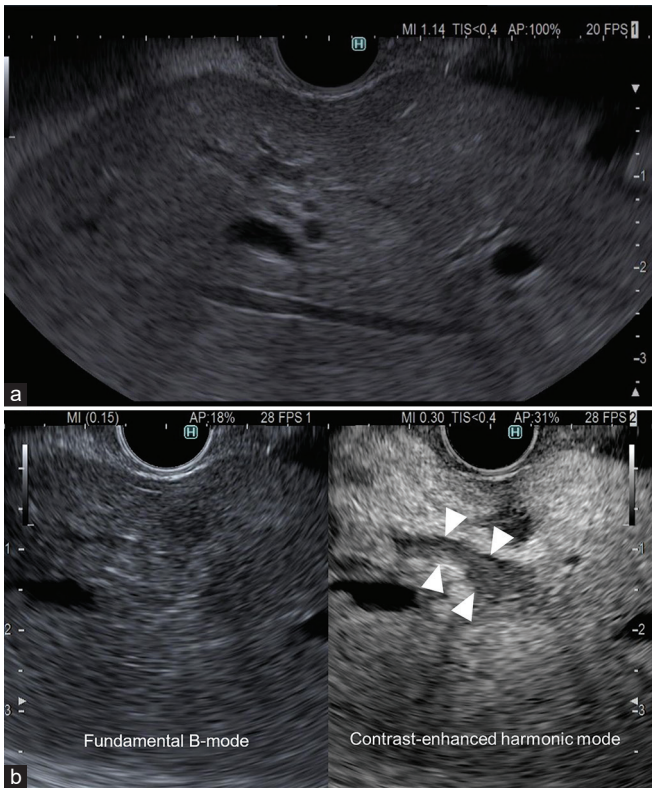

Figure 1. EUS-guided hepaticogastrostomy with contrast-enhanced harmonic imaging. (a) Fundamental B-mode EUS imaging showing the left hepatic lobe. The dilated intrahepatic bile duct was unclear. (b) Contrast-enhanced harmonic EUS after a bolus injection of ultrasound contrast agent, showing enhancement of the liver parenchyma, but not of debris, as well as a clearly visible dilated intrahepatic bile duct

and liver parenchyma appear isoechoic. However, under CH-EUS, the hepatic parenchyma is enhanced because the Sonazoid are phagocytosed by Kupffer cells in the liver, whereas the bile ducts are not enhanced because of the absence of Kupffer cells.[5] Therefore, intrahepatic bile ducts with debris can be detected more easily under CH-EUS than under FB-EUS.

In conclusion, CHI can play an important role in identifying targeted IHBDs that are difficult to detect by fundamental B-mode imaging during EUS-HGS.

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Conflicts of interest
There are no conflicts of interest.

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