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**Hepatobiliary alveolar echinococcosis infiltration of the hepatic hilum diagnosed
by endoscopic ultrasonography-guided fine-needle aspiration**

Running head: Echinococcosis diagnosed by EUS-FNA

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A 46-year-old woman was admitted to our department for further evaluation of dilated intrahepatic bile ducts surrounded by soft tissue with minimal calcification detected on computed tomography. The physical examination was unremarkable. Laboratory tests showed elevated serum hepatobiliary enzymes. An endoscopic retrograde cholangiogram revealed multiple strictures in the bile duct (**Fig. 1**). During the same session, multiple bile duct biopsies were obtained prior to biliary stenting. Although the pathological examination yielded no evidence of malignancy, a definitive diagnosis could not be reached. Endoscopic ultrasonography-guided fine-needle aspiration (EUS-FNA) was performed for a histological diagnosis of the echogenic lesion surrounding the common bile duct (**Fig. 2, arrows**). The histopathological analysis demonstrated a cuticular layer (**Fig. 3, arrows**) associated with hyaline-like necrosis consistent with alveolar echinococcosis (AE). An enzyme-linked immunosorbent assay using recombinant Em18 antigen was positive. A diagnosis of AE was made based on the serological and histopathological findings. Despite treatment with albendazole for 15 weeks, the patient developed an abscess in the right hepatic lobe. We ultimately performed a right caudate hepatectomy with extrahepatic bile duct resection for control of the cholangitis and the hepatic abscess. The postoperative course was uneventful.

AE is a parasitic disease caused by *Echinococcus multilocularis*. The liver is

the most frequent site of involvement and is infested in 50–70% of patients. Most patients with AE are asymptomatic, and the cysts are recognized during imaging studies for nonspecific abdominal symptoms; about 5–20% of patients present with biliary obstruction and cholangitis. However, AE with nonvisualized cysts by imaging modalities that infiltrate around the common bile duct is a rare condition. Therefore, histological diagnosis around the bile duct by transpapillary bile duct biopsy is very difficult. EUS-FNA was highly useful for establishing the definitive histopathological diagnosis of hepatobiliary AE with infiltration around the common bile duct.

FIGURE LEGENDS

Fig. 1: Endoscopic retrograde cholangiogram showing multiple strictures in the bile duct.

Fig. 2: Endoscopic ultrasound (EUS) showing an hypoechoic mass with small hyperechoic spots surrounding with common bile duct (*arrows*).

Fig. 3: Histopathological examination of the EUS-guided fine-needle aspiration specimen showing a cuticular layer (*arrows*) associated with hyaline-like necrosis consistent with alveolar echinococcosis (hematoxylin and eosin stain, original magnification×200).

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L=2048 W=4096

SINGLE PLAN
DERIVED
FOV: 180mm

Liver

Portal vein



