

CASE SERIES

Narrow band imaging cholangioscopy in hilar cholangiocarcinoma

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Abstract

Per oral cholangioscopy has been developed as a diagnostic modality for evaluation of bile duct lesions. Per oral cholangioscope with narrow band imaging (NBI) system can provide good quality images of bile duct lesions. There is limited data on per oral cholangioscopy using NBI in biliary tract diseases. We report our experience of NBI cholangioscopy in hilar strictures.

Keywords Bile duct stricture · portocaval lymphadenopathy · self-expanding metallic biliary stent

Introduction

Per oral cholangioscopy is a diagnostic modality for evaluation of bile duct lesions that are difficult to differentiate by imaging modalities.¹ Narrow band imaging (NBI) is a new technology to improve the quality and utility of endoscopic images which helps to differentiate malignant from benign lesions.^{2,3} A new NBI cholangioscopy system has been developed that provides characteristic endoscopic imaging of mucosal structures and mucosal vessels in bile duct lesions to differentiate benign from malignant lesions.^{4,5} We present our experience of NBI cholangioscopy in hilar strictures.

Methods

Three patients with hilar strictures who underwent NBI cholangioscopy were included. All endoscopic procedures were performed with therapeutic duodenoscope (*TJF 160 R*; Olympus Medical Systems, Tokyo, Japan). A video cholangioendoscope (*CHF-B260*; Olympus Medical Systems), with an outer diameter of 3.4 mm and an accessory channel diameter of 1.2 mm, was advanced through the 4.2 mm accessory channel of the therapeutic duodenoscope into the bile duct. All cholangioscopic procedures were performed by the NBI system (*CV-260SL* processor; *CVL-260SL* light source; Olympus Medical Systems). The bile duct was irrigated through an accessory channel with saline solution during endoscopic biliary examination. After inspection with white light endoscopy and NBI, biopsies of all abnormal-looking lesions were done. All endoscopic images were recorded. Images were observed: (i) to delineate the margins of the lesions distally or proximally, if possible; and (ii) for identification of vessels on the surface of lesions. All procedures were performed under sedation using intravenous propofol. The average procedure time was 15 minutes. Informed consent was obtained from the patient prior to the procedure.

Case 1

A 39-year-old man presented with obstructive jaundice and weight loss of 3 months duration. Liver function tests showed serum total bilirubin 4 mg/dL, AST 79 U/L (normal <40), ALT 116 U/L (normal <40), and alkaline phosphatase 300 U/L (normal <120). Transabdominal ultrasonography (TUS) showed thickened common hepatic duct without significant intrahepatic biliary radical dilatation (IHBRD). CT scan of abdomen revealed minimal bilobar IHBRD (left > right) with small heterogeneous lesion in the left hepatic duct. No lymphadenopathy was noted.

ERCP showed type IV hilar stricture⁶ (Fig. 1). Brush cytology from hilar stricture was suggestive of low grade dysplasia. NBI cholangioscopy showed irregular, dilated, cork-screw vascular mucosal pattern suggestive of malignancy.

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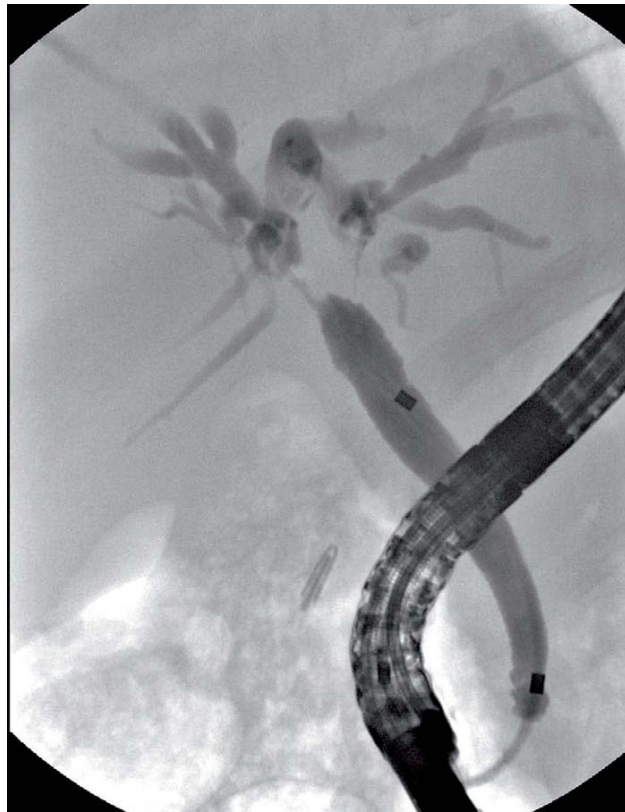


Fig. 1 ERCP showing Type IV hilar stricture

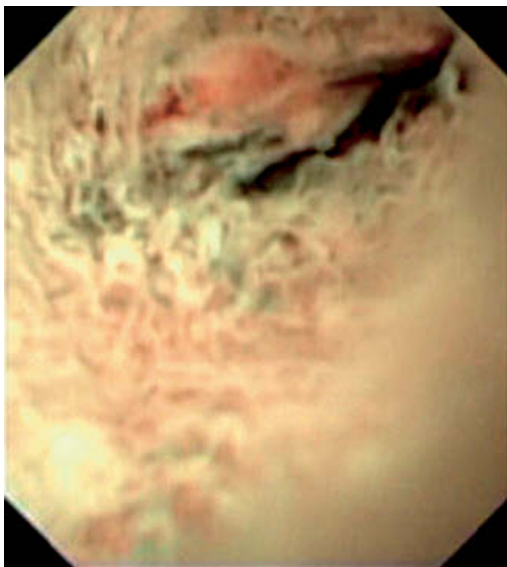


Fig. 2 NBI choangioscopy showing abnormal mucosal vessels

nancy in distal part of stricture as against fine, regular mucosal vascular pattern in normal area (Fig. 2). Cholangioscopic biopsy from the suspicious area confirmed adenocarcinoma (Fig. 3). Patient was advised surgery. During laparoscopy, patient was found to be inoperable, and a self-expandable metallic “Y” stent was placed.

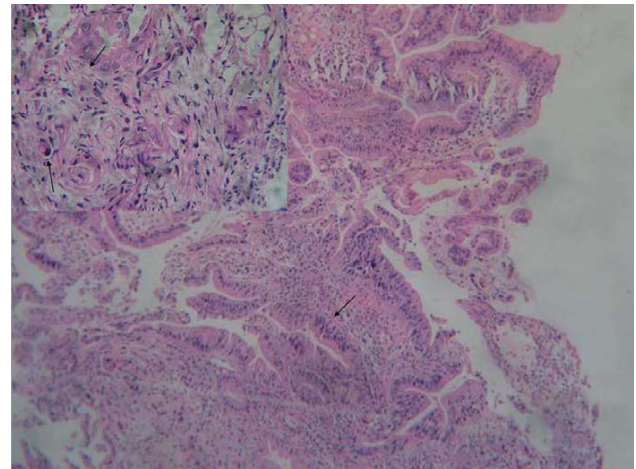


Fig. 3 Cholangioscopic biopsy showing adenocarcinoma

Case 2

A 43-year-old man presented with obstructive jaundice of 5 months duration with significant weight loss. He had undergone laparoscopic cholecystectomy earlier. TUS showed normal caliber common bile duct with significant IHBRD. CT abdomen showed bilobar IHBRD with few periportal and retroperitoneal lymph nodes. Total serum bilirubin was 18 mg/dL, AST 92 U/L, ALT 101 U/L and ALP 165 U/L. ERCP revealed type III hilar stricture. Brush cytology from hilar stricture showed low grade dysplasia. NBI cholangioscopy showed focal, irregular, thick mucosal vascular pattern suspicious of neoplasia. Cholangioscopic biopsy from the suspicious area confirmed adenocarcinoma. Patient underwent surgery. Operative findings showed lesion at common hepatic duct extending upto hilum and small lesions in segments 7 and 3. Frozen section from liver lesion was positive for malignancy. The definitive surgical procedure was abandoned and an 8-cm self-expandable metallic biliary stent was placed.

Case 3

A 63-year-old lady presented with features of cholangitis. Five months earlier, the patient had pain abdomen and fever for which she underwent diagnostic laparoscopy that revealed peri-portal lymphadenopathy. Histology from the lymph node showed non-caseating granulomas. At the same time, ERCP had revealed stricture in the common hepatic duct (CHD), and a biliary stent was placed. She was started on anti-tuberculous therapy, but showed no significant improvement.

ERCP was performed and the blocked biliary stent was extracted and endoscopic naso-biliary drain was placed. After stabilizing the condition of the patient, investigations were done. Total WBC count was 15,500 cells/mm³. The total bilirubin was 3.5 mg/dL, AST 250 U/L, ALT 181 U/L,

SAP 420 U/L, S albumin 4.2 g/dL. USG abdomen showed mass lesion in porta hepatis infiltrating into the CHD. CT abdomen showed mild hepatomegaly, minimal IHBRD with periportal and portocaval lymphadenopathy. EUS-guided FNAC from the portal mass and brush cytology from CHD stricture were negative for malignancy. NBI cholangioscopy showed focal irregular mucosal vascular pattern suggestive of malignancy. Cholangioscopic biopsy from stricture confirmed adenocarcinoma.

The patient was advised surgery. However, she declined surgery and underwent biliary self-expandable metallic stent placement.

Discussion

There is limited data on NBI cholangioscopy in bile duct diseases. In order to plan management of obstructive jaundice, it is important to determine whether the biliary stricture or filling defects seen on imaging are benign or malignant.^{7,8} NBI makes it possible to image the mucosal structures and mucosal microvessels better than cholangioscopy.

Fukuda *et al.* have reported that per oral cholangioscopy has better diagnostic accuracy and sensitivity than ERCP and tissue sample (93% vs. 78%).⁹ NBI combined with video cholangioscopy has further improved the quality and utility of images. The ability of NBI system to identify both surface mucosal structures and mucosal vessels is superior to conventional white-light cholangioscopy. By using NBI system, it is feasible to detect not only polypoidal lesions but also flat superficial lesions.¹⁰ The results of our case series also confirm this observation. However further studies are

needed to assess the role of NBI cholangioscopy in evaluation of bile duct cancers.

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