Non-operative management of endoscopic iatrogenic haemobilia: case report and review of literature

W. T. Siu*, C. H. Chau, B. Ka Bo Law, K. K. Yau, Y. W. Luk, M. KaWah Li

Combined Endoscopy Unit, Pamela Youde Nethersole Eastern Hospital, Chai Wan, Hong Kong, * Department of Surgery, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, N.T., Hong Kong.

Abstract

Haemobilia denotes an abnormal communication between a vessel of the splanchnic circulation and the biliary system. Patients typically presents with the triad of abdominal pain, upper gastrointestinal haemorrhage, and jaundice. Common causes for haemobilia are iatrogenic causes secondary to hepatobiliary system instrumentation and trauma. Management of patients with haemodynamic significant haemobilia is aimed at stopping bleeding, maintaining continuous flow of biliary system, and cure of the underlying aetiology. Iatrogenic haemobilia after ERCP polyethylene biliary endoprosthesis placement is extremely uncommon. Herein we present a case of iatrogenic haemobilia triggered by biliary endoprosthesis placement and was successfully managed by non-operative treatment. The management algorithm for a rational approach to haemobilia is discussed (Acta gastroenterol. belg., **2005**, 68, **428-431**).

Keywords: haemobilia, endoscopy, ERCP, angiographic embolization.

Introduction

Endoscopic placement of biliary endoprosthesis is originally devised for palliation of patients with malignant biliary obstruction (1). Beside other indication, as treatment of post-operative bile leak and benign biliary stricture, endoscopic placement of biliary endoprosthesis is also recognise as a safe and effective mean of biliary drainage in patients with choledocholithiasis who cannot tolerate sphincterotomy and/or stone extraction (2,3). Common complications related to endoprosthesis placement are stent clogging with resultant cholangitis, proximal and distal stent migration and pancreatitis. Herein we present a case of iatrogenic haemobilia triggered by biliary endoprosthesis placement and was successfully managed by non-operative treatment. The management algorithm for a rational approach to haemobilia is discussed.

Case Report

A 64-year-old man presented with 1-day history of upper abdominal pain, fever and passage of tea-colour urine. Blood biochemistry revealed raised white cell count and liver function profile showed obstructive pattern. Prothrombin time, activated partial thromboplastin time and platelet count were normal. Transabdominal ultrasonography of abdomen showed gallstones, common and intrahepatic biliary ductal dilatation with stones. Clinical diagnosis of cholangitis was established, intravenous broad-spectrum antibiotics was prescribed to patient. Haemodynamic status was normal and urgent endoscopic retrograde cholangiopancreatography (ERCP) was thus arranged. ERCP revealed dilated common bile duct with multiple CBD stones. As the patient became hypotensive (blood pressure 90/60) during the procedure, temporary biliary drainage was decided. A 10 F, 11-cm long polyethylene biliary endoprosthesis (Cotton-Leung biliary stent, Wilson-Cook Medical Inc., Winston-Salem, NC) was placed using a pusher tube over a guide wire (0.35 inch Protector Wire Guide, Wilson-Cook Medical Inc., Winston-Salem, NC) with a guiding catheter for temporary drainage (Fig. 1a). No sphincterotomy was performed before endoprosthesis placement. Good bile drainage was observed after endoprosthesis insertion. Clinical condition and liver function improved after the procedure and elective definitive treatment was planned. However, the patient developed another attack of cholangitis one week after stent placement. White cell count rose to 41.1x10/L and haemoglobin dropped from 12.7g/dl to 8.4g/dl and 3 units of blood were transfused. Liver function tests were markedly deranged with obstructive pattern. Another emergency ERCP revealed fresh bleeding and blood clots at the ampullary orifice. Biliary endoprosthesis was blocked by fresh and organized clot. The stent was removed and cholangiography performed revealed multiple filling defects in common bile duct compatible with stones and clots. (Fig. 1b) Sphincterotomy was fashioned and part of blood clots and stones were retrieved by Dormia basket. A nasal-biliary (NB) drainage catheter (Leung Nasal Biliary Drainage Catheter, Wilson-Cook Medical Inc., Winston-Salem, NC) was inserted for drainage and monitoring at the end of the procedure.

Post-ERCP the patient developed tachycardia and fresh blood keep draining from the NB catheter, urgent hepatic angiography was thus performed. It demonstrated a contained area of contrast extravasation from a branch of inferior segmental branch of right hepatic

Correspondence to Dr W.T Siu, Department of Surgery, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, N.T., Hong Kong.
E-mail: wtsiu@netvigator.com

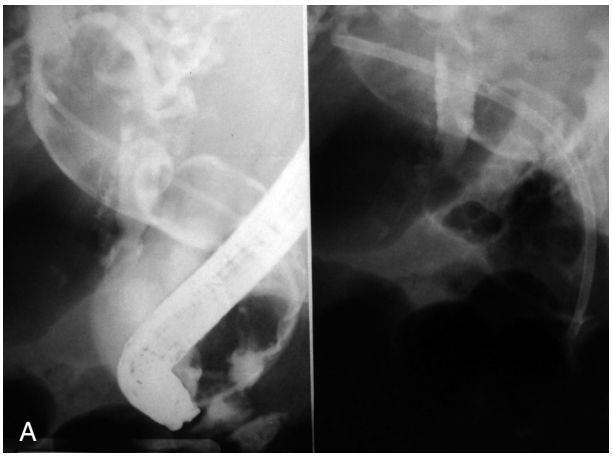

Fig. 1a. — First ERCP revealed common duct stones and insertion of biliary endoprosthesis.

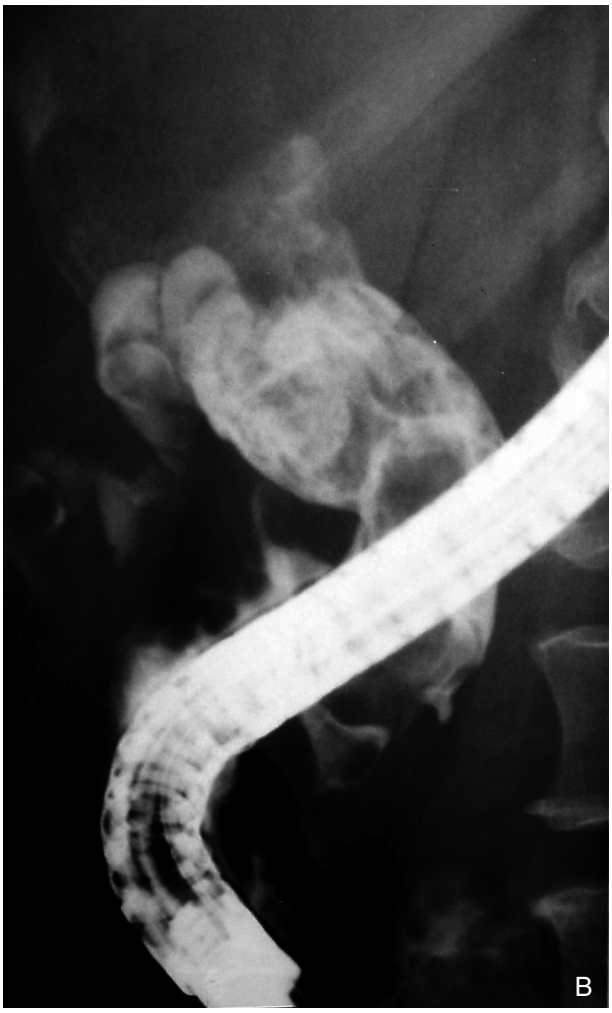

Fig. 1b. — Second ERCP noted multiple common bile duct filling defects and haemobilia.

artery that was compatible with a pseudoaneurysm (Fig. 2). Superselective coil embolization of the injured vessel was performed. Completion angiography showed obliteration of the pseudoaneurysm and the remaining arterial branches of the inferior segment of right lobe

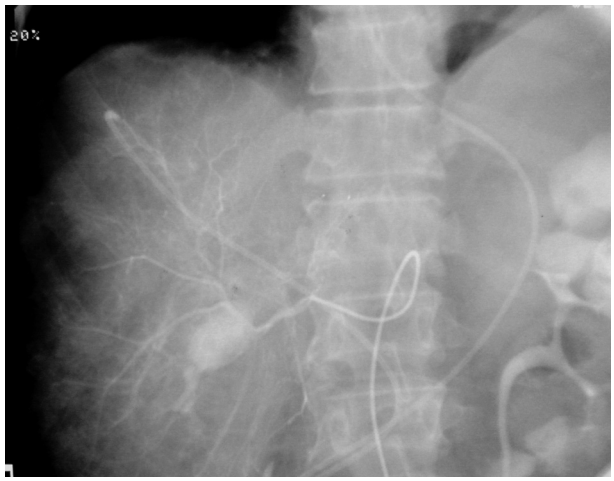

Fig. 2. — Hepatic angiography demonstrated a pseudoaneurysm from a branch of inferior segmental branch of right hepatic artery.

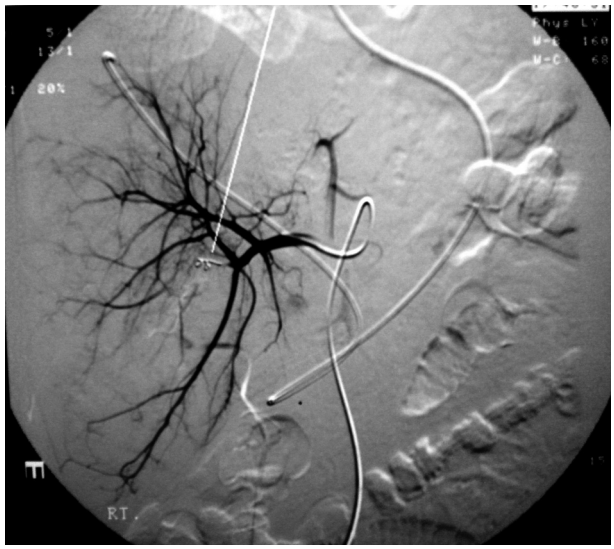

Fig. 3. — Superselective catherization of injured artery and microcoil embolization.

were preserved (Fig. 3). The patient's haemodynamic condition was stabilized after embolization and the NB drain effluent restored to clear bile. Naso-biliary cholangiogram performed two days later showed a clear biliary system and the NB drain was then removed. The patient made an uneventful recovery and was discharged five days after the second ERCP.

Two weeks later, an abdominal computerized tomography (CT) was performed to investigate for unexplained fever and showed a 5-cm hypoattentuated lesion with peripheral enhancement at the anterior segment of right lobe of liver compatible with central necrosis and inflammatory changes. (Fig. 4) The temperature was subsided with a course of parental antibiotic. Second follow-up abdominal CT scan was performed three months later demonstrated the hypoechoic lesion in right lobe of liver had resolved. Since then he remained asymptomatic for the subsequent three years.

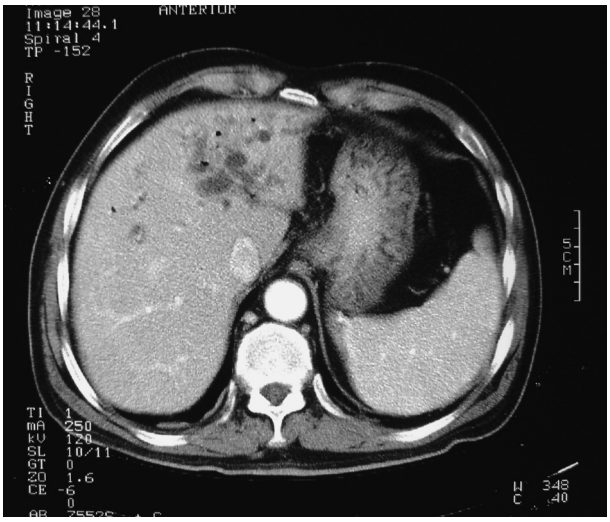

Fig. 4. — CT scan revealed liver necrosis at anterior segment of right lobe of liver.

Discussion

Haemobilia occurs when there is an abnormal communication between a vessel of the splanchnic circulation and the biliary system (4). Quinke described haemobilia typically presents with the triad of abdominal pain, upper gastrointestinal haemorrhage, and jaundice (5). Common causes for haemobilia are iatrogenic causes secondary to hepatobiliary system instrumentation and trauma.4 The reported incidence of haemobilia is 0.06 to 1% after percutaneous liver biopsy, 1-4% after percutaneous cholangiography, and 2-14% after percutaneous biliary drainage (4,6,7). Other rare causes for haemobilia are cholangitis (8), biliary stones (9), bleeding tendency (10), vascular malformations, trauma (11) and tumours. Haemobilia can also complicate laparoscopic cholecystectomy (12), open biliary procedures and radiofrequency thermal tumour ablation (13).

Iatrogenic haemobilia after ERCP polyethylene biliary endoprosthesis placement is extremely uncommon (14,15). One previous report described a patient with Billroth II gastrectomy and pancreatic pseudocyst complicated with massive haemobilia 3-weeks after ERCP endoprosthesis insertion, and the patient was treated by operative ligation of hepatic artery pseudoaneurysm and bilio-enteric bypass (14). The postulated injury mechanism was the long (15-cm) endoprosthesis employed might had been wedged into the hepatic parenchyma with the resultant hepatic artery erosion. In the present report, the deep-seated hepatic artery injury might be related to guide wire or guiding catheter perforation of the inflamed bile ductal wall. Biliary tract inflammation attributed to stone obstruction or endoprosthesis in the biliary tract might also predispose to hepatic artery pseudoaneurysm formation.

Management of patients with haemodynamic significant haemobilia is aiming at stopping bleeding, maintaining continuous flow of biliary system, and cure of the underlying etiology (4).

ERCP can verify the diagnosis of haemobilia, on may also perform sphincterotomy and insertion of NB drain for bile drainage and monitoring (16,17). Blood clot clogging of NB catheter can be prevented by aspiration and gentle irrigation. Completion cholangiogram can also be performed via NB catheter to confirm the patency of the biliary tree.

Clot retention in biliary tree can lead to acute biliary obstruction, cholangitis, cholecystitis, or pancreatitis (4) As restoration of bile flow is a prerequisite for the dissolution of clots by bile's fibrinolytic activity (8), sphincterotomy, percutaneous biliary catheter exchange, or insertion of NB catheter can offer therapeutic and monitoring functions.

Hepatic angiography has been established as the preferred diagnostic and therapeutic modality in the management of persistent or recurrent haemobilia, and up to 95% of the vascular abnormality could be identified and managed by angiography (19-22). Embolization of pseudoaneurysm is facilitated by superselective arterial catheterization and release of either temporary or permanent agents for embolization. Recanalization of the vessel occurs in about 2 weeks when a temporary agent such as gelatine sponge is employed (23). Recanalization of hepatic vasculature might avoid the complication of hepatic necrosis caused by metallic microcoil embolization as demonstrated in our case.

In summary, haemobilia induced by pseudoaneurysm of hepatic artery after endoscopic biliary polyethylene stent placement is a rare complication. Prompt diagnosis followed by NB catheter drainage and angiographic embolization could reduce the morbidity of this unusual but potentially fatal complication.

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