Int J Clin Exp Med 2018;11(8):8699-8703
www.ijcem.com /ISSN:1940-5901/IJCEM0068746

Case Report

Post-ERCP multiple bleeding and related treatment in a decompensated cirrhotic patient with choledocholithiasis: a case report

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Received November 7, 2017; Accepted May 26, 2018; Epub August 15, 2018; Published August 30, 2018

Abstract: Endoscopic retrograde cholangiopancreatography (ERCP) has become a primary tool for the treatment of biliary tract disease. We presented an 89-year-old Chinese man with choledocholithiasis. This patient had a history of liver decompensated cirrhosis. After 2 endoscopic biliary procedures, common bile duct stones clearance was obtained. This patient began to appear nasal bile duct drew out blood and hematochezia. Emergency duodenoscopy disclosed severe ampullary bleeding and related treatment with electrocoagulation and injection of diluted epinephrine was required. Seven days later, this patient developed an episode of massive hematochezia with hemodynamic instability. Selective catheterization of celiac artery was done and contrast extravasation from a branch of the right hepatic artery. This artery was successfully embolised by two spring coils. The multiple bleeding from ampulla and a branch of the right hepatic artery after ERCP is a serious and rare complication. We presented here a case of multiple bleeding following ERCP along with different therapeutic options.

Keywords: ERCP, complication, cirrhosis, common bile duct stone

Introduction

Liver cirrhosis is a serious and end-stage liver disease. The incidence of choledocholithiasis in cirrhotic patients is three times higher than that in noncirrhotic patients. Acute obstructive suppurative cholangitis (AOSC) and acute cholangitis have been reported in 19% and 44% of cirrhotic patients with choledocholithiasis, respectively [1]. Because of poor hepatic reserve, surgical treatment of choledocholithiasis in patients with cirrhosis has high morbidity (66.7%) and mortality rates (44.4%). Laparoscopic common bile duct exploration may be effective in these patients with Child-Pugh A or B, but the conversion from laparoscopic to open surgery is unavoidable with severe adhesions and massive hemorrhage. Percutaneous biliary drainage in patients with decompensated cirrhosis can cause bile leakage and predispose to infection [2]. So, the better approach to therapy for common bile duct (CBD) stones of cirrhotic patient should be needed.

ERCP is an important diagnostic and therapeutic tool used for biliary tract disease. As a minimally invasive technique, ERCP has been recommended as the first choice for treatment of choledocholithiasis in the general population, and has also been reported to be useful in a few cases of cirrhosis. However, ERCP adverse events, such as bleeding is statistically higher among patients with cirrhosis. Endoscopic sphincterotomy (EST) is also associated with increased bleeding risks [3]. Both ampulla and a branch of the right hepatic artery bleeding in a decompensated cirrhotic patient with choledocholithiasis after ERCP is a potentially serious, rare complication. Not many cases are reported in the literature. We present here a case of both ampulla and a branch of the right hepatic artery bleeding following ERCP along with a review of the literature and possible therapeutic options.

Case report

The first stage (2017.01.13--2017.06.26)

An 89-year-old man was admitted to the Second Hospital Affiliated to Jiaxing University (Jiaxing, China) because of severe, intermittent upper abdominal pain and marked cutaneous-mucous jaundice on Jan 13, 2017. This patient had a history of liver cirrhosis with chronic schistoso-

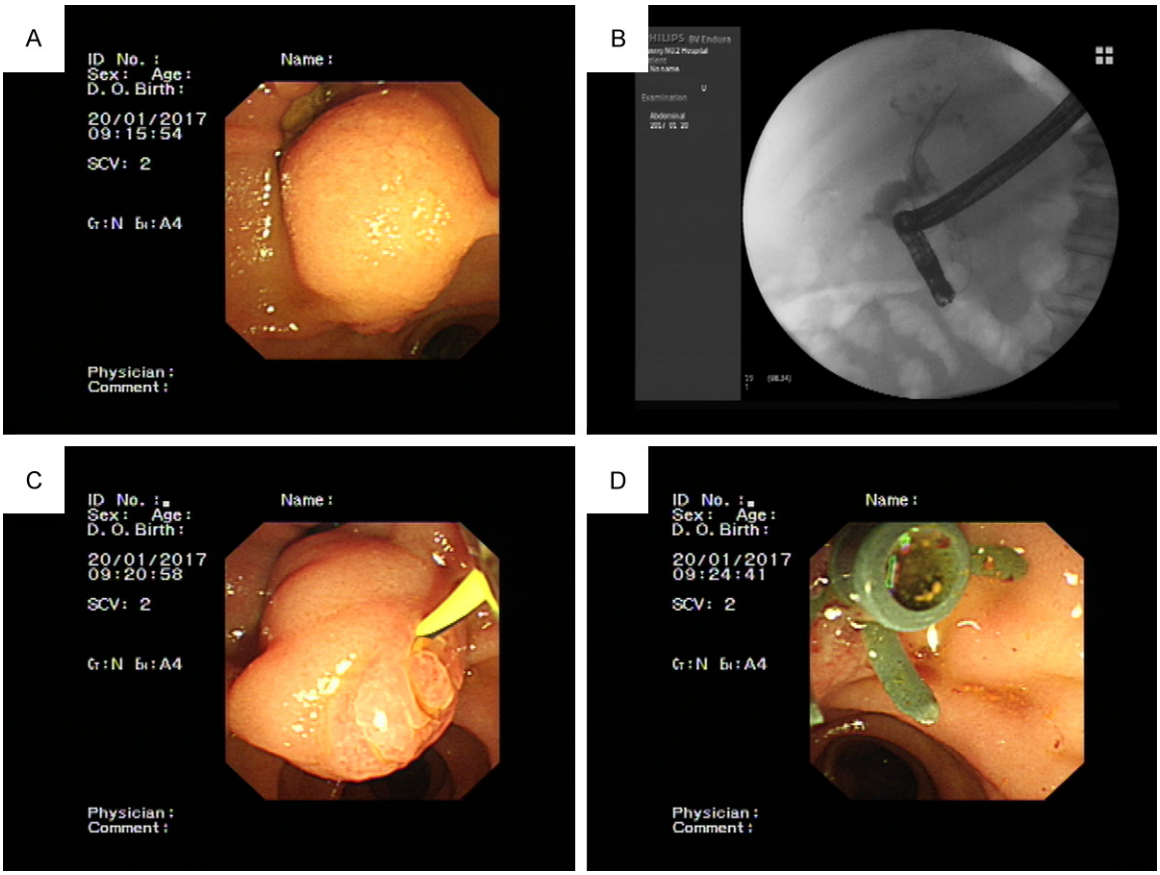

Figure 1. A. Tumescent duodenal papilla. B. Multiple filling defects by cholangiography. C. Insert guide wire. D. Placed plastic biliary stent.

miasis. Laboratory tests showed abnormal liver function and raised inflammatory markers. Blood work revealed total bilirubin (TBIL) 104.0 μmol/L, direct bilirubin (DBIL) 67.7 μmol/L, serum albumin 23.3 g/L, prothrombin time (PT) 17.6 s, activated partial thromboplastin time (APTT) 52.3 s, C reactive protein (CRP) of 76.22 mg/L, aspartate aminotransferase (AST) 123 IU/L, alanine aminotransferase (ALT) 77 IU/L. An abdominal computed tomography (CT) scan revealed a retained 10 millimetre calculus in lower segment of common bile duct and presence of ascites. Following extensive discussion and consideration, a decision was made to proceed to elective ERCP. Simultaneously, antibacterial, liver protection, dieresis and transfusion of albumin were applied. ERCP was undergone on Jan 20, 2017. Poor coagulation funcion and Child-Pugh Class C had a higher rate of adverse events after ERCP, so we decided to just put one biliary stent this time. A 6 Fr/7 cm plastic stent was placed in CBD to reduce bilirubin levels and make subsequent removal easier for this large stone (**Figure 1**) [4].

The second stage (2017.06.27--2017.08.05)

This patient was secondly admitted to our hospital on Jun 27, 2017, because he was worried about stent occlusion and required to remove the CBD stone. Blood work revealed TBIL 31.5 μmol/L, DBIL 8.1 μmol/L, serum albumin 27.2 g/L, PT 15.4 s, APTT 44.9 s, AST 44 IU/L, ALT 17 IU/L. Based on a careful preoperative evaluation, the patient was treated with ERCP on Jul 03, 2017. We noted that the plastic biliary stent had been blocked (**Figure 2**). So we took out it with a snare. EST and Endoscopic papillary balloon dilation (EPBD) were used to dilate papilla orifice for removing stones. Stones were removed with baskets. Endoscopic nasobiliary drainage (ENBD) was performed in order to prevent the occurrence of pancreatitis. Moderate bleeding was observed during procedure which stopped spontaneously within three minutes.

Two days after the ERCP was performed, the patient began to appear hematochezia. The nasal bile duct drew out blood of about 100 ml.

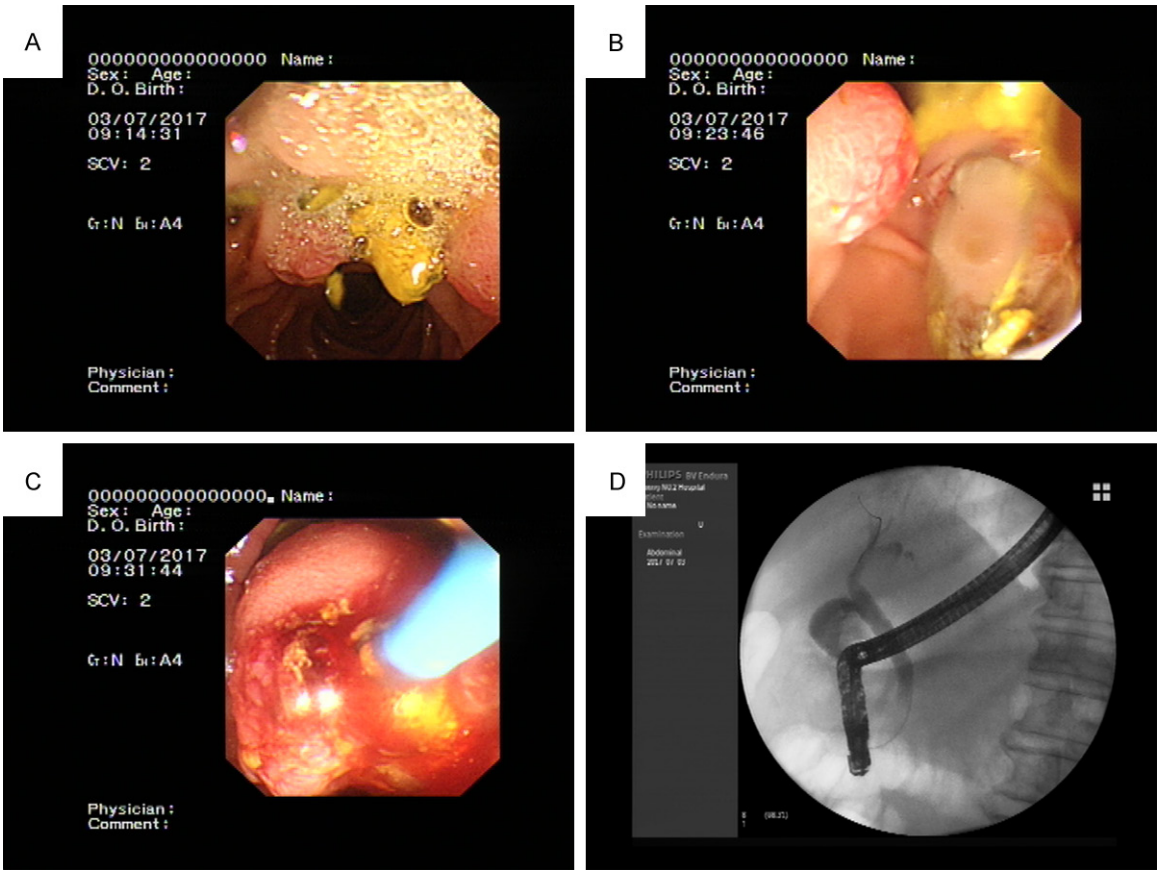

Figure 2. A. Blocked plastic biliary stent. B. Dilated papilla by EPBD. C. Performed ENBD. D. Cholangiography.

An urgent laboratory test showed a marked drop in hemoglobin from 127 g/L to 89 g/L. The patient was diagnosed with post-ERCP haemorrhage. The ENBD was pulled out. Emergency duodenoscopy disclosed severe ampullary bleeding. Endoscopic treatment was required with electrocoagulation and injection of diluted epinephrine (**Figure 3**). Hemodynamic instability was corrected with intravenous fluids, 2.5 units of packed red blood cells, and 460 ml of fresh frozen plasma.

Seven days after post-ERCP bleeding, this patient developed an episode of massive hematochezia, and then was transferred to the Emergency Intensive Care Unit for stabilization and monitoring. An urgent laboratory tests showed a marked drop in hemoglobin from 120 g/L to 79 g/L. He was immediately taken up for abdominal angiography through right common femoral artery. Selective catheterization of celiac artery was done with catheter system, which revealed contrast extravasation from a branch of the right hepatic artery (**Figure 4**). The bleeding stemmed from accidental puncture by guidewire of intrahepatic biliary duct and resulting breakage of small intrahepatic artery. This artery was successfully embolized by two spring coils with 3×2.5 micrometer. Subsequently, his hematocrit and hemoglobin stabilized and he was discharged from the hospital after three weeks.

Discussion

Patients with cirrhosis can be divided into those who have compensated or decompensated disease. They usually have poor synthetic function of the liver, leading to an elevated coagulation profile or thrombocytopenia, and can cause high rates of bleeding. In addition, previous reports suggested that performing EST was associated with an increased the risk of ERCP-related bleeding. Consequently, a cirrhotic patients undergoing ERCP may be predisposed to haemorrhage [5]. By a retrospective comparative analysis, the bleeding rate associated with ERCP in Child-Pugh C patients was significantly

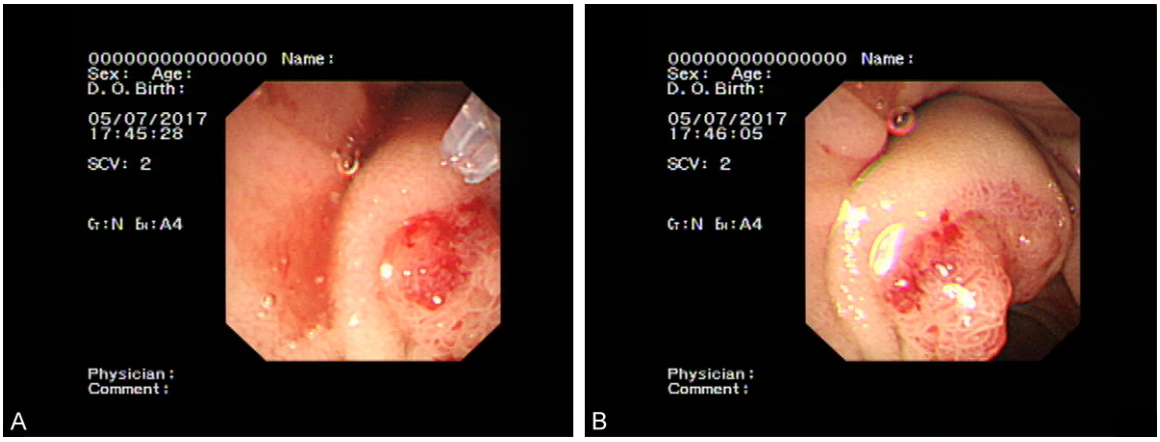

Figure 3. A. Injection of diluted epinephrine. B. Electrocoagulation.

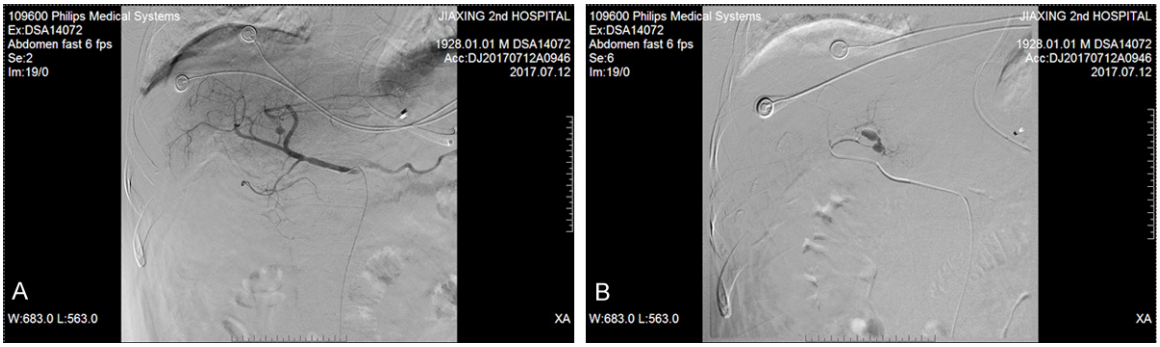

Figure 4. A, B. Contrast extravasation from a branch of the right hepatic artery.

higher (25%) than in non-cirrhotic patients (3%) [6]. Patients with Child-Pugh C cirrhosis had significantly more bleeding than patients with Child-Pugh A or B [7]. A national inpatient database study revealed a higher risk of post-ERCP bleeding (2.3% vs. 1.0%) in decompensated cirrhotic patients compared to compensated controls. On multivariable analysis, decompensated cirrhosis, compensated cirrhosis, and biliary sphincterotomy were independently associated with increased risk of post-ERCP bleeding [2, 8]. These patients with a Model for End-stage Liver Disease (MELD) score above 11.5 developed a post-ERCP bleeding with a 47% rate [9]. Therefore, it is important to improve liver reserve function before performing ERCP in patients with cirrhosis and decrease the risk for bleeding.

Bleeding associated with ERCP was sometimes potentially serious event which required prompt identification and treatment. The etiology for post-ERCP bleeding is not identical. EST bleeding was the most common and the most important contributing factor to the increased morbidity and mortality. There are some ways to deal with post-ERCP bleeding. Mild or moderate bleeding during the procedure usually stops spontaneously, but if it does not stop in three minutes, endoscopic treatment with injection of diluted epinephrine, application of hemostatic clips, or electrocoagulation may be required. Acute or delayed massive hemorrhage needs alternative therapeutic ways as endoscopic hemostasis is impossible due to obscured the endoscopic field and hemodynamic instability. Surgery needs to be considered in approximately 10% of these patients but is associated with high mortality. A growing amount of evidence has been reported on usefulness of angiographic embolization in the event of recurrent and refractory post-ERCP hemorrhage [5].

In this case, due to the presence of hyperbilirubinemia, the treatment for reducing jaundice was chosen by placing plastic biliary stent. One

week later, this stent was effective in reducing bilirubin levels. Irrespective of its etiology, prolonged bile duct obstruction, as manifested with deep jaundice was a more significant predictor of bleeding. EST risk for bleeding was high in decompensated cirrhotic patient, especially in Child-Pugh C patient who had serious coagulopathy and liver dysfunction. Patients with advanced cirrhosis who required EST should be treated with fresh frozen plasma or vitamin K to maintain the INR within the proper range [10]. Therefore, we decided stones would be removed from CBD by ERCP after the improvement of liver function.

In the current case, two bleeding spots were existed. One was ampulla. The other was intrahepatic small branch of right hepatic artery breaking which was punctured by guide wire during endoscopy procedure. There are several experiences that need to be summed up. Firstly, when large CBD stone extraction is difficult, a period of plastic stent may make subsequent removal easier. Secondly, a thorough risk evaluation should be performed prior to performing ERCP towards decompensated cirrhotic patients. The amelioration of liver function after therapeutic intervention can obviously reduce the risk of bleeding. Thirdly, there may be multiple bleeding points after ERCP; the method of angiography is available, if necessary.

In conclusion, this case showed multiple bleedings from ampulla and a branch of the right hepatic artery in a decompensated cirrhotic patient with choledocholithiasis after initial ERCP therapy. We optioned electrocoagulation, injection of diluted epinephrine, and embolization to successfully control massive after ERCP bleeding.

Disclosure of conflict of interest

None.

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