Hemobilia Causing Acute Cholecystitis and Pancreatitis after Percutaneous Liver Biopsy: A Case Report and Review of the Literature

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Keywords

Bleeding · Complication · Biliary · Pancreatitis · Biopsy

Abstract

We report a case of a 75-year-old woman who developed acute cholecystitis and acute pancreatitis due to hemobilia after a percutaneous liver biopsy. She was admitted to our hospital 13 days after the procedure. The patient presented with cholangitis and acute biliary pancreatitis and underwent endoscopic retrograde cholangiopancreatography (ERCP). Active hemobilia was observed during the ERCP, and sphincterotomy and stent placement were carried out. Angiography was performed because of ongoing bleeding and demonstrated multiple arterioportal fistulas. The bleeding vessel was successfully embolized through an angiographic catheter with microcoils and Histoacryl glue.

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Introduction

Liver biopsy is a valuable diagnostic tool in many acute and chronic liver diseases. The complication rate is low, but it may be affected by the number of attempts, physician experience, and coagulation parameters of patients [1]. Complications commonly occur in the first 24 h [2]. Cirrhosis and malignancy may also increase the complication rate [3]. The risk of bleeding after percutaneous liver biopsy is less than 1% [3]. Liver biopsy can be done using a Menghini type needle or Tru-Cut needle. The rate of bleeding is 1.3 and 2.2%, respectively [4]. In advanced

stage of cirrhosis and chronic liver disease, a Tru-Cut needle is recommended for preserving tissue integrity. Bleeding can manifest as intraperitoneal bleeding or intrahepatic or subcapsular hematoma [5]. The emergence of bleeding as hemobilia is very rare after percutaneous liver biopsy. Piccinino et al. [2] reported only 4 hemobilia patients in a series of 68,276 patients, with no deaths.

Hemobilia from arterioportal fistula causing acute cholecystitis and pancreatitis is a rare complication of percutaneous liver biopsy. Gastrointestinal bleeding secondary to hemobilia is a usual presentation but acute pancreatitis and cholecystitis are extremely rare. The following case illustrates a presentation that was managed successfully with multidisciplinary approach.

Case Report

A 75-year-old female patient presented to our emergency department with black stools, abdominal pain, fever, and yellowing of the skin. Thirteen days earlier, she had undergone an ultrasound-guided percutaneous liver biopsy with a Tru-Cut needle for chronic hepatitis B at another hospital without immediate complications. Before the biopsy, hemoglobin level, platelet count, prothrombin time, bilirubin, and cholestatic enzymes were normal. She was not on antiplatelet or anticoagulant medication. There was no remarkable medical history except diabetes mellitus and hypertension. Liver biopsy demonstrated significant necroinflammatory activity (Ishak 15/18) and severe fibrosis (Ishak 5/6). On admission, abnormal physical findings included fever, icteric sclera, and right upper quadrant and epigastric abdominal tenderness. Rectal examination disclosed melena. Murphy sign was positive. The laboratory findings were: Hb: 7.5 g/dL (11.2–15.7), ALT: 135 U/L (10–41), ALP: 244 U/L (35–104), total bilirubin: 7.1 mg/dL (0.2–1.2), direct bilirubin: 6.0 mg/dL (0–0.2), GGT: 595 U/L (6–60), amylase:

Fig. 1. Hepatic angiography shows two fistulas between the right hepatic artery branches and portal system (APF1 and APF2).

Fig. 2. Hepatic angiography shows a new fistula between the right hepatic artery branch and portal vein.

531 U/L (28–100), lipase: 702 U/L (13–60). Abdominal ultrasonography demonstrated thickened gallbladder wall with enlarged lumen with multiple large stones and dilated main hepatic and common bile ducts. The patient was hospitalized with the diagnosis of acute cholecystitis and pancreatitis due to hemobilia as a complication of percutaneous liver biopsy.

The patient was followed in the intensive care unit and was treated with omeprazole, somatostatin, and broad-spectrum antibiotics parenterally. She received a total of three units of erythrocyte suspensions. Esophagogastroduodenoscopy revealed non-bleeding esophageal varices (F1) and no sign of active bleeding or bleeding site origin. Endoscopic retrograde cholangiopancreatography (ERCP) was performed due to dilated bile ducts and acute biliary pancreatitis. Endoscopic biliary sphincterotomy was performed, and active bleeding from the common bile duct was seen. Large blood clots were extracted with a 15-mm balloon catheter (Microvasive Endoscopy Boston Scientific, Natick, MA, USA). Because of ongoing active bleeding from bile ducts, two 10-Fr, 10-cm plastic stents (Microvasive Endoscopy Boston Scientific) were placed into the common bile duct. The patient underwent urgent hepatic arterial angiography which revealed two fistulas between the right hepatic artery and right portal vein branches communicating with the biliary tree (Fig. 1). In the same session, embolization with nine Hilal Embolization Microcoils (Cook Medical, Bjæverskov, Denmark) was performed. One day later, her abdominal pain recurred and her hemoglobin level decreased. Angiography was repeated 3 days after the initial procedure. Another weak fistula between the right hepatic artery branch and portal system was observed (Fig. 2). Embolization was performed with a superselective catheterization procedure by using 1.0 mL of Histoacryl glue mixed with 1.0 mL of lipiodol. After a second therapeutic angiographic procedure, the bleeding stopped, and liver functions and clinical findings improved. She was discharged after 15 days without further bleeding. Pancreatitis was not associated with gallbladder stones, and elective cholecystectomy was recommended.

Discussion

Hemobilia is defined as bleeding into the biliary tree. It arises where a fistula has developed between a vessel of the splanchnic circulation, and the intrahepatic or extrahepatic biliary tree. The causes of hemobilia include iatrogenic and accidental trauma, gallstones, inflammation

of gall bladder or pancreas, vascular malformations, and tumors such as hepatoma and cholangiocarcinoma. Percutaneous interventions for liver such as liver biopsy, percutaneous transhepatic cholangiography, and radiofrequency ablation of liver tumors are the leading causes of hemobilia. The average time for hemobilia occurrence is 5 days after liver biopsy. In our case, the hemobilia developed 13 days after the procedure. It was complicated by acute pancreatitis and cholecystitis. In fact, liver trauma is the most common cause of arterioportal fistula. The incidence of arterioportal fistula after liver biopsy was reported as 0.008%. This ratio is quite low [6–8]. Cholangitis and acute cholecystitis may be developed due to the obstruction of the biliary tree by the clot, as described previously in the literature [9, 10].

Acute pancreatitis is a rare complication of hemobilia. If a large volume of hemobilia occurs, and the rate of bleeding exceeds the intrinsic fibrinolytic capacity of the bile, clot formation in the biliary tree occurs and passage of blood clots might precipitate pancreatitis with a similar mechanism to gallstone pancreatitis. In our case, amylase and lipase were also high with epigastric pain and tenderness compatible with acute pancreatitis. Dean and Falconer mentioned this association for the first time in 1912 [11]. However, the first documented case report appeared in 1975 [12]. In the published literature, we found 37 cases of acute pancreatitis induced by hemobilia [5, 11–44]. Nineteen cases were secondary to percutaneous liver biopsy, 4 cases due to hepatic artery aneurysm, 4 cases were secondary to hepatocellular carcinoma, and 3 cases due to post-cholecystectomy. The other causes were reported as one case each (hemorrhagic acalculous cholecystitis after accidental trauma, biliary papillomatosis, disseminated tuberculosis, cystic artery aneurysm, hepatic cryosurgery, percutaneous transhepatic cholangiography), and in the remaining cases the etiology was unknown. Ten of them were treated with ERCP. However, 10 of them were treated with transarterial embolization (TAE) successfully. Three cases were treated with a combination of ERCP

and TAE. Three patients needed surgical management. Two patients were treated conservatively; in other cases, the treatment remained unknown.

In some cases, hemobilia may be self-limited but a therapeutic procedure is often required. ERCP is used successfully in the diagnosis and treatment of hemobilia. ERCP and biliary sphincterotomy, with or without nasobiliary drainage and biliary stenting, would be effective in removing clots and relieving the associated complications such as cholangitis and pancreatitis [6]. In our case, during ERCP, two plastic stents were inserted for drainage. Selective hepatic arterial embolization with angiography is a procedure recommended in the treatment of hemobilia. The therapeutic success rate is above 90% [7, 8]. Surgical management of hemobilia may be required in continuing bleeding with high mortality.

Cases of pancreatitis show improvement after treatment with endoscopic sphincterotomy [5, 14, 18]. In our case, pancreatic enzyme levels decreased and pancreatitis resolved after endoscopic sphincterotomy. However, in many cases angiographic embolization of a bleeding vessel may be required like in our case [15, 16, 17]. Superselective transcatheter arterial embolization, a very effective modality to control bleeding is used as a definitive treatment or a palliative treatment such as a bridge to surgery. Its success rate is greater than 95%. Contraindications to angiographic embolization include portal vein thrombosis, as the dual blood supply is necessary for liver after embolization. Assessing portal vein patency prior to hepatic arterial embolization is therefore very important. Complications after the procedure include complications of embolization or arterial access. Complications of the embolization process include hepatic necrosis, hepatic abscess formation, gallbladder necrosis or fibrosis, and

arterial thrombosis secondary to intimal dissection. Complications of arterial access which may be seen in all angiographic procedures are femoral artery pseudoaneurysm and inguinal and retroperitoneal hematoma [10, 20].

In the literature, cases of acute pancreatitis due to hemobilia were usually seen in patients over the age of 60. The youngest case was a 49-year-old man with renal failure due to hypertension [16]. Advanced age seems to increase the risk of complications after liver biopsy.

Although it is a very rare cause of acute cholecystitis and pancreatitis, arterioportal fistula causing hemobilia should be considered in the differential diagnosis of acute cholecystitis and pancreatitis after percutaneous liver biopsy even 13 days later. Especially in elderly patients, liver biopsy indications must be clear, and all patients must be followed closely for early and late complications after the procedure. Also, more attention must be paid if they have comorbidities.

Statement of Ethics

The informed consent form was signed by the patient.

Disclosure Statement

The author has no relevant financial or nonfinancial relationships to disclose.

Funding Sources

This project received no funding.

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