



Hemobilia and other complications caused by percutaneous ultrasound-guided liver biopsy

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Received: November 14, 2013 Revised: February 12, 2014

Accepted: March 6, 2014

Published online: April 7, 2014

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Zhou HB. Hemobilia and other complications caused by percutaneous ultrasound-guided liver biopsy. *World J Gastroenterol* 2014; 20(13): 3712-3715 Available from: URL: <http://www.wjgnet.com/1007-9327/full/v20/i13/3712.htm> DOI: <http://dx.doi.org/10.3748/wjg.v20.i13.3712>

Abstract

Hemobilia accounts for approximately 3% of all major percutaneous liver biopsy complications, and rarely results from arterioportal fistula. We report a patient who suffered from four complications over 11 d after ultrasound-guided percutaneous liver biopsy: hemobilia, acute pancreatitis, acute cholecystitis, and multiple stomach ulcers. Digital subtraction angiography was done after consultation with doctors, and showed obvious arteriovenous fistula of the right liver. The hepatic artery was selected and embolized by spring orbs. The active bleeding was stopped after embolization of the hepatic artery. The patient was discharged home on day 12 after embolization and remained well.

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Key words: Hemobilia; Acute pancreatitis; Acute cholecystitis; Stomach ulcers; Ultrasound-guided liver biopsy

Core tip: We report a patient who suffered from four complications over 11 d after ultrasound-guided percutaneous liver biopsy: hemobilia, acute pancreatitis, acute cholecystitis, and multiple stomach ulcers. Digital subtraction angiography was done after consultation

INTRODUCTION

Percutaneous ultrasound-guided liver biopsy is a common practice in the differential diagnosis and treatment of chronic liver disease. The rates of major complications and mortality are 2%-4% and 0.01%-0.33%, respectively. Arterioportal fistula as a complication of percutaneous liver biopsy is infrequently seen and normally asymptomatic. Hemobilia accounts for approximately 3% of overall major percutaneous liver biopsy complications, and rarely results from arterioportal fistula. We report a patient who suffered from four complications over 11 d after ultrasound-guided percutaneous liver biopsy: hemobilia, acute pancreatitis, acute cholecystitis, and multiple stomach ulcers.

CASE REPORT

A 57-year-old woman underwent ultrasound-guided liver biopsy because of abnormal liver function for 4 years. She experienced acute epigastric pain and melena without hematemesis 7 d after the procedure. Type-B ultrasound showed cholecystitis, cholangitis, and siltation of biliary mud in the gallbladder. Enhanced computed tomography showed cholangitis, cholelithiasis, high-density reflection in the common bile duct, and mild cholangiec-

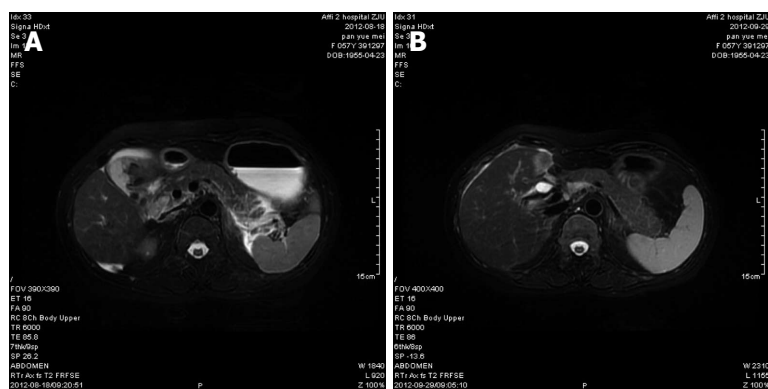


Figure 1 Magnetic resonance cholangiopancreatography. A: Magnetic resonance cholangiopancreatography (MRCP) revealed pancreatitis, cholelithiasis, cholecystitis, and cholangiectasis and abnormal signals that were considered to indicate muddy stone or hematocoele in the common bile duct and hepatic duct; B: After treatment, MRCP showed there was little exudation in the gallbladder fossa, and bile ducts in the left liver were thickened.

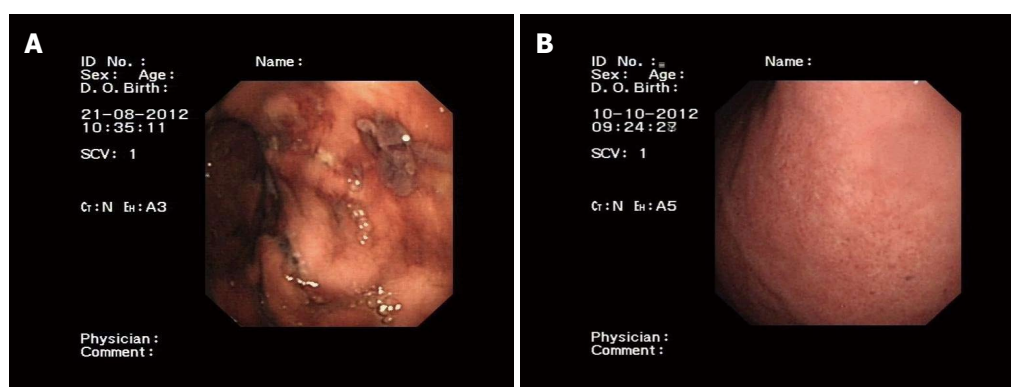


Figure 2 Gastroscopy. A: Gastroscopy showed multiple gastric ulcers; B: After treatment, gastroscopy revealed chronic superficial gastritis, and no gastric ulcers.

tasis. After antibiotics, proton pump inhibitors and analgesics, the patient had no obvious improvement and had severe abdominal pain, hematemesis, and bloody stools. After fasting, gastrointestinal decompression and fluid replacement, the patient was hospitalized. In the following days, she developed worsening right epigastric pain and 1500 mL red bloody stools. Her hemoglobin level decreased from 134 to 73 g/L (normal range: 113-151 g/L). Serum amylase was 614 U/L (normal range: 22-80 U/L), and total bilirubin was 65 mg/dL (normal range: 0.1-1.2 mg/dL). Ultrasound examination demonstrated enlargement of the gallbladder and the possibility of empyema. There was a low echo-level mass (hematocoele) in the common bile duct, and distension of the pancreatic duct. Magnetic resonance cholangiopancreatography (MRCP) revealed pancreatitis, cholelithiasis, cholecystitis, cholangiectasis, and abnormal signals indicating muddy stone or hematocoele in the common bile duct and hepatic duct (Figure 1). The gastroscope showed multiple gastric ulcers and bleeding duodenal papilla (Figure 2). The epigastric pain was decreased after percutaneous ultrasound, which was guided by the tube drainage of the tumescent gallbladder. About 100-250 mL of red bile was drained within 1 d. Her hemoglobin level decreased to 52 g/L after 4 d in hospital. She received 4 U packed red blood cells. Digital subtraction angiography (DSA) was performed, which showed obvious arteriovenous fistula of the right liver. The hepatic artery was selected and embolized by spring orbs. The active bleeding was stopped after embolization of the hepatic artery. The pa-

tient was discharged home on day 12 after embolization and remained well. After 2 mo, her hemoglobin level increased to 140 g/L. Serum amylase was 68 U/L, and total bilirubin was 0.75 mg/dL. MRCP showed little exudation in the gallbladder fossa and the bile ducts in the left liver were thickened. Gastroscopy revealed chronic superficial gastritis (Figure 3).

DISCUSSION

Hemobilia is often considered to occur in liver injury and after calculus removal from the bile duct. With the application of traumatic examination of the liver and endoscopic technology, the traumatic intrahepatic biliary bleeding that is induced by iatrogenic trauma such as percutaneous transhepatic cholangial drainage has gradually increased^[1]. Traumatic intrahepatic biliary bleeding may not occur during the procedure, but possibly a few days later. One needs to be extra vigilant in the clinic. Due to the close relationship of the intrahepatic bile duct and hepatic artery and portal vein, a puncture needle can easily injury all of these structures to form arteriovenous fistula, arterial bile duct fistula, and venous bile duct fistula. Venous bile duct fistula bleeding can often stop spontaneously because of the low venous pressure. When patients have biliary obstruction and infection, the hepatic arterial blood flow increases, and hyperplasia and distension of the arterial peribiliary vascular plexus and the branch of the hepatic artery in periportal areas can lead to bile duct fistula hemorrhage. This is the patholog-

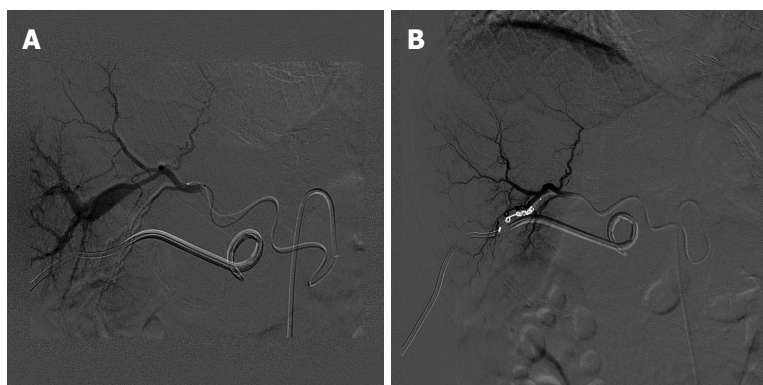


Figure 3 Digital subtraction angiography. A: Digital subtraction angiography showed obvious arteriovenous fistula of the right liver; B: There was no obvious arteriovenous fistula of the right liver after the hepatic artery was selected and embolized by spring orbs.

ical basis of biliary bleeding. Blood clots formed in the bile duct can cause obstructive jaundice, leading to acute cholangitis and acute pancreatitis^[2,3]. The present case had a tumescent gallbladder because of a hematocele. A blood clot in the biliary tract could have caused the increased pressure. That could have provoked acute pancreatitis and increasing hemodiastase. Pancreatitis caused by hemobilia and increased pressure can be improved by reducing the biliary tract pressure. Patients with hemobilia and increased pressure in the biliary tract should undergo puncture gallbladder to reduce pressure. This could strive the time of treatment. Reducing the biliary tract pressure can prevent pancreatitis.

In the present case, traumatic arteriovenous fistula of the liver was detected by DSA. Lim *et al*^[4] have reported that percutaneous liver biopsy can lead to liver arteriovenous fistula. Lee *et al*^[5] reported that arteriovenous fistula formed in 38% (8/21) of cases after liver biopsy. Arteriovenous fistula bleeding in the liver often results from intrahepatic hematoma and portal hypertension. Although DSA did not directly show arteriovenous fistula, and the contrast agent was not obviously leaking into the bile, traumatic arteriovenous fistula guided us to find the possible bleeding artery. In our case, selective arterial embolization was performed and gastrointestinal bleeding stopped. Usually, the best opportunity for DSA is acute sustained bleeding with a rate > 0.5 mL./min. Tillotson *et al*^[6] have suggested that patients with unexplained gastrointestinal bleeding should receive immediate access to DSA and interventional treatment. Interventional treatment includes arterial embolization and drug infusion. Embolic materials often used are gelatin sponge, autoallergy-sludged blood, spring orb and polyvinyl alcohol particles. Hypophysin is also commonly used. Several studies have suggested that superselective embolization is a safer and more effective treatment for active bleeding, but it is not a substitute for emergency surgery^[7,8]. In patients with hematemesis and/or melena, right upper quadrant pain, and iatrogenic jaundice occurring after invasive surgery of the liver, care is needed to guard against the presence of tardive hemobilia. It is important to request the correlated case history. It is necessary to perform DSA and give interventional treatment when the treatment of gastrointestinal tract hemorrhage is ineffective.

COMMENTS

Case characteristics

The patient experienced acute epigastric pain and red bloody stools after ultrasound-guided liver biopsy.

Clinical diagnosis

We report a rare case of a 57-year-old woman who suffered from four complications over 11 d after ultrasound-guided percutaneous liver biopsy: hemobilia, acute pancreatitis, acute cholecystitis, and multiple stomach ulcers.

Differential diagnosis

Acute epigastric pain and red bloody stools hinted at differential diagnosis between hemobilia and bleeding peptic ulcer.

Laboratory diagnosis

Serological testing revealed anemia, hyperamylasemia and hyperbilirubinemia.

Imaging diagnosis

Magnetic resonance cholangiopancreatography (MRCP) revealed pancreatitis, cholelithiasis, cholecystitis, cholangiectasis, and digital subtraction angiography (DSA) showed obvious arteriovenous fistula of the right liver.

Treatment

The hepatic artery was selected and embolized by spring orbs.

Term explanation

MRCP is an evolving technique for noninvasive imaging of diseases of the biliary tree and pancreatic duct. DSA is a widely used fluoroscopy technique for vascular imaging, which produces a sequence of projection X-ray images of blood vessels that is used in diagnosis and treatment.

Experiences and lessons

The author reports a rare case of a patient who suffered from four complications over 11 d after ultrasound-guided percutaneous liver biopsy. This rare clinical condition has seldom been reported in the literature.

Peer review

In this manuscript, the author reported an interesting case of a patient who suffered from four complications over 11 d after ultrasound-guided percutaneous liver biopsy. This case is rare and seldom reported in the literature.

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P- Reviewers: Casciaro S, Markic D, Streba CT
S- Editor: Gou SX **L- Editor:** A **E- Editor:** Wang CH





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ISSN 1007-9327



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