Bile Leak: A Rare Complication of Percutaneous Liver Biopsy

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Introduction

Ultrasound-guided liver biopsy is generally a safe procedure. Pain is the most common complication, occurring in up to 84% of patients. Other commonly known complications include hematoma and intraperitoneal hemorrhage. Also very rare, bile leak is a possible complication with rates less than 0.001%. We present the case of a 79 years old woman who presented with abdominal pain after undergoing an ultrasound-guided liver biopsy and was found to have a bile leak at the level of the common hepatic duct, highlighting the importance of prompt recognition, appropriate work-up, and timely management of this rare complication.

Case description

A 79 years old woman with a past medical history of ulcerative colitis, abdominal aortic aneurysm, hypertension, psoriasis, and gastroesophageal reflux disease presented to the emergency department with severe right upper quadrant abdominal pain along with nausea and vomiting after undergoing ultrasound-guided percutaneous liver biopsy for elevated liver enzymes. On examination, right upper quadrant tenderness was appreciated.

Initial laboratory results revealed leukocytosis (16.4 k/uL), elevated alkaline phosphatase (428 U/L), and normal lipase (31 U/L), bilirubin (total bilirubin 0.8 mg/dL; direct bilirubin 0.2 mg/dL) and transaminases (aspartate aminotransferase [AST] 29 U/L; alanine aminotransferase [ALT] 23 U/L). No microorganism growth was appreciated on blood cultures.

Computed tomography (CT) of the abdomen revealed a lobulated hyperdensity (70 Hounsfield units [HU]) within a fluid-filled gallbladder, likely secondary to blood products or vicarious excretion of contrast. There was a small amount of perihepatic subdiaphragmatic complex fluid (20 HU). Magnetic resonance imaging (MRI) of the abdomen revealed a gallbladder filled with T1 hyperintense and T2 hypointense signal, suggestive of blood products and mild perihepatic hemorrhage. No evidence of biliary duct dilatation or hepatic laceration was noted.

She underwent Endoscopic retrograde cholangiopancreatography (ERCP) for increased bilirubin. The bile duct was deeply and selectively cannulated on the first attempt. On Fluoroscopy, extravasation of contrast originating from the common hepatic duct was observed, suggestive of bile leak. The cystic duct was patent. A sphincterotomy was performed. Blood clots and sludge were retrieved on sweeping the biliary tree. A 10 French (Fr) and 7 cm temporary plastic biliary stent was placed 6 cm into the common bile duct (CBD).

Prior to the procedure, she needed oxygen supplementation with a non-rebreather mask. Her oxygen requirement improved soon after stent placement, and she was breathing on room air. Her abdominal pain and atrial fibrillation resolved as well. Total bilirubin decreased to 2.2 mg/dL. She was discharged two days after the procedure. Her liver biopsy revealed lymphoplasmacytic hepatitis and periductal sclerosis with focal damage to the bile duct.

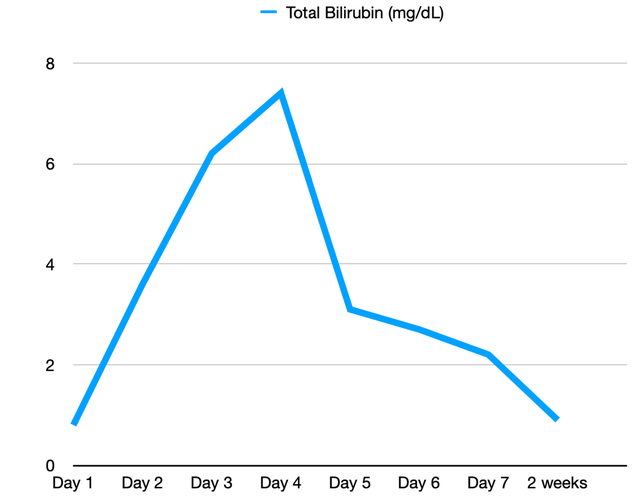

Figure 1: Total bilirubin levels during hospitalization. Notice the substantial decrease after stent placement on Day 4

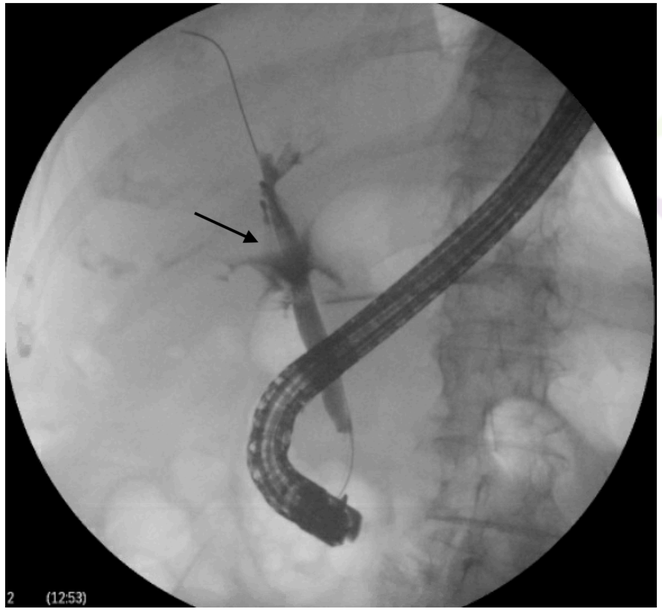

Figure 2: Fluoroscopy demonstrates contrast extravasation at the level of common hepatic duct, suggestive of bile leak

WBC	ALP	Lipase	Bilirubin	Direct Bilirubin	AST	ALT
16.4	428	31	0.8	0.2	29	23

Table 1: Laboratory values of WBC count, Alkaline phosphatase, Lipase, Bilirubin, aspartate transaminase, and alanine transaminase

Discussion

Although the initial imaging studies for our patient were representative of blood products, the extravasation of fluoroscopy contrast through the common hepatic duct was strongly suggestive of bile leak and a clear association with biopsy. Aranda, M. et al. presented similar findings (1). Paymani et al. reported four cases of bile leak among transplant patients, one of whom had bile peritonitis. Intraperitoneal leakage was more frequently seen than intraparenchymal leakage (2).

There are guidelines by the American Association for the Study of Liver and the Society of Interventional Radiology to prevent complications after percutaneous needle biopsies and liver biopsies (3,4). Utilizing ultrasound can help avoid injury to the gall bladder and large bile ducts. A biopsy of at least 2-3 cm length and 16 gauge caliber is considered sufficient. Patients should be closely observed for at least 2-4 hours after the procedure. Keeping a low threshold for prompt evaluation with appropriate imaging modalities and timely intervention can help overcome this challenge and reduce morbidity and mortality.

In conclusion, bile leak is a rare and potentially disastrous complication of liver biopsy. Appropriate indications, image guidance, and proper techniques need to be ensured. Patients should be closely observed for at least 2-4 hours after the procedure (5). Keeping a low threshold for prompt evaluation with appropriate imaging modalities and timely intervention can help overcome this challenge and reduce morbidity and mortality

References

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