

Spontaneous hemobilia after liver transplantation

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Abstract

Liver transplantation is a safe and effective treatment for cirrhosis or acute liver failure with a 1 year mortality rate less than 90%. Despite successes, biliary complications affect about 10 to 30% of patients that undergo a transplant and typically include a biliary stricture or bile leak. Rarely, patients can have spontaneous hemobilia after transplant. Diagnosis is confirmed via Endoscopic Retrograde Cholangiopancreatography (ERCP) where clot can be evacuated and a stent can be placed for continued drainage. Given advancements in endoscopic therapy, hemobilia can typically be managed via ERCP and requires arterial embolization or surgical intervention if endoscopic therapy fails.

Keywords

hemobilia; liver transplant; endoscopic retrograde cholangiopancreatography; gastrointestinal bleeding

Abbreviations

endoscopic retrograde cholangiopancreatography – ERCP

Introduction

Liver transplantation is a safe and effective treatment of end stage liver disease or acute liver failure. According to the United Network for Organ Sharing, approximately 8,000 liver transplants were performed in 2017 and the number of transplants continues to increase yearly [1]. Liver transplantation is one of the most complex surgeries performed in the United States on a regular basis; however, given surgical and medical advancements over the past two decades, 1 year survival rates after transplantation remain exceptionally high at approximately 90% [2]. This is in part due to prompt recognition and treatment of early post-operative complications to ensure graft and patient survival. Common early post-operative complications include allograft dysfunction, such as acute cellular rejection, and surgical complications, including post operative hemorrhage, hepatic artery thrombosis, portal vein thrombosis, hepatic venous obstruction, biliary leak or fistula and biliary stricture [3]. Other complications after liver transplantation including he-

mobilia can occur, however this is a rare complication [4]. We present a case of spontaneous hemobilia after liver transplantation and aim to explore the diagnosis and management of hemobilia in addition to other post-operative biliary complications.

Case Report

A 61 year old female with a past medical history of cryptogenic cirrhosis complicated by hepatic hydrothorax underwent an orthotopic liver transplantation that was cytomegalovirus donor negative and recipient positive. There were no complications during surgery. Post operatively, her immunosuppression regimen included mycophenolate 720mg twice daily, tacrolimus with a goal trough between 8 and 10 ng/mL and steroids with a plan to taper over five days. On post-operative day 1, liver doppler revealed patent vasculature and liver function tests were trending downwards with a total bilirubin of 1.3mg/dL (reference range: <1.5mg/dL), direct bilirubin 0.5mg/dL (reference range: <0.3mg/dL), ALT 128U/L (reference range: <48U/L), and AST 54U/L (reference range: <40U/L) (Figure 1). Post-operative day 3, she developed hypoxic respiratory failure requiring intubation due to volume overload after a blood transfusion despite diuresis with Lasix. Liver function tests increased over the next six days and peaked with a total bilirubin of 6.8mg/dL, direct bilirubin 5.0mg/dL, ALT 257U/L, and AST 129U/L (Figure 1). She was also noted to have a rising white blood cell count and hypotension. Given concern for possible cholangitis secondary to a biliary leak or anastomosis stricture, she underwent an emergent endoscopic retrograde cholangiopancreatography (ERCP). ERCP revealed hemobilia with spontaneous blood flow from the major papilla prior to biliary cannulation. Cholangiogram was performed and did not reveal any evidence of bile leak, anastomotic stricture or vascular communication. The biliary tree was swept and revealed clots, therefore a 10 French by 7cm plastic stent was placed in the common bile duct. Following ERCP, liver function tests continued to improve (Figure 1). Other medical complications stabilized and she was discharged. She underwent an ERCP 6 weeks after initial stent placement and the stent was removed. The biliary anastomosis was patent and there was no further evidence of hemobilia, therefore an additional stent was not placed. Her liver function tests remain normal.

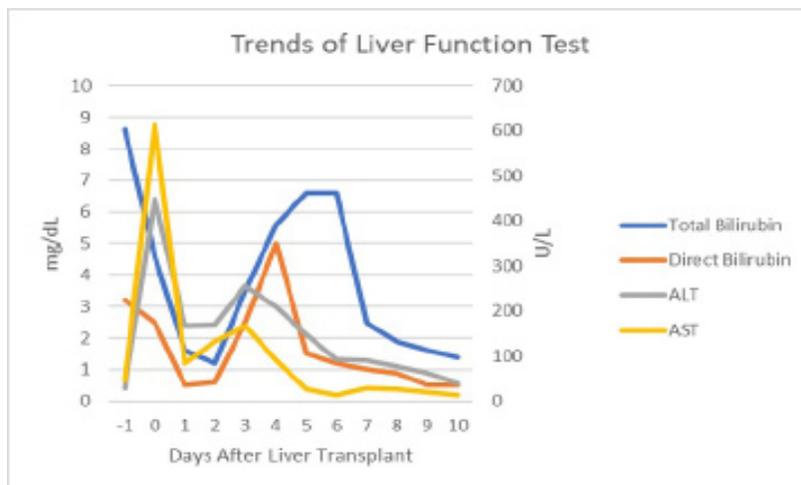


Figure 1: Trends in Liver Function Tests

Discussion

Biliary complications after transplantation are a major cause of morbidity and mortality. Approximately 10 to 30% of patients that undergo liver transplantation experience a biliary complication within the first 3 months after transplantation, with the most common including a stricture or leak. Multiple risk factors are known to increase the risk of developing these complications such as the technique of biliary reconstruction, reduced size of the transplanted organ, as well as ischemia [5]. Patients typically present with worsening elevation in liver function tests, specifically bilirubin, but may also have worsening abdominal pain or signs of sepsis from cholangitis [6]. With prompt recognition, many of these complications can be managed endoscopically or surgically.

Hemobilia is a known complication after liver biopsy or percutaneous transhepatic cholangiography placement, but also complicates about 1 percent of liver transplantations [7]. The cause of hemobilia after liver transplant has not been determined, however previous studies have noted an association with alcoholic liver disease and a body mass index less than 24.5% [4]. If a patient develops this complication, most present within days to weeks after liver transplantation. Although the presentation varies, many patients present with a combination of symptoms including right upper quadrant abdominal pain, jaundice and upper gastrointestinal bleeding [8]. While many biliary complications after liver transplantation can present in a similar manner, if the patient has signs of upper gastrointestinal hemorrhage in addition to biliary obstruction, there should be a higher clinical suspicion for hemobilia. Our patient did require a blood transfusion shortly after transplantation and had an increase in her bilirubin within days after transplantation. However, she had no overt signs of gastrointestinal bleeding to suggest hemobilia, highlighting the variable presentation of this complication.

Once a concern for biliary complications is established, patients typically undergo abdominal imaging for further evaluation of the biliary anastomosis. In patients with hemobilia, imaging can reveal a hematoma, extravasation of contrast or a pseudoaneurysm [9]. However, if the suspicion is high enough, many patients undergo an ERCP for an initial evaluation. If hemobilia is noted prior to any endoscopic therapy, a diagnosis of spontaneous hemobilia can be made. Multiple treatment options are possible for this complication, but regardless of the intervention utilized, control of bleeding and maintaining flow of bile to prevent obstructive jaundice or acute cholangitis is crucial. Previous studies have emphasized conservative treatment for minor bleeding, including reversing coagulopathy and endoscopic intervention. During an ERCP, intervention such as epinephrine injection, bipolar cautery or stent placement can assist with the control of bleeding. Stent placement can also facilitate in allowing bile and clot drainage to prevent biliary obstruction during the control of bleeding [8]. Our patient was found to have multiple clots present through the common bile ducts which were causing an obstructive jaundice. These were swept from the biliary tree and a stent was placed to facilitate ongoing drainage. No other endoscopic intervention was needed given the control of bleeding with this intervention. If bleeding is brisk or unable to be controlled endoscopically, other intervention such as arterial embolization and rarely surgery have been utilized [8].

Conclusion

In summary, biliary complications affect approximately 10 to 30% of patients that undergo a liver transplantation. Typical complications include biliary strictures, leaks and rarely hemobilia. Our patient developed an increase in her liver function tests within a week after transplantation in association with increased abdominal pain. Given the high concern for a biliary complication after transplantation, she underwent an ERCP which revealed an unexpected finding of hemobilia. During the procedure, clots were evacuated and a stent was placed for continued drainage. After the procedure her liver function tests returned to normal. Most biliary complications, including stricture and leak present in a similar manner with abnormal blood work, abdominal pain and even cholangitis. Given the significant advancements in endoscopy, most of these patients are managed via ERCP and stent placement. If this approach fails, other approaches such as embolization or surgical repair can also be an effective treatment. Given the prompt recognition of these complications and the advancements in treatment, the associated morbidity and mortality have significantly improved.

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