

Case Report

Hepatic hematoma following endoscopic retrograde cholangiopancreatography: overview and case report

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ABSTRACT

Endoscopic retrograde cholangiopancreatography (ERCP) is a procedure with a high risk of complications. Hepatic subcapsular hematoma is an infrequent complication, with few cases reported in the international literature. Treatment can be conservative with the patient under close surveillance in an intensive care unit and surgical management is reserved for failure of conservative treatment and cases with hemodynamic instability. We present a case of subcapsular and intraparenchymal hepatic hematoma in an adult male who presented sudden hemodynamic instability, associated with hemoglobin decrease, which required surgical management. The challenge in the therapeutic decision due to sudden hemodynamic instability is clearly demonstrated; therefore, there was a need for surgical treatment as the best measure of hemorrhage control. Conservative management should be reserved for hemodynamically stable patients and invasive management by interventional radiology or surgery for cases of acute abdomen associated with hemodynamic instability.

Keywords: Hepatic hematoma, Laparotomy, ERCP, Subcapsular hematoma, Hemostasis

INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is a procedure with a high risk of complications, which ranges from 2.5-8%, with a mortality of 0.5-1 %.¹ Hepatic subcapsular hematoma is an infrequent complication, with few cases reported in the international literature; the first case was reported in 2000.² The incidence is unknown. There are two theories regarding the etiology of this pathology; the first postulates that it is due to hepatic parenchymal damage due to a tear secondary to the traction exerted on the balloon inside the biliary tract when extracting the stones.³ The most frequent clinical presentation according to the literature review is abdominal pain, fever, hypotension, decreased serum hemoglobin levels. Laboratory studies such as abdominal ultrasound and computed tomography may show abdominal collections compatible with hepatic hematomas.

We present a case of subcapsular and intraparenchymal hepatic hematoma; given the clinical presentation associated with sudden hemodynamic instability, surgical treatment was decided, together with review of literature.

CASE REPORT

In June 2021, a 28-year-old man, with a history of alcoholic liver disease, presented with fever, jaundice and abdominal pain predominantly in the right hypochondrium. He was admitted to another hospital with the diagnosis of cholangitis where a diagnostic-therapeutic protocol was initiated. ERCP was performed, trying to cannulate in 4 attempts with sphincterotome, showing stenosis of the ampulla of Vater, performing pre-cut with abundant blackish bile outflow.

He was discharged on the second day after the procedure and came to our unit due to severe abdominal pain.

Biochemical studies on admission reported: Hb-11.20 gr/dL, Hto 27.40, platelets $190 \times 10^9/L$ Leu $18.0 \times 10^9/L$, Neu 93.70%, lymphocytes 30.24%, eosinophils 2.16%, amylase 1341, creatinine 0.56 mg/dL, FA 250 U/L, AST 320 U/L, ALT 350 U/L, BT: 5.70 mg/dL, GGT: 100 U/L, BD: 4.2 mg/dL, BI: 1.50 mg/dL, DHL: 289, Na:145, K: 4.3, AFP: 1.81 ng/mL, Ca 19-9: 3.2 ng/mL, carcinoembryonic antigen: 0.8 ng/mL. Integrating the diagnosis of acute pancreatitis post-ERCP. Abdominal ultrasound (US) showed two lesions. A lesion in segment VIII of Couinaud with rounded morphology, poorly defined borders, heterogeneous echogenicity measuring $96 \times 80 \times 85$ mm with approx. volume of 342 ml. Second lesion in segment II, III and IVA of ovoid morphology with well-defined borders, measuring $133 \times 45 \times 130$ mm with an approx. volume of 409 ml (Figure 1).

It was decided to complement the diagnostic protocol with abdominal computed axial tomography (CT), which reported lesions in the right and left hepatic lobe with hepatic subcapsular mass in segments II, III and IVA of ovoid morphology, another heterogeneous hepatic intraparenchymal lesion in segment VIII of Couinaud, compatible with hepatic hematomas (Figure 2).

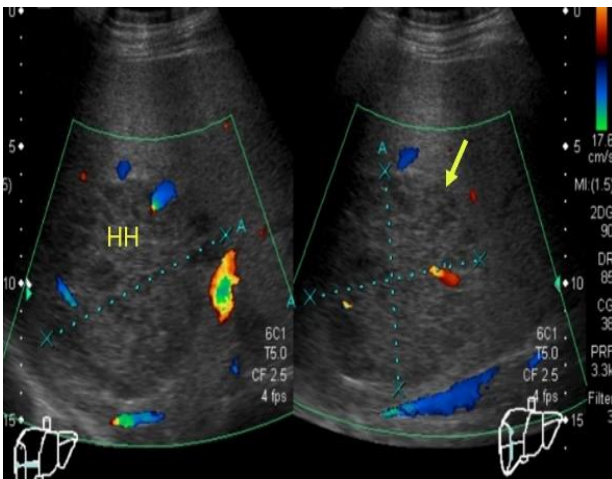


Figure 1: Liver ultrasound, with the presence of a rounded lesion in segment VIII of Couinaud (arrow), poorly defined borders, with heterogeneous echogenicity measuring $96 \times 80 \times 85$ mm, with an approximate volume of 342 cc, compatible with hepatic hematoma (HH).

During the first day of in-hospital stay he presented fever associated with sudden hemodynamic instability. New biochemical studies revealed Hb 8.40 gr/dL, Hto 23.20, platelets $185 \times 10^9/L$, Leu $19.10 \times 10^9/L$, Neu 92.00%. For this reason it was decided to perform an urgent exploratory laparotomy. During surgery, hemoperitoneum 1500 ml, ruptured hepatic hematoma at the level of the left lobe, fibrin creations and organized clots, with layered bleeding were identified. Lavage was performed, clots were removed and hemostasis of the hematoma bed was performed. Open drainage was placed. The patient was discharged to stable recovery,

without requiring amine support and with spontaneous ventilation. The postoperative evolution was without complications and the patient was discharged 6 days later without any eventuality. An abdominal tomography was performed showing disappearance of the hepatic subcapsular lesion in segment II, III and IVA; and decrease of the intraparenchymal hematoma in Couinaud's segment VIII (Figure 3).

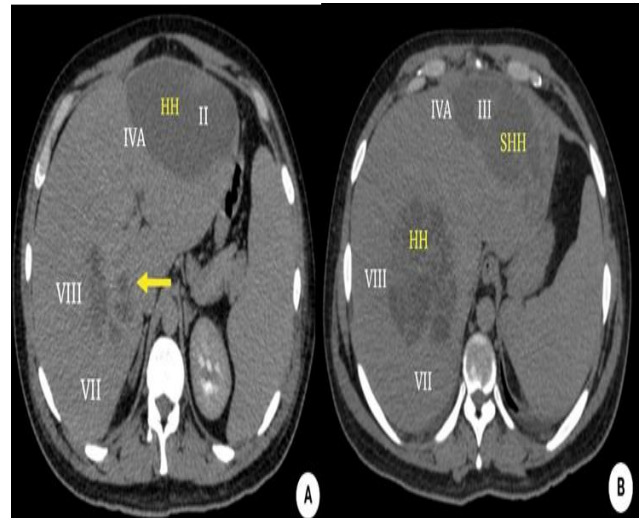


Figure 2 (A and B): Abdominal computed tomography (CT) showing lesions in the right and left hepatic lobe, involving segments II, III, IVA and VIII of Couinaud axial CT with presence of heterogeneous image of $124 \times 65 \times 123$ in segments II and IVA of Couinaud, compatible with hepatic hematoma (HH) and another heterogeneous lesion of $88 \times 85 \times 89$ in segment VIII of Couinaud (Arrow). Axial CT scan with hepatic mass in segment VIII of Couinaud compatible with intraparenchymal hepatic hematoma (HH); another lesion in segment III and hepatic IVA compatible with subcapsular hepatic hematoma (SHH).

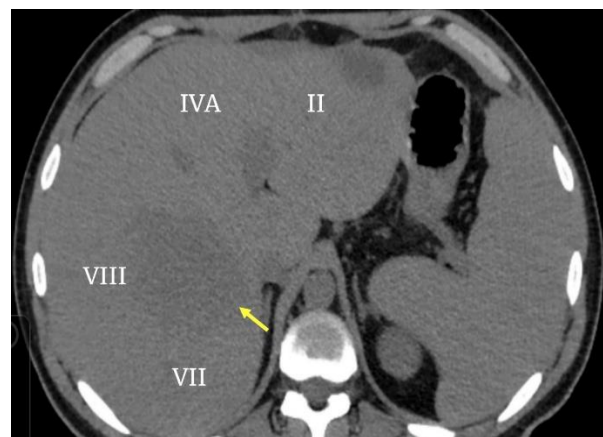


Figure 3: Abdominal computed tomography (CT) after surgery. Axial section of abdominal tomography, showing decrease of hepatic lesions in segment VIII (arrow) and in segment II, III, IVA.

DISCUSSION

Most post-ERCP liver hematomas have been described in specific cases of multiple attempted bile duct (BD) cannulation, exhibiting their origin in difficult BD cannulation. As hepatic hematomas may be asymptomatic, they are likely to be diagnosed incidentally while patients are presenting with abdominal pain, fever and/or hypotension.

ERCP is a procedure with a high risk of complications ranging from 2.5-8% with a mortality rate of 0.5-1%. The most frequent complications described in the international literature are acute pancreatitis (1-7%), acute cholangitis (1-4%), hemorrhage (1%) and duodenal perforation (1%). We reviewed the cases reported in the literature, and when the terms: "hepatic hematoma" "hepatic subcapsular hematoma" "ERCP" were introduced in PubMed, Medline, NCIB, Embase. Hepatic hematoma is a poorly described complication with few cases reported worldwide.^{4,5} The incidence is unknown. Orellana et al have described 3 cases of hepatic subcapsular hematoma following 796 ERCP procedures over a 5-year period with an incidence of 0.37%.⁶

The etiology is unknown; however, multiple theories have been postulated. Regarding the two most accepted theories, the first proposes accidental puncture with the guidewire of the intrahepatic biliary tree secondary to deep insertion; with subsequent rupture of small caliber intrahepatic blood vessels. The second theory details the intraparenchymal hepatic lesion secondary to the traction exerted with the balloon when extracting biliary tract enclaved lithiasis that would cause tearing and bleeding.^{7,8} The first theory can be supported by case reports in which the presence of free air in the abdominal cavity has been found in patients with hepatic subcapsular hematoma (Figure 4).^{9,10}

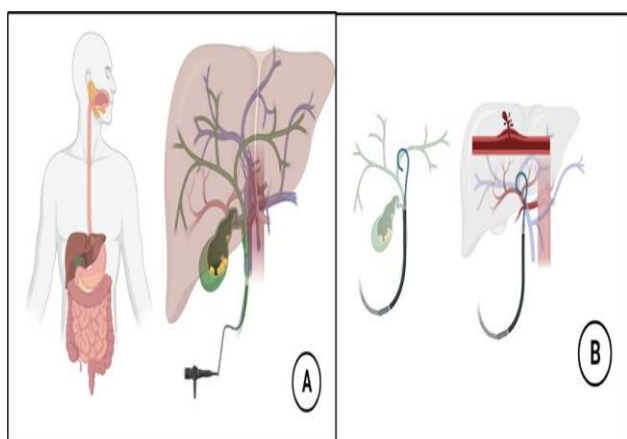


Figure 4 (A and B): Theory on the etiology of hepatic hematoma after ERCP. Vascular injury due to tearing of the intrahepatic biliary tree secondary to the force exerted on the biliary tract. Incidental puncture with metallic guidewire of the biliary tree and rupture of small caliber intrahepatic blood vessels.

Clinical presentation of severe abdominal pain associated with hemodynamic instability with hemoperitoneum is exceptional. A systematic review of hepatic hematoma after ERCP found that abdominal pain is the most common symptom (91.7%); together with anemia (43.8%), hypotension (29.2%), fever (20.8%) and that the administration of antibiotics is the only treatment capable of reducing mortality. It is also described that anemia and the need for surgery were the only independent factors of increased mortality in hepatic hematoma.¹¹

It is important to mention that early clinical presentation has been reported within the first 72 hours, and late after 7 days following ERCP; therefore, we conclude that it is not a complication following ERCP only of early presentation, and high clinical suspicion should be held in any patient regardless of the time of evolution.¹²

Fernandez et al have reported a case of hepatic subcapsular hematoma as an incidental finding during laparoscopic cholecystectomy in a patient who had previously undergone ERCP for choledochal lithiasis, which shows that this pathology may be underdiagnosed. Abdominal computed tomography (CT) and magnetic resonance imaging (MRI) are useful; however, CT is the imaging method of choice, being able to characterize the lesion, define size, location and specific characteristics.¹³ Some authors recommend the prophylactic use of antibiotics.¹⁴ Treatment can be conservative with the patient under close surveillance in an intensive care unit and surgical management is reserved for failures in conservative treatment and cases with hemodynamic instability.^{15,16} Privetta et al described a subgroup of patients who had hepatic subcapsular hematoma rupture; showing a significant increase in mortality compared to patients who did not have rupture.¹⁷

It can be concluded that patients who present hematoma rupture require some type of intervention, either by interventional radiology or surgery.¹⁸ Roldan's group reported the case of a man who developed hepatic subcapsular hematoma after ERCP who presented with hemodynamic instability and computed tomography revealed a giant subcapsular hematoma requiring urgent surgery.¹⁹ It is of utmost importance to take into account hepatic hematoma within the differential diagnosis of post-ERCP complications, especially when clinical data such as intense abdominal pain, hemodynamic instability, fever, decreased serum hemoglobin levels and typical characteristics in imaging studies are found.

Conservative treatment can be carried out when there is a hospital with an intensive care unit and a 24-hour operating room available; all of this is decisive for the successful outcome and evolution of the patient.

CONCLUSION

Our case clearly demonstrates the challenge in the therapeutic decision due to sudden hemodynamic

instability; therefore, there was a need for surgical treatment as the best measure of hemorrhage control. Treatment is individualized and oriented to the hemodynamic stability of the patient. According to our experience and the review of international literature, we can suggest conservative management in hemodynamically stable patients, and reserve invasive management by interventional radiology or surgery in cases of peritoneal irritation associated with hemodynamic instability.

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