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Case Report

Hepatic Hematoma After Endoscopic Retrograde Cholangiopancreatography in a Patient with Mirizzi Syndrome: Case Report and Summary of Literature

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Abstract

Endoscopic Retrograde Cholangiopancreatography (ERCP) is currently the most widely used minimally invasive technique for the diagnosis and treatment of biliary and pancreatic diseases. Although uncommon, subcapsular hematoma is a known cause of morbidity. We present the case of a 43-year-old Mexican woman who presented with pain and anemia inmmediately after undergoing ERCP for obstructive jaundice consistent with Mirizzi syndrome. She was hemodynamically stable, and the computed tomography (CT) showed a 205 x 148 x 77 cm subcapsular hematoma that was managed conservatively with crystalloids, blood products, antibiotics and an oral proteolytic. At two months follow-up, the hematoma remained stable, and there were no signs of liver failure or compressive symptoms. Treatment selection should be individualized, adopting a similar approach to that used for liver trauma.

Keywords: Endoscopic retrograde; Cholangiopancreatography; Hepatic subcapsular hematoma; Mirrizzi syndrome; Trypsin

Introduction

ERCP was developed in 1968 and is currently the most commonly performed minimally invasive technique for the diagnosis and treatment of biliary and pancreatic diseases. However, it is associated with the highest incidence of complications of any endoscopic procedure [1]. Even in experienced centers, the rate of certain complications, like pancreatitis, can be as high as 10%, while for others, like duodenal perforation, it can be as low as 0.08%. The incidence of mortality ranges from 0.3% to 1%, especially when therapeutic procedures are involved [2,3].

Subcapsular hematoma is a rare cause of morbidity, with only 63 cases reported in the literature since the first publication in 2000. Four were fatal [1]. Diagnostic and management criteria have not been established. As a result, maintaining a high index of suspicion and providing prompt, individualized treatment is crucial in preventing mortality. In the following section, we present a case of this uncommon condition which was presented to our hospital.

Clinical Case

This is the case of a single 43-year-old Mexican woman who presented with icterus, asthenia, acholia, choluria and pruritus, accompanied by stabbing pain in the right hypochondrium two weeks after an acute episode of optic neuritis managed with systemic steroid boluses and the use of cannabidiol for three days at her own choice. She had a family history of pancreatic cancer, cholelithiasis and unspecified liver tumors. She had recently undergone a ketogenic diet and lost 14 kg in 4 months. Her blood chemistry revealed elevated levels of transaminases, alkaline phosphatase and bilirubin (2.6 mg/dl) with an predominance of the direct fraction (2.3 mg/dl). Coagulation tests and blood cell count (hemoglobin 14 g/dl) were normal.

The echosonogram reported alithiasic cholecystitis, intrahepatic bile duct dilatation, and hepatomegaly. Based on these findings, the patient was diagnosed with drug-induced hepatitis, and the jaundice resolved spontaneously. However, the patient continued to experience symptoms and one month after the initial evaluation, the jaundice recurred. A plain CT scan was performed, which showed dilatation of the intrahepatic bile duct and common hepatic duct. The gallbladder contained fluid and material of varying density protruding towards the common hepatic duct. ERCP was indicated finding a non-mobile eccentric stenosis of the common bile duct at its junction with the common hepatic duct with a suprastenotic dilatation of 12 mm and hemobilia on manipulation, consistent with Mirizzi syndrome. A 10 Fr stent was implanted **(Figure 1)**, and a brush biopsy was performed, ruling out gallbladder carcinoma. Almost immediately after the procedure the patient experienced severe right subcostal pain in the radiating to the ipsilateral shoulder, nausea, vomiting and mucotegumentary pallor. She was then referred to the emergency department of a specialized center. On admission, she was hemodynamically

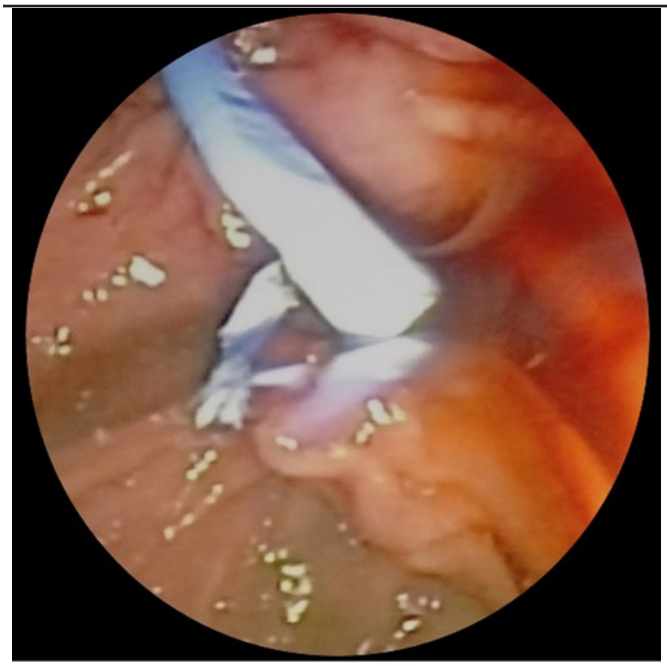

Figure 1: ERCP image of stent placement.
ERCP: Endoscopic Retrograde Cholangiopancreatography

stable, but had moderate anemia, elevated transaminases and alkaline phosphatase. Autoimmune and viral etiologies were excluded. The echosonogram demonstrated a well-defined, irregularly shaped, mass in hepatic segment VII with a volume of approximately 216 cc **(Figure 2)**. In addition, the CT scan showed pneumobilia, perihepatic fat striation, and delineated the collection without contrast enhancement, with hematoma-like density involving segments VI, VII, and VIII, with dimensions of 205 x 148 x 77 cm, and a volume of approximately 1214 cc **(Figure 3)**.

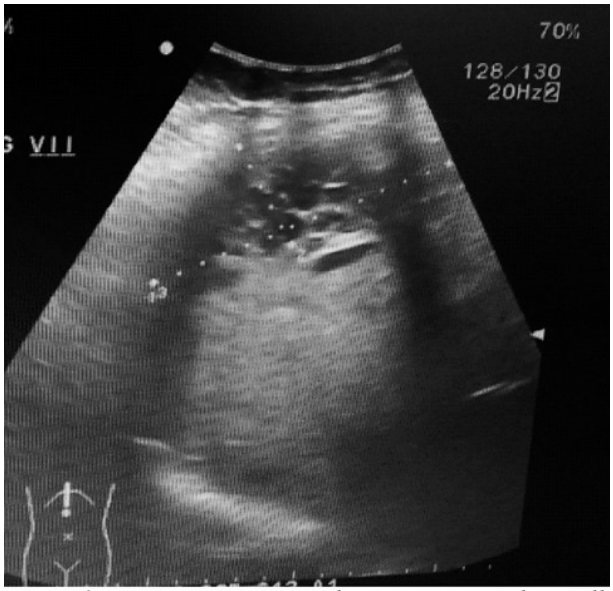

Figure 2: Liver ecosonogram showing an irregular, well-defined, heterogeneous, septated non-vascularized collection measuring 106 x 38 x 10 mm in segment VII.

Consequently, she was admitted to the general surgery department for close monitoring and additional diagnostic testing. Two units of concentrated red blood cells were transfused due to a 1 mg/dL fall in hemoglobin. The patient remained normotensive and showed no signs or laboratory findings of sepsis. Antibiotic prophylaxis with meropenem was administered. The patient's bilirubin level normalized. Control ultrasounds and CT scans showed no increase in hematoma volume **(Figure 4)**. Angiotomography ruled-out active bleeding. After evaluation by an interventional radiology, she was determined not to be a candidate for percutaneous drainage. She was prescribed oral trypsin/chemotrypsin and discharged after 2 weeks, pending MRI results to assess of biliary tract morphology.

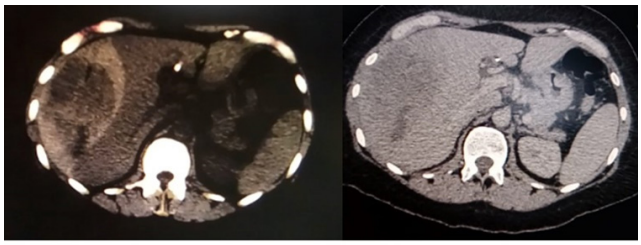

Figure 3: Computed tomography in axial plane on admission with a subcapsular hematoma involving hepatic segments VI, VII, and VIII, measuring 205 x 148 x 77 cm. A) arterial phase B) portal phase without enhancement.

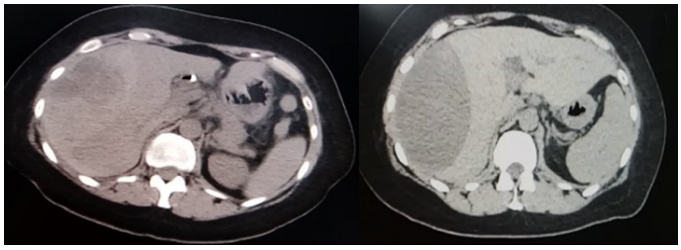

Figure 4: Follow-up computed tomography in axial plane at A) one week and B) 2 months.

Discussion

The use of endoscopic techniques is advised, with the potential risks carefully weighed against the benefits. The incidence of complications ranges from 2.5% to 8%, of which 1.67% are severe [3,4]. Mortality is higher with therapeutic ERCP at 0.4-0.5% compared to 0.2% with diagnostic ERCP [5].

Clinically evident bleeding occurs in 0.1% to 2% of cases, typically at the site of sphincterotomy [6]. Subcapsular hematoma is another infrequent hemorrhagic complication, first reported in 2000 by Ortega et al [7]. The exact incidence is difficult to determine because many patients may course asymptomatic, and follow-up imaging studies are not performed, unless indicated for other reasons [8].

The pathophysiology of this condition is not fully understood, but two potential mechanisms have been proposed. The first involves direct injury to small intraparenchymal vessels caused by the tip of the guidewire. The second suggests a lesion of the Glissonian pedicle caused by the traction of the balloon during stone extraction [2]. The use of a guidewire was mentioned in 80.3% of the reviewed publications. Nonetheless, in the remaining 19.7%, no statement was made in this regard, as in this case, being unable to ascertain the device responsible for the lesion.

García et al. reported a mean age of presentation of 59 years, with a gender distribution of 58% female and 35% male. Choledocholithiasis was the most common indication for ERCP (72.7%), followed by stent replacement (6%) and ampullary tumors (6%), which coincides with the characteristics of our case. Only 6.4% of the reports confirmed the use of anticoagulant therapy [9].

The latest comprehensive review reveals that the most common symptoms at presentation are abdominal pain (83%), anemia (56.7%), hypotension (28.7%), fever (18.3%), and omalgia (13.3%). The majority of cases are diagnosed within the first 48 hours post-procedure (77.8%), with almost half of them (40.7%) presenting immediately (within the first 12 hours) [1] as seen in the patient described. However, Roldan

et al informed a case identified 15 days after the endoscopic intervention [10].

Cases mentioning a decrease in hemoglobin have exhibited a higher frequency of surgical or percutaneous intervention (63%) [9], but other laboratory tests are unspecific. The percentage of hematoma rupture is 23.7%, resulting in a mortality rate of 21.4% [1]. This underscores the importance of early recognition and continuous monitoring of indicators of hypovolemia and peritoneal irritation.

The most utilized diagnostic method is CT scan (91.4%), followed by ultrasound (22.4%). This may be due to the necessity for thorough characterization before making therapeutic decisions, although hemodynamic instability may preclude its use. The predominant location is the right lobe (87.3%), as in the case discussed, with no correlation to mortality [1].

Conservative approach is successful in only 39.3% of patients. The use of proteolytic enzymes has not been previously mentioned, and it did not affect the hematoma size at two months, probably due to the initial size greater than 1000 cc. When evacuation is required surgery is performed in 27.9% of patients, while percutaneous drainage is implemented in 22.95% of subjects. Embolization is indicated in only 8.2% of patients. Either large hematomas may be candidates for non-operative management [8,11] or small sizes lesions may necessitate exploratory laparotomy [12]. Therefore, we propose to extrapolate the classification of liver trauma and treat accordingly based on extension/depth, hemodynamic status, and angiothomography result to exclude positive extravasation [13], as well as signs of liver failure or compression symptoms. Currently, there are insufficient data to determine the safety of conservative management in the setting of an additional indication for surgery or the appropriate timing for cholecystectomy. Mirizzi syndrome has not been reported in previous cases, and the presence of a hematoma may difficult cholecystectomy.

In addition to the risk of rupture, sepsis is also a concern. Antibiotics are used and recommended by most authors (70.9%) [1,14], with Pivetta et al being the only one to specify the agents used (ciprofloxacin and metronidazole) [1]. The isolated microorganisms in the reports that mentioned cultures were Citrobacter freundii and Escherichia coli, which is consistent with the microbiology of biliary tract infections described in the 2018 Tokyo guidelines [15]. As a result, antimicrobial agents should be selected based on these recommendations.

Conclusion

In conclusion, subcapsular hematoma is a rare event following ERCP, typically presenting within 48 hours after the procedure. Early diagnosis and treatment require a high index of suspicion and treatment should be guided by the grade of the lesion according to the liver trauma injury scale and hemodynamics along with administration of adequate antibiotic prophylaxis to avoid hepatic abscess and cholangitis. The addition of proteolytic enzymes as adjuvant therapy may constitute an area for further study to determine the effect on reducing the frequency of surgical intervention in lesions of similar or smaller volume.

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