CASE REPORT

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Hemobilia through aneurysm of the right hepatic artery, 22 months after laparoscopic cholecystectomy: case presentation

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Abstract

Hemobilia is a rare cause of upper digestive bleeding, and it should be suspected when there are traumas of the liver area or surgical or exploratory interventions of the liver–bile–pancreas area in the patient's history. Iatrogenic bleeding occurs, most often, after transcutaneous bile punctures, laparoscopic cholecystectomies, cateterisms of the biliary ways. After such interventions, hemobilia may appear earlier, but also up to a few months later. We present a case of massive hemobilia occurring 22 months after a laparoscopic cholecystectomy.

Keywords: hemobilia, cholecystectomy, hepatic artery aneurysm, biliary system.

Introduction

Hemobilia is a complex pathological state, characterized by blood loss through the biliary ways, due to an abnormal communication between the liver vascular system and the biliary tree [1]. The condition may be asymptomatic (when bleeding is low) or it may manifest itself through hematemesis and melena [2].

Hemobilia is a rare cause of upper digestive bleeding, most frequently occurring because of traumatic lesions of the abdomen or of iatrogenic causes [3]. The iatrogenic causes are represented by hepatic biopsy, transhepatic biliary drainage, hepatic cholecystectomies or resections [4]. Hemobilia may have multiple causes: idiopathic (aneurysms of the cystic artery, of liver or gastroduodenal arteries that break down into the biliary ways) [5, 6], portal high blood pressure [7], liver, cholecyst or biliary ways tumors [8–11], liver cysts and abscesses, etc. Approximately two-thirds of the hemobilia cases are iatrogenic. The percutaneous liver biopsy, the transhepatic cholangiography, the endoscopic interventions on the cholecyst or biliary ways, etc., may cause lesions of the biliary tree and of the liver vascularization that manifest through hemobilia [12].

Aneurysm of the hepatic artery that is secondary to the laparoscopic cholecystectomy, a "golden standard" in cholecystectomy, is an extremely rare cause in hemobilia and less than 100 cases are reported up to date in specialized literature [13]. Hemobilia that is caused by laparoscopic cholecystectomy is usually unpredictable and has a lethal potential. Most often, it occurs in the first four weeks after the surgery intervention [13].

We present the case of a patient with massive hemobilia occurring 22 months after the laparoscopic cholecystectomy, who presented non-specific abdominal symptoms and raised serious problems of positive and differential diagnosis.

Case presentation

A 56-year-old patient, with laparoscopic cholecystectomy, who had no notable events approximately 22 months before, was hospitalized in the clinic presenting pains in the upper level of the abdomen, nausea, hematemesis, melena and asthenia. The blood count indicates an abnormal leukocytes count and hemoglobin of 11.3 g/dL. The biochemical tests indicate hyperbilirubinemia (1.7 mg/dL), increased transaminases count [alanine aminotransferase (ALAT) 296 U/L (normal values – N: 30–65 U/L), aspartate aminotransferase (ASAT) 663 U/L (N: 15–37 U/L)], as well as a risen amylasemia (783 U/L, N: 25–115 U/L) and serum lipase (5692 U/L, N: 73–393 U/L). An emergency upper digestive endoscopy is performed, which shows the presence of blood and blood clots in the stomach, without the presence of parietal lesions, as well as blood absence in duodena I and II. The case is interpreted as acute pancreatitis and specific conservatory treatment is established. The evolution is not favorable, the upper digestive bleeding continues, triggering the decrease of hemoglobin levels to 6.2 g/dL and the increase of the sclerotic and tegument jaundice; the values of total bilirubin reach 4.91 mg/dL (direct bilirubin 4.83 mg/dL). Due to the progressive deterioration of the general status and the lack of a precise diagnosis, an abdominal computed tomography (CT) with contrast agent is performed four days after hospitalization. CT shows a slight hepatomegaly with dilation of intrahepatic biliary ducts mostly at the level of the left liver, as well as the dilatation of the extrahepatic biliary ducts; the common bile duct (ductus choledochus) has a diameter of 2 cm at the retro-pancreatic level, containing dense matter. The pancreas shows no pathological changes in the CT. Six days after hospitalization, the general status of the patient deteriorates and exploratory laparotomy is decided. Intraoperatory, we

observed a marked hypertrophy of the right liver, with compensatory hypertrophy of the left liver and a cholestatic aspect. Longitudinal choledochotomy is performed, initially evacuating blood clots and further on evacuating fresh blood. After the biliary duct lavage, distal permeability is observed, as well as proximally at the level of the left hepatic channel. At the level of the right hepatic channel, approximately 2–2.5 cm from the biliary convergent a stenosis area is observed, which does not allow its proximal examination. The bleeding source is discovered to be located proximally and after abundant lavage of the biliary duct, the bleeding stops. At the channel level, the biliary fluid is exteriorized and biliary drainage is fitted on an 18/6 mm Kehr tube. Postoperatory, through the biliary drainage tube, fresh blood is exteriorized in high quantity, approximately 600 mL in 20 minutes, with the decrease of blood pressure values. At this point, while overviewing the intraoperatory findings – mainly of the marked hypertrophy of the right hemi-liver, the CT is reviewed again. At the level of the right hepatic artery in arterial phase, an aneurysm with a diameter of approximately 2 cm (Figure 1) is found. In the context of massive hemobilia and of the hemodynamic instability of the patient, emergency surgery is performed again. The right hepatic artery is isolated at the level of the aneurysm dilatation, close to the right hepatic channel and an arterial-biliary fistula is suspected. After clamping the right hepatic artery, bleeding stops and bile is exteriorized on the Kehr tube, an important reason for its ligature, with room for biliary drainage. The postoperatory evolution of the patient was favorable, lacking in events. The patient was released on the 11th day after surgery. Twenty-one days after surgery the patient returns for a control cholangiography, which shows the extrahepatic and intrahepatic biliary ducts of the left hepatic lobe as being dilated and permeable (Figure 2). After the cholangiography, the external biliary drainage tube is suppressed. Two months after the surgery, the patient shows no symptoms and has a favorable evolution.

Figure 1 – ***CT examination highlighting an aneurysm in the right liver artery.***

Figure 2 – ***Postoperatory cholangiography on a Kehr tube, highlighting the dilatation of the intra- and extra-liver ducts.***

Discussion

Hemobilia represents a major surgical problem that requires immediate management, because it may lead to the patient's death [1, 14]. The incidence of iatrogenic hemobilia is ever growing, due to the increase of hepato-biliary surgical interventions [15–17].

Secondary hemobilia due to hepatic or cystic artery aneurysm after laparoscopic cholecystectomy is a rare situation in specialized literature, less than 100 cases having been described. Hemobilia occurs in 80% of the cases during the first four weeks after the surgical intervention, such cases being totally exceptional [18]. In our case, hemobilia occurs approximately 22 months after laparoscopic intervention and is the latest manifestation reported in specialized literature. In lack of other conditions that might trigger the aneurysm of the right hepatic artery, its development and consecutive hemobilia were related to the laparoscopic cholecystectomy performed to this patient.

The exact mechanisms of hepatic or cystic artery aneurysm after laparoscopic cholecystectomy are not completely clarified up to this date. They can be related to direct vascular lesions by applying clips, erosions due to neighboring clips or thermal lesions [19], to which biliary fistulas and consecutive infection [20], respectively acute pancreatitis are added [13]. Due to the presence of clips after laparoscopic cholecystectomy in the surrounding area of the aneurysm of the right hepatic artery, associated with the marked atrophy of the right hemi-liver and narrowing of the biliary ducts destined for it at the cholangiography examination, the development of the aneurysm and the consecutive hemobilia have been attributed to laparoscopic cholecystectomy.

The Quincke's triad, expressed through pains of the upper abdominal level, jaundice and melena, although occurring in 20–30% of patients with hemobilia due to a hepatic artery aneurysm after a laparoscopic cholecystectomy [19] was presented in this case. Since the aneurysm was not visualized at the initial CT interpretation and due to the relatively short time since the laparoscopic surgery, these clinical expressions could not be related to the presence of hemobilia. During the upper digestive endoscopy, blood was identified only in the stomach, not in the duodenum.

The elected treatment of the hepatic artery aneurysm is

represented by transarterial embolism with a success rate varying between 80 and 100%. It is possible however to have a failure of the first embolism, requiring a second embolism, which is performed through either classical or laparoscopic surgery [18]. Surgery can be extremely useful in the case of lack of arterial embolism techniques. In this case, classical intervention was required due to the diagnosis uncertainty. In case of repeated interventions, the hemodynamic instability of the patient, secondary to the massive blood exteriorization on the biliary tube drainage, required repeated laparotomy and ligature of the right hepatic artery, seen as an escape solution in the context of a permeable portal ax.

In the last decade, various studies showed that laparoscopic cholecystectomy is associated with a high incidence of biliary and vascular lesions. The prevalence of biliary lesions was appreciated up to 0.2–1% of laparoscopic cholecystectomies, with a frequency 10 times higher in comparison to open surgery, while vascular lesions occur in about 0.25–0.5% [21, 22]. That is why we consider that a careful monitoring is required over a longer period of time for every patient that underwent laparoscopic cholecystectomy.

Conclusions

Aneurysm of right hepatic artery with consecutive hemobilia, following laparoscopic cholecystectomy, represents an extremely rare – but potentially lethal condition. It may occur late, even one year and a half after the intervention. Surgery with ligature of the artery may be a solution under extreme emergency conditions or in the case of lack of arterial embolism techniques, the last technique mentioned being an elective treatment for this condition.

Conflict of interests

The authors declare that they have no conflict of interests.

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