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A case report and review of the literature

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Fatal hemoperitoneum due to bleeding from gallbladder varices in an old stage cirrhotic patients. A case report and review of the literature

Gallbladder perforation with hemorrhage may be the source of massive hemoperitoneum under rare and extreme circumstances. In cirrhotic patients the bleeding may be associated with the tearing of gallbladder varices and represents a fatal complication, as reported in all the cases available in literature. The incidence of gallbladder varices in the setting of portal hypertension ranges 12-30%, although literature data are limited.
We describe the case of an end-stage cirrhotic patient without portal thrombosis awaiting for orthotopic liver transplantation, who developed a fatal hemoperitoneum caused by massive bleeding from ruptured varices of both gallbladder wall and cholecystic fossa. The review of the literature was also performed.

KEY WORDS: Cirrhosis, Gallbladder, Hemoperitoneum, Perforation, Portal hypertension, Varices

Introduction

Acute spontaneous hemoperitoneum in end-stage cirrhotic patients is a rare and life-threatening event most frequently caused by the rupture of hepatocarcinoma or tearing of variceal collateral veins associated with portal hypertension. Gallbladder varices (GBVs) are uncommon portosystemic shunts with an overall incidence of 12-30% in patients with portal hypertension [1]. They are usually asymptomatic but their spontaneous bleeding results in hemobilia, recurrent gastrointestinal bleeding or even perforation of the gallbladder [2].
In this report we describe a case of spontaneous massive hemoperitoneum where the active bleeding from torn varices of both gallbladder wall and cholecystic fossa was documented by emergency laparotomy. A literature review of clinical and pathological characteristics of similar cases was also performed [2-5].

Case Report

A 50-year-old man with end-stage liver cirrhosis, who had already been hospitalized at the internal medicine ward for the adjustment of the medical therapy, was submitted to emergency surgical exploration due to the sudden onset of hemorrhagic shock secondary to massive hemoperitoneum of unknown origin.
Liver cirrhosis was secondary to alcohol abuse and HCV infection and was classified as Child-Pugh C 12, MELD 18. No previous history of gastrointestinal bleeding was reported and the latest upper endoscopy (7 months ear-

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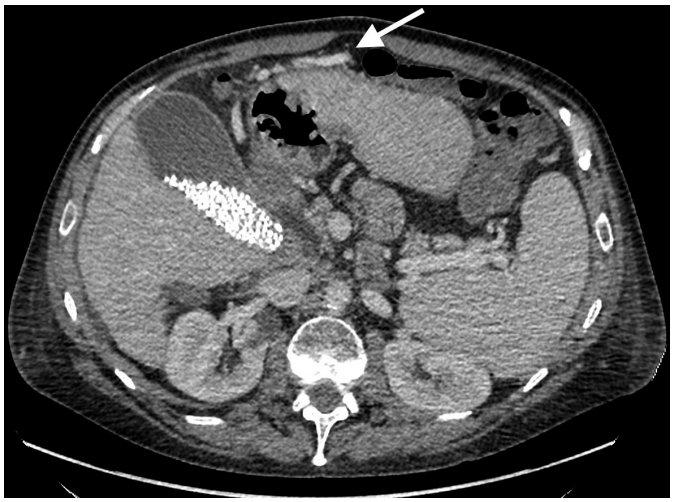

Fig. 1: CT scan (portal phase) showing microlithiasis and recanalised umbilical vein (arrow). No signs of gallbladder varices or chronic cholecystitis are evident.

lier) had shown a mild hypertensive gastropathy with no esophagogastric varices. The abdomen CT scan (3 months earlier) and the US examination (1 month earlier) had confirmed a widespread cirrhotic degeneration of the liver without focal lesions or portal vein thrombosis. The umbilical vein had been recanalized with evidence of mild collateral portosystemic vessels but no sign of GBVs had been shown. The spleen had a diameter of 16 cm. The gallbladder had appeared slightly distended and full of biliary sludge with micro cholelithiasis. No biliary tree dilatation had been shown (Fig. 1). The patient had been included in the waiting list for orthotopic liver transplantation.

The onset of the shock occurred suddenly and without relationship to any causative event. Upon examination blood pressure was 70/50 mmHg, pulse 100 bpm, O_2 saturation 97% with O_2 50% mask. Arterial hemogasanaylsis showed pH 6.1, Hb 6.6 g/dL and lactate 11 mmol/L. The abdomen was distended with widespread tension. Bedside US examination showed a massive peritoneal fluid collection which proved to be blood by explorative puncture. Resuscitation maneuvers were initiated with blood and plasma transfusion and noradrenaline infusion.

The patient was consequently submitted to emergency laparotomy and 3000 ml of blood were aspirated. Exploration of the peritoneal cavity proved a 2 cm-diameter perforation of the posterior-inferior surface of the gallbladder with active venous bleeding. No other lesions were identified. Cholecystectomy was performed and revealed the presence of diffuse and congested varices at the pericholecystic bed without signs of tearing. Due to the apparent stability of the hemostasis, a Jackson-Pratt drain was placed at the subhepatic space and the laparotomy was closed. The specimen was evaluated: the lumen of the gallbladder was filled with blood clots and micro biliary stones and the wall had no signs of inflammation but multiple ruptured variceal vessels were identified. In the immediate post-operative period, high volume of liquid blood was detected in the drain. Therefore the patient underwent a re-laparotomy and a massive bleeding at the pericholecystic bed was found. Firstly, hemostasis with argon beam and fibrillar haemostatic was attempted with limited control on the hemorrhage. Thus, packing with laparotomic gauzes was opted for. The patient was transferred to the intensive care unit where he died the day after due to the fatal progression of hemodinamic instability. Pathological microscopic examination of the gallbladder confirmed the vascular origin of the perforation with signs of venous infarction but not of chronic cholecystitis.

Discussion

The hemorrhage resulting from gallbladder perforation may be the source for massive hemoperitoneum under rare and extreme circumstances. Several cases of hemorrhagic cholecystitis have been reported, most frequently associated with cholelithiasis, anticoagulant therapy, hemodialysis [6-8]. In cirrhotic patients the bleeding is usually associated with the rupture of GBVs which develops within the cholecystic wall or at the cholecystic fossa [2-5]. The portal hypertension, which causes and sustains the development of GBVs, can be either intrahepatic or prehepatic [1]. Although portal vein thrombosis is considered a major risk factor, GBVs can develop even without it [2-4]. Uncomplicated GBVs are usually asymptomatic or may cause obstructive jaundice due to extrinsic compression of the bile duct [3]. It has been demonstrated that GBVs can cause bile stasis but since they do not alter gallbladder motility, a causative relationship with gallstone formation seems unlikely [2,3]. On the other hand, portal cavernoma formation, common bile duct varices and ischemic injury of the bile duct are implicated as causes of portal biliopathy [9]. The majority of these patients are asymptomatic, but occasionally they develop biliary obstruction, cholangitis and choledocholithiasis [10-12].

Bleeding from GBVs may cause spontaneous hemobilia (with continuous or recurrent gastrointestinal bleeding) or hemoperitoneum in case of gallbladder perforation or variceal tearing [2-5]. The overall reported incidence in the setting of portal hypertension is 12-30%, although the literature data are limited [1]. The study by Chawla, carried out on 102 patients affected by portal hypertension, reported that gallbladder varices were present in 13% of patients with cirrhosis, in 24% of those with non-cirrhotic portal fibrosis, and in 34% of those with extrahepatic portal vein occlusion [13].

Only 4 cases of hemoperitoneum by GBVs bleeding are reported in the literature to date and all of them were

TABLE I - *Demographics, pathologic and clinical data of the reported cases in Literature of cirrhotic patients with hemoperitoneum due to gallbladder variceal bleeding.*

		Demographics						Pathology					Management	
Author	**Year**	**Sex**	**Age**	**Cause of Cirrhosis**	**Child-Pugh**	**Meld**	**Transplantation Waiting List**	**Portal Vein Trombosis**	**Gallbadder Wall Varices**	**Gallbladder Bed Varices**	**Other Sites of Varices**	**Cholelithiasis**	**Emergency Laparotomy**	**Outcome**
Present case	2015	M	50	alcohol, HCV	C 12	19	yes	no	yes	yes	umbelical vein, gastropathy	yes	yes	death
Vilallonga [2]	2012	M	49	alcohol	n.a.	n.a.	no	no	yes	no	n.a.	not specified	yes	death
Kevans [3]	2009	M	43	HCV, HIV	n.a.	n.a.	yes	no	yes	no	esophagus, gastropathy	no	no	death
Chu [4]	2002	M	41	alcohol	C 14	27	yes	no	no	yes	esophagus, gastropathy, gastrohepatic ligament, left retroperitoneal collateral, umbelical vein	no	no	death
Hellerich [5]	1991	M	50	alcohol	n.a.	n.a.	n.a.	yes	no	yes	n.a.	not specified	no	death

fatal [2-5]. Three out of the 4 cases were end-stage cirrhotic patients awaiting for liver transplantation. One of them had portal vein thrombosis, whereas 3 had not. Two cases had gallbladder wall varices and 2 had gallbladder bed varices, whereas the patient herein presented had both. Two patients had not cholelithiasis, in the other two this date was not specified. Three patients were not even submitted to emergency laparotomy because of the clearly predictable fatal evolution of the event. The literature data are reported in Table I.

Cholelithiasis was present only in the herein reported case, where no signs of chronic inflammation were recognized however, thus the role of biliary stones may be considered not significant determining in the perforation and bleeding process.

As shown in the few literature data, GBVs are never alone, but seem to be always associated with other more common varices, as esophageal, gastric and umbelical ones.

GBVs are difficult to diagnose using conventional imaging technique and there are 3 pitfalls proposed for correct diagnosis: rarity, small caliber and presence of numerous large collaterals in porta hepatis and hepatoduodenal ligament [14].

Color-Doppler US is the imaging modality with the highest sensitivity and specificity for the diagnosis of GBVs: they appear as anechoic serpentine areas in the wall or around the gallbladder showing venous flow on color-Doppler imaging. Contrast-enhanced US is useful for a more careful diagnosis [15]. CT scan and MRI appear as less sensitive methods for demonstration of these ectopic varices if compared to US [14,16]. They are performed in order to diagnose or follow-up liver cirrhosis, liver neoplasms or portal hypertension, therefore the detection of GBVs may be incidental and the use of contrast-enhanced series is essential. Contrast-enhanced CT scan may be also helpful for the research of the cause of hemoperitoneum of unknown origin. Endoscopic US has high sensitivity and specificity in detecting GBVs but is a more invasive, less widespread and skill-requiring exam, if compared to US [17].

As shown by literature, the presence of GBVs does not correlate with the size of esophageal varices, presence or absence of gastric varices, portal gastropathy, Child-Pugh grade, the number of sessions of sclerotherapy or splenorenal shunt placement, the site and the extent of extrahepatic portal vein occlusion, and the presence of a spontaneous porto-Caval Shunt [13,16,18].

Conclusion

In conclusion, GBVs are a not common entity resulting from portal hypertension with absent of poor symptoms. The clinical significance of GBVs is the propensity to bleeding during biliary surgery or spontaneously: in the first case they may be a source of major blood loss which can be managed with difficulty by the surgeon, in the latter they cause massive hemorrhage (hemobilia, hemoperitoneum from rupture of the varices and/or gallbladder) which is very rare but fatal. Color Doppler US is the best procedure for elective diagnosis of GBVs.

Thus, the attempt to implement the color-Doppler US examination surveillance for GBVs identification would probably be advisable in high risk patients, mainly in those affected by portal hypertension undergoing hepatobiliary surgery, affected by cholelithiasis or with an history of cholecystitis. Moreover, the elective diagnosis of GBVs should be considered as an additional criteria for priority in the waiting list for liver transplantation.

Riassunto

L'emorragia da perforazione della colecisti può essere molto raramente fonte di emoperitoneo massivo. Nei pazienti cirrotici il sanguinamento può essere associato alla rottura delle varici della colecisti, rappresentando in tal caso una complicanza fatale, come riportato in tutti i casi presenti in letteratura. L'incidenza delle varici della colecisti in presenza di ipertensione portale è del 12-30%, sebbene i dati della letteratura siano limitati.
Descriviamo il caso di un paziente cirrotico terminale senza trombosi portale in attesa di trapianto di fegato ortotopico, il quale ha sviluppato un emoperitoneo fatale da sanguinamento massivo dovuto a rottura di varici sia della colecisti che della fossa colecistica. È inoltre riportata la revisione della letteratura a riguardo.

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