Case Report

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Gallbladder volvulus by laparoscopic surgery

Summary

Gallbladder volvulus has a higher incidence between the sixth and eighth decades of life, exceptional condition for its infrequence. Since it tends to be confused with other pathologies, its diagnosis is usually intraoperative and can cause serious complications, such as gangrene, biliary sepsis and even death. We present the case of a 97-year-old patient who went to the emergency department with abdominal pain in the epigastric region, oppressive, irradiated to the right hypochondrium. Due to laboratory and imaging findings, a laparoscopic cholecystectomy was decided. During the surgery, a gallbladder volvulus was observed. The patient presented a satisfactory postoperative evolution, being discharged after 48 hours. This article presents a clinical case of vesicular volvulus and its proper laparoscopic management.

Keywords: gallbladder, twisting, volvulus, laroscopic cholecystectomy

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Introduction

Gallbladder volvulus is a condition with a clinical presentation similar to an acute abdomen, being a diagnosis performed intraoperatively. It represents 1 in 365,000 cases with gallstone disease.[1] More than 500 cases have been reported since its first description in 1898, occurring in patients aged 60 to 80 years, with a predominance in women 3.5:1. The mortality rate goes up to 100% without treatment and decreases considerably to approximately 6% with timely intervention.[2] The appearance depends on the laxity of the vesicular meso, which would be related to advanced age and tissue atrophy phenomena. Currently there is no clear cause of biliary volvulus, however, associated factors have been described, being anatomical variations the main cause. Other causes are: the agenesis or partial absence of mesentery that supports the gallbladder, hypoplasia of the hepatic fossa and decreased hepatic volume.[3] The Gross classification distinguishes 2 major variations of the mesentery, resulting in anomalous embryologic migration of the gallbladder. As a result, it is covered only by the superficial peritoneum and there is a displacement towards the hepatic surface known as the floating vesicle, a factor associated with the volvulus.[4] The pathophysiological mechanism is the torsion of the gallbladder on its axis, resulting in a systemic inflammatory response and septic shock. If not resolved surgically, it can even lead to death. The evolution is attributed to ischemia and necrosis that occurs when there is a rotation of the gallbladder along its axis with involvement of vascular irrigation, which can be a complete torsion, being a circumferential rotation more than 180º and incomplete torsion less than 180°, respectively, which could determine the intensity of the symptomatology and prognosis of the patient.

Clinical presentation becomes a diagnostic challenge for the surgeon and radiologist despite the availability of advanced laboratory research and imaging, since differentiating the presentation of acute cholecystitis from biliary volvulus requires a more meticulous approach. In 1982, Lau's article proposed the following diagnostic triad 1) sudden abdominal pain accompanied by vomiting, 2) the presence of palpable mass on the right flank and 3) the clinical and physical characteristics of the patient,[5] on the other hand, there are no specific preoperative symptoms, which makes it difficult to diagnose based on clinical history and physical examination only.

The most frequent diagnostic approach is ultrasonographic findings consistent with acute cholecystitis and acute abdomen in addition to the white blood cell count and C-reactive protein level that may be increased. Three features of ultrasound indicative of gallbladder torsion are recognized. First, a diffusely thickened gallbladder wall that is suggestive of gangrene and inflammation; second, a floating gallbladder, in which most of the organ does not adhere to the hepatic bed; third, a conical structure in the neck of the gallbladder, consisting of multiple linear echoes that converge towards the tip of the "cone".[6,7] Contrast enhanced computed tomography (CECT) and magnetic resonance imaging (MRI) are the most sensitive diagnostic methods used. In CECT we can see a "floating gallbladder" with thickening of the wall, whereas, the MRI can demonstrate a twisted cystic duct, mainly T2-weighted images that are beneficial for evaluating necrosis of the gallbladder wall. A hepatobiliary scan with iminodiacetic acid (HIDA) shows a target image due to the subsequent accumulation of the radio isotope in the gallbladder.[4] Early diagnosis of gallbladder twisting can help prevent life-threatening complications, such as gallbladder gangrene, perforations that cause biliary peritonitis, and other infections. Upper digestive endoscopy may also help with diagnosis, however diagnosis is made intraoperatively.[8] The treatment is surgical, the approach may be laparoscopic or open cholecystectomy. There are no studies that compare the open approach with the laparoscopic, however, the advantages of minimally invasive surgery should be considered.

Case report

We present the case of a 97-year-old patient with a history of exploratory laparotomy secondary to a perforation of the cecal appendix, more than 30 years ago. The patient begins with oppressive abdominal pain 3 hours before going to the emergency department, in the epigastric region, with an intensity 6/10 in Visual Analogue Scale (VAS), irradiated to right hypochondrium and upper dorsal region, accompanied of biliary vomiting in 4 occasions. Upon arrival, vital signs were within normal parameters. On physical examination, the abdomen was soft, depressible, without hyperesthesia and hyperalgesia, with normal peristaltic noises, pain to superficial and deep palpation in the epigastric region and right hypochondrium, with generalized nuance percussion. No evidence of peritoneal irritation. Negative appendicular signs, right Giordano sign positive, Murphy

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sign positive. Laboratory studies showed no significant alterations. The ultrasound reported a gallbladder diameter of 5.5 mm, data suggestive of hydrocholecyst, with the presence of bile mud and microlithiasis (Figure 1). During his stay in the emergency room, he begins with severe pain on the right flank, that does not refer to the use of intravenous painkillers. A surgical procedure by laparoscopy was decided. The procedure consisted of a laparoscopic cholecystectomy. It was found a distended gallbladder, with ischemia and necrotic plaques, as well as abundant perivesicular fluid and evidence of torsion of the pedicle of the gallbladder (Figure 2 & 3). Finally, a gallbladder volvulus is diagnosed, followed by a satisfactory postoperative evolution, with hospital discharge at 48 hours.

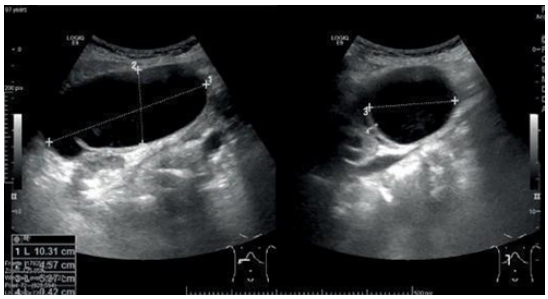

Figure 1 The ultrasound shows a gallbladder with a diameter of 5.5 mm, data compatible with hydrocholecyst and the presence of biliary mud and microlithiasis.

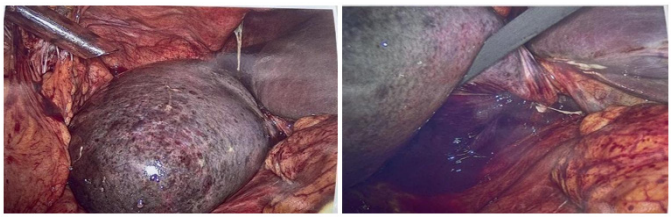

Figure 2 & 3 Image of intraoperative laparoscopy showing a very distended gallbladder, with ischemia and necrotic plaques, in addition to abundant perivesicular fluid and a torsion of the gallbladder pedicle.

Discussion

The volvulus represents the torsion of a segment of a viscera on its longitudinal axis (organo-axial), or around its transverse axis (mesentero-axial).[9] The gallbladder volvulus is an infrequent entity of difficult preoperative suspicion due to the location of the pathology, far from its usual topography. Wendel described the first case in the literature in 1898.[10] Since the initial publication to the present day, there are more than 500 cases reported in the entire bibliography worldwide, which has allowed us to understand the disease.[11] In 2006, Matsuhashi reported a case of vesicular volvulus diagnosed using ultrasound, computed tomography and endoscopic retrograde cholangiography (ERCP).[12]

The absence of a palpable mass and the characteristics of the case that we report could be explained because there are 2 types of floating vesicle, type A, in which the mesentery covers the gallbladder and the cystic duct, and type B, which only covers the cystic duct with the free gallbladder. Cases of acquired floating gallbladder occur in elderly patients with loss of visceral fat and hepatic atrophy, which generates a long and mobile mesentery susceptible to torsion, has also been observed in patients with advanced liver cirrhosis.[13] The main clinical manifestation is severe pain in the right flank, although it can also occur in the epigastrium and the right iliac fossa in case of vesicular ptosis, which can simulate an acute appendicitis.[14] The three essential steps during the surgical approach are, decompression, detorsion and removal of the gallbladder. It is necessary to take into account the clinical state of the patient and the experience of the surgeon to decide the surgical approach. The prognosis is excellent after a timely intervention; However, in those cases where diagnosis and surgery are delayed, the high risk of perforation and peritonitis may increase mortality by 5%.[15]

Acknowledgments

None.

Conflicts of interest

The authors declare that there are no conflicts of interest.

References

1. Kashyap S, Mathew G, Abdul W, Ahmad H. Gallbladder volvulus. StatPearls. 2020.
2. Shaikh AA, Charles A, Domingo S, et al. Gallbladder volvulus: Report of two original cases and review of the literature. *Am Surg*. 2005;71(1):87–89.
3. Bardol T, Roucaute S, Souche R. Laparoscopic cholecystectomy for gallbladder volvulus (with video). *J Visc Surg*. 2021;158(5):448–449.
4. López-Casillas N. Gallbladder volvulus as a cause of acute abdomen. *Revista Chilena de Cirugía.* 2017;69(6):479–482.
5. Lau WY, Fan ST, Wong SH. Acute torsion of the gallbladder in the aged: A re-emphasis on clinical diagnosis. *Aust N Z J Surg*. 1982;52(5):492–494.
6. Christoudias GC. Gallbladder volvulus with gangrene. Case report and review of the literature. *J Soc Laparoendosc Surg*.1997;1(2):167–170.
7. Younan G, Schumm M, Ali F, Christians KK. Gallbladder volvulus in a patient with type I choledochal cyst: a case report and review of the literature. *Case Rep Surg*. 2016;2016:5626531.
8. Drubay V, Vanwest L, Tchanderli R, et al. Gallbladder volvulus. *Presse Med*. 2015;44(4 Pt 1):478–480.
9. López C, Pous S, Dolz JF, et al. Acute torsion of the gallbladder. *Cir Esp.* 1998;64:504–505.
10. Wendel AV. Case of floating gallbladder and kidney complicated by cholelithiasis with perforation of gallbladder. *Am Surg.* 1898;27(2):199–202.
11. Abadía Barnó P, Coll Sastre M, Picón Serrano C, et al. Gallbladder volvulus: diagnostic and surgical challenges. *Cir cir.* 2017;85 Suppl 1:89–92.
12. Matsuhashi N, Satake S, Yawata K, et al. Volvulus of the gallbladder diagnosed by ultrasonography, computed tomography, coronal magnetic resonance imaging and magnetic resonance cholangiopancreatography. *World J Gastroenterol.* 2006;12(28):599–601.
13. Baley Spindel I, Martín Téllez KS, Cervantes Castro J. 78-year-old woman with severe abdominal pain. *Gac Med Mex.* 2011;147:275–278.
14. Puga-Bermudes R, Sabater-Maroto C, Ramia-Ángel JM, et al. Gallbladder Torsion. *Cir Esp*. 2010;88(4):260–276.
15. Pu TW, Fu CY, Lu HE, et al. Complete body-neck torsion of the gallbladder: A case report. *World J Gastroenterol.* 2014;20:14068–14072.