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A New Observation of Volvulus of the Gallbladder

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Abstract: Background: The volvulus of the gallbladder is a rotation of the gallbladder around its cystic pedicle. It is a relatively rare disease in the literature. Only 400 cases have been described. The diagnostic may be difficult in preoperative. The aim of our study is to report an observation of gallbladder volvulus to discuss its diagnostic and therapeutic management in relation to the literature. Observation: A 63-year-old woman was admitted for febrile hepatic colic. The biological examination revealed an hyperleukocytosis at 12000G/L, ASAT was at three times normal and ALAT at four times normal. Total bilirubin and conjugated bilirubin were without particularity. The most likely diagnosis was an acute cholecystitis in front of the clinical status, leading to ultrasound of the liver and bile ducts. The scanographic explorations had suspected a torsion of gallbladder. The diagnosis of gallbladder volvulus was made intraoperatively during exploratory laparotomy. The gallbladder was gangrened, twisted in a turn of the clockwise. The cholecystectomy was made after detorsion. The evolution was favorable. Conclusion: The volvulus of the gallbladder is a rare cause of acute cholecystitis. The medical imaging is a key element for the diagnostic. The prognosis is good in front of an early diagnosis. The cholecystectomy is the only surgery treatment.

Keywords: Cholecystectomy, Gallbladder, Volvulus

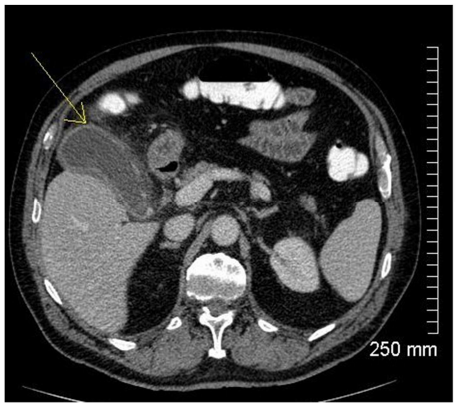
1. Introduction

Gallbladder volvulus is an uncommon disease caused by torsion of the gallbladder around its mesentery along the axis of the cystic duct and artery, ultimately leading to gallbladder ischemia an obstruction of biliary drainage. While gallbladder twisting is a relatively rare disease, it has become increasingly common in recent years [1, 2]. It's a potentially fatal condition by its most often late diagnosis [1, 2]. However, with increasing awareness of the condition, advancements in medical imaging, and more accurate knowledge coming from the collection of published case reports, it is increasingly possible for this condition to be diagnosed and managed appropriately [3-5]. We report the particular case of a volvulus of the gallbladder to improve its management, given the critical nature of this disease.

2. Observation

A 63-year-old woman came to the emergency with an acute febrile hepatic colic (38.5°C). She had a pain of the right hypochondrium during two days. The patient had also nausea with bilious vomiting. On physical examination, Murphy's sign was positive with a pain in the right hypochondrium at the blocked inhalation. The biological examination revealed hyperleukocytosis at 12000G/L, C ReactiveProtein at 64, ASAT at three times normal and ALAT at four times normal. Total bilirubin and conjugated bilirubin were without particularity. The most likely diagnosis was an acute cholecystitis in front of the clinical status, leading to ultrasound of the liver and bile ducts. The latter had revealed a thickened-walled gall bladder with peri-vesicular infiltration, no visible vesicular lithiasis and no

dilation of the bile ducts. An abdominal CT scan had completed the radiological investigations. It was marked by the absence of vascular flow in the gallbladder, suggesting a torsion of the gallbladder. Surgical consultation was then requested, and the patient was brought to the operating room for an urgent laparotomy. The gallbladder was gangrened, twisted in a turn of the clockwise. The cholecystectomy was made after detorsion. The patient had received post-operative antibiotic therapy. The hospitalization was extended for seven days because the blood pressure was high few days, which required monitoring in the continuing care unit. The evolution was simple. The healing was complete with removal of the skin stitches after twelve days.

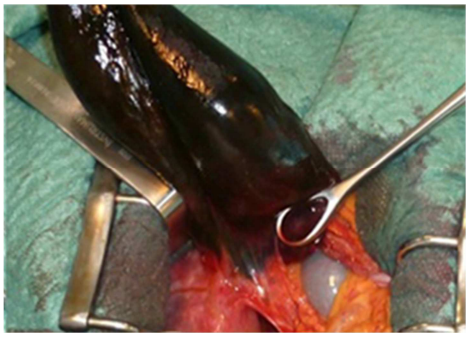


Source: Unit of surgery A, Verdun Hospital

Figure 1. *Abdominal CT scan axial section with contrast medium: thickened wall gallbladder with peri-vesicular infiltration.*

Source: Unit of surgery A, Verdun Hospital

Figure 2. *Intraoperative image of torsion of the gallbladder.*



Source: Unit of surgery A, Verdun Hospital

Figure 3. *Intraoperative image of the distorted gallbladder.*

3. Discussion

Since Wendel first described a volvulus of the gallbladder in 1898, only 400 cases have been described in international publications. The clinical incidence of tosion of gallbladder has been reported to be one in 365,250 hospital admissions. In our observation, the patient was an elderly woman; this pathology affects mainly elderly women. The loss of fat and elasticity is related to age, leading to visceropathy [3]. The articles and cases reported two age groups with a maximum incidence between [6-19 years] and [60-80 years] with a sex ratio of 4/1 in children and 1/3 in adults [2-4]. In our observation, the patient was 63 years old. A few rare cases of gallbladder torsion in children around two years of age had also been observed. The female predominance in the literature is explained by the higher prevalence of biliary lithiasis among women. Indeed, the presence of cystic calculus will disturb the peristalsis of the neighbouring organs and promote a volvulus of the gallbladder. In our observation, laparotomy had led to the discovery of a twisted vesicle around the axis of the cystic duct. The torsion of the gallbladder had occurred on a floating gallbladder without adherence between the gallbladder and the liver. Indeed, it is often associated with a particular anatomical deformation. The mobility of the gallbladder is classified as type I or type II according to the raw classification [3]. GROSS had established a classification according to the anatomical arrangement of the volvulus of the gallbladder. The classification had distinguished: a pedicle gallbladder moored in its own peritoneum, free, joined to the gallbladder by a mesocyst twisting around the cystic duct; A gallbladder and a cystic duct moored to the underside of the liver by a meso too short, with torsion of the gallbladder around the latter. Peristalsis of the colon, duodenum or stomach may also induce sub-torsion-detorsion episodes prior to complete torsion of the gallbladder [1]. Other risk factors were also noted, such as thinness of the subject, kyphoscoliosis, and associated visceral ptosis [1]. Another mechanical events may be sudden shifts in body position, intense peristalsis of adjacent viscera, and blunt trauma. Increased cholecystokinin production leading to gallbladder peristaltis after a fatty meal may facilite gallbladder torsion [5, 6].

In our observation, the acute febrile hepatic colic with no sign of sepsis had suggesting an acute cholecystitis. The pain was right upper-quadrant, sudden, sharp, and intense. The clinical presentation is similar than acute cholecystitis sometimes, but a correct dignosis is possible. A triad has been described to alarm and stimulate clinical suspicion for the presence gallladder volvulus. A triad of patient characteristics is elderly female, thin, and kyphotic or with lung disease. A triad of symptoms is early presentation, typical pain, and early vomiting, nausea. A triad of physical signs is palpable abdominal mass, absence of toxemia and jaundice, and pulse-temperature discrepancy [7, 8]. In the other reported cases, he sign of "coming and going" of SHORT is inconsistent, remained pathognomonic of the volvulus of the gallbladder [4]. An important clue to the

dignosis is an acute cholecystitis patient who does not improve on supportive management and antibiotics [9, 10]. In our observation, the abdominal CT scan had suspected a twisted vesicle in front of the absence of vascular flow. The most contributing examinations were abdominal CT and liver and biliary ultrasound examinations showing a thickened, duplicated vesicle in the report case, il has also been suggested that under the suspicion of cholecystitis, the absence of cholelithiasis is supportive of volvulus as an alternative diagnosis [11]. Absence of blood flow on Doppler ultrasonography can also support the diagnosis. Computed tomography can find a changement to anatomical orientation of gallbladder from vertical to horizontal, gallbladder location away from its fossa, the « beak » sign, and the « whirl » sign, the angulation of the twisted pedicle. Other findings include a well-enchanced cystic duct to the right of the gallbladder, fluid collection seperating the gallbladder from its fossa, significant gallbladder distension, and gallbladder wall thickening with hyperdensity and poor enchancement on IV contrast [12]. The surgery confirmed the diagnosis. Cholecystectomy was mandatory. There was a contradiction in terms of surgical technique. If a cholecystectomy performed without detorsion of the gallbladder had reduced the risk of sepsis, it could damage the bile ducts [5, 13]. In the literature, a minimally invasive approach should be the first choice, laparoscopic cholecystectomy can often be facilitated by the minimal adherence of the gallbladder to the liver bed, but it is recommended to assess the anatomy with diagnostic imaging like intraoperatory cholangiogram [14, 15]. It avoids an unwanted biliary injury in the laparoscopic surgery [14, 16]. Actually, robotic surgery is on the rise. The intraoperative cholangiogram is not necessarily required in the robotic surgery because the ICG fluorescence is already integrate into the platform. The 3D vision, and the instruments added benefits to the more traditional laparoscopic approach too. However, further evidence is necessary to show an obious advantage of the robotic approach in the management of this rare and acute condition in comparison to the widely accepted laparoscopy [16]. In our observation, there were no postoperative complications. The prognosis of this pathology was good because the diagnosis and treatment were early. However, in the other cases reported in the literature, the delayed diagnosis had worsened the prognosis with a gallbladder necrosis, which ca be complicated by perforation, bilious peritonitis and hemodynamic instability [6].

4. Conclusion

Gallbladder volvulus is a rare pathology. It is important to consider gallbladder volvulus as a differential diagnos with acute cholecystitis in an elderly patient. In our patient, the classic characteristics were present, however the preoperative diagnosis was difficult, delaying treatment. Ultrasound of the liver and bile ducts and abdominal CT scan are still important for the diagnosis. Cholecystectomy is the only surgical treatment. Early intervention remains the only guarantee of a good prognosis. Robotic-assisted surgery has had an exponential growth in the last two decades, but its use in the acute setting has still to be fully explored.

Conflict of Interest

None declared.

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