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Case Report

A rare case report of chronic cholecystitis complicated with incomplete gallbladder volvulus

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Abstract: Gallbladder volvulus, or gallbladder torsion, is a rare condition. There have been very few case reports of chronic cholecystitis complicated by incomplete gallbladder volvulus. A 63-year-old woman had suffered recurrent right upper quadrant pain for 3 years, which had grown worse during the past day. She was admitted through the emergency department on February 24, 2012. Laparoscopic exploration revealed approximately 180° torsion of the gallbladder. Postoperative pathologic examination suggested a diagnosis of chronic cholecystitis, without operative complications. Incomplete gallbladder volvulus is associated with anatomic changes to the gallbladder mesentery, constipation, and increased bowel movements. Early diagnosis and laparoscopic exploration are the keys to management.

Keywords: Incomplete gallbladder volvulus, chronic cholecystitis, gallstone, diagnosis

Introduction

Gallbladder volvulus or torsion, is an uncommon cause of acute abdomen and occurs by rotation of the gallbladder on its mesentery [1]. Eighty-five percent of cases occur in the elderly with three times as many women being affected. It is characterized by a generous peritoneal investment of the gallbladder and long, tortuous cystic duct which allows for the development of an abnormally "long mesentery" suspending the gallbladder from the liver bed [2, 3]. However, there have been very few case reports of chronic cholecystitis complicated with incomplete gallbladder volvulus. We here present a rare chronic cholecystitis case complicated with gallbladder volvulus.

Case presentation

A 63-year-old woman had suffered recurrent right upper quadrant pain for 3 years, which had grown worse during the past day. She was admitted through the emergency department on February 24, 2012. She had no fever, and had nausea but no vomiting. She had a 10 year history of gallstones and had suffered constipation for 5 years. Her vital signs were: temperature 36.9°C; heart rate 90/min; respiratory rate 16/min; and blood pressure 110/70 mm Hg. She was in acute distress but had no jaundice, and cardiopulmonary examination was normal. There was tenderness in the upper right quadrant of the abdomen, with no rebound tenderness or rigidity. Murphy's sign was positive, she had a palpable gallbladder, there was no shifting dullness, and bowel sounds were normal. White blood cell count was 7.07×10^9/L and neutrophils were 86.7%. Abdominal computed tomography showed an enlarged gallbladder with uneven thickening, multiple gallstones inside the gallbladder, a blurry gallbladder neck, free air inside the gallbladder cavity, and circular hyperdensity (**Figure 1**). The diagnosis on admission was: ① acute exacerbation of chronic cholecystitis, ② multiple gallstones.

After symptomatic treatment including nothing by mouth, gastrointestinal decompression, antibiotics, and antispasmodic medications, the patient's abdominal pain was relieved. She underwent laparoscopic exploration on day 5 after admission, under general anesthesia. During surgery, the gallbladder was found to be tremendously enlarged (17 cm × 6 cm × 5 cm), with high tension, a free fundus, a short and loose mesentery, an enlarged neck (approximately 5 cm), subserous gallbladder artery and

Figure 1. CT showed an enlarged gallbladder with uneven thickening, multiple gallstones inside the gallbladder, a blurry gallbladder neck, free air inside the gallbladder cavity, and circular hyperdensity.

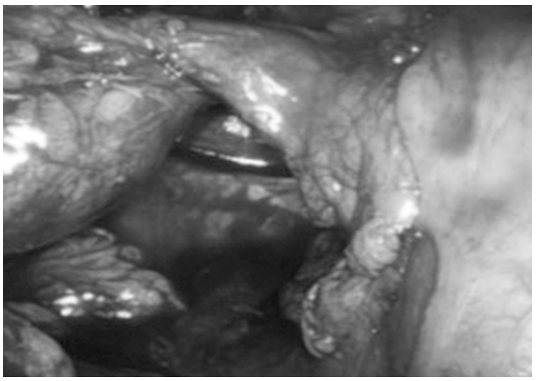

Figure 2. Laparoscopic exploration showed approximately 180° counterclockwise torsion of the mid-gallbladder duct.

vein, and approximately 180° counterclockwise torsion of the mid-gallbladder duct (**Figure 2**). The common bile duct was dilated to approximately 1.2 cm. The patient underwent successful laparoscopic cholecystectomy, without exploration of the common bile duct due to the fact that she did not have common bile duct stones or jaundice on preoperative examination and her liver function tests were normal. A subhepatic drainage tube was placed post-surgery. The resected gallbladder was dissected, revealing multiple cholesterol gallstones. The drainage tube was removed 3 days post-surgery and the patient was discharged fully recovered on day 5. Post-surgical pathology revealed chronic cholecystitis.

Discussion

Gallbladder volvulus was first reported by Wendel in 1898 [4] and has been a rare clinical condition. It most often occurs in the elderly, frequently in women. The condition is associated with congenital and acquired anatomic changes [5], as follows: ① abnormality of embryonic development leading to a free-floating gallbladder, also known as a mesenteric gallbladder; ② age-related lipopenia, tissue atrophy, decreased elasticity, loose gallbladder mesentery, and visceral organ ptosis resulting in a long gallbladder mesentery; ③ the gallbladder fundus is not attached to the gallbladder base; and ④ rarely, a free hepatic lobe is present, to which the gallbladder attaches. People with these anatomic abnormalities are predisposed to gallbladder volvulus following kyphoscoliosis, intense exercise, abdominal trauma, abdominal ptosis, constipation, volvulus of the sigmoid colon, or diarrhea. Gallbladder volvulus can be classified as clockwise or counterclockwise, which, according to Nakao, is determined by the movement of neighboring organs. For instance, movement of the stomach or duodenum causes clockwise volvulus, whereas movement of the transverse colon causes counterclockwise volvulus [6].

Gallbladder volvulus is divided into complete and incomplete cases based on the angle of torsion; volvulus of less than 180° is termed incomplete and volvulus of more than 180° is termed complete. Acute complete gallbladder volvulus is the most common situation and is a life-threatening emergency because of the risk of gallbladder gangrene and perforation. By contrast, incomplete gallbladder volvulus is rare. The case reported here might have been caused by the following factors: ① tissue atrophy associated with aging, free gallbladder fundus, and loose gallbladder mesentery; ② chronic cholecystitis with bile emptying abnormalities and cholestasis, and resultant gallstones that further worsened the gallbladder ptosis and mobility, thereby increasing the risk of volvulus; or ③ long-lasting constipation and poor diet leading to increased movement of the transverse colon, causing counterclockwise incomplete gallbladder volvulus.

Diagnosis of gallbladder volvulus is difficult due to its low incidence and lack of specific symptoms. In the literature, magnetic resonance cholangiopancreatography is reported to be optimal method for detecting volvulus of the gallbladder duct; a V-like structure formed by the gallbladder duct at the junction of the extra-

hepatic bile duct supports the diagnosis of gallbladder volvulus [7-9].

Most cases of gallbladder volvulus are sudden-onset complete volvulus, which can compromise the blood supply to the gallbladder and cause gallbladder gangrene, perforation, and subsequent diffuse peritonitis. Therefore, gallbladder volvulus is a life-threatening emergency. If gallbladder volvulus is diagnosed or highly suspected, surgical resection of the gallbladder should be performed promptly. Laparoscopy is optimal for both diagnosis and treatment.

Patients with chronic cholecystitis complicated by incomplete gallbladder volvulus are at lower risk of compromised blood supply and gallbladder gangrene and perforation, and have less inflammation, edema, and adhesion of the gallbladder neck; the anatomy of Calot's triangle is clear. The optimal treatment is laparoscopic exploration with cholecystectomy.

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Disclosure of conflict of interest

None.

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