

Gallbladder volvulus: Review of the literature and report of a case

Safra kesesi volvulusu: Olgu sunumu ve literatür incelemesi

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Gallbladder volvulus is defined as the rotation of the gallbladder on its mesentery along the axis of the cystic duct and cystic artery. The presence of a redundant mesentery (floating gallbladder) is a prerequisite for volvulus. The disease, described for the first time by Wendel in 1898, is an extremely rare surgical disease. The disease mimics acute cholecystitis symptoms. Because of these two conditions, preoperative diagnosis of the disease is difficult. In any case, the definitive diagnosis is made during surgery. Volvulus of the gallbladder is an acute surgical emergency that must be treated with immediate detorsion and cholecystectomy. We report a case of gallbladder volvulus suspected pre-operatively using pre-operative imaging with ultrasound. The cases reported in the literature are reviewed and the treatment of gallbladder volvulus is also discussed.

Key words: Gallbladder torsion, gallbladder volvulus, surgery

Safra kesesi volvulusu, safra kesesinin mezosundan, sistik arter ve sistik kanal ekseninde rotasyonudur. Gereğinden uzun mezenterin varlığı (yüzen safra kesesi) volvulus için bir ön koşuldur. Bu hastalık ilk kez 1898 yılında Wendel tarafından tanımlanmış son derece nadir bir cerrahi hastalıktır. Bu hastalık akut kolesistit semptomlarını taklit eder. Bu iki durum nedeni ile bu hastalığın ameliyat öncesi tanısını koymak zordur. Her halükarda, kesin tanı ameliyat sırasında konur. Safra kesesi volvulusu acil detorsiyon ve kolesistektomi ile tedavi edilen cerrahi bir acildir. Biz ameliyat öncesi yapılan ultrasonografi ile safra kesesi volvulusundan şüphelenilen bir olguyu sunuyoruz. Literatürde bildirilmiş vakalar incelenerek safra kesesi volvulusunun tedavisi tartışılmıştır.

Anahtar kelimeler: Safra kesesi volvulusu, safra kesesi torsiyonu, cerrahi

INTRODUCTION

Volvulus of the gallbladder is an unusual event. The disease was first described in 1898 by Wendel (1). The true incidence is not known, but over 500 cases have been reported in the last century (2). The disease shows female preponderance, occurring particularly in old age (3). Although the etiology is unknown, a constant finding is the presence of the gallbladder on a mobile mesentery ("floating" gallbladder) (4). The clinical features and laboratory assays mimic those of acute cholecystitis. A delay in the diagnosis and treatment may be life-threatening. Ultrasonography and computed tomography can show a more distended gallbladder, with a multi-layered wall different from acute cholecystitis. Nevertheless, it is usually diagnosed at laparotomy, and treatment consists of detorsion and cholecystectomy. We present a case of volvulus of the gallbladder and review the clinical aspects of the disease.

CASE REPORT

A 70-year-old male was admitted to the emergency clinic with right upper quadrant pain, nausea and vomiting for the last two days. Physical examination revealed obesity and muscular guarding, and a mobile, palpable mass of the right hypochondrium. Body temperature was 38°C, pulse was 104 per minute, and blood pressure was 110/70 mmHg. In the blood count, he had a leukocyte count of 14,700/mm³, with a left shift, and a hematocrit of 32.8%. Serum total bilirubin was 2.4 mg/dl, direct bilirubin 1.7 mg/dl, SGOT 95 IU/L, SGPT 137 IU/L, and alkaline phosphatase (ALP) 280 IU/L.

The abdominal plain film was normal. Ultrasound examination revealed a large distended gallbladder (12x5 cm) with thickened (7 mm) and multi-layered wall and a stone (26 mm) (Figure 1).

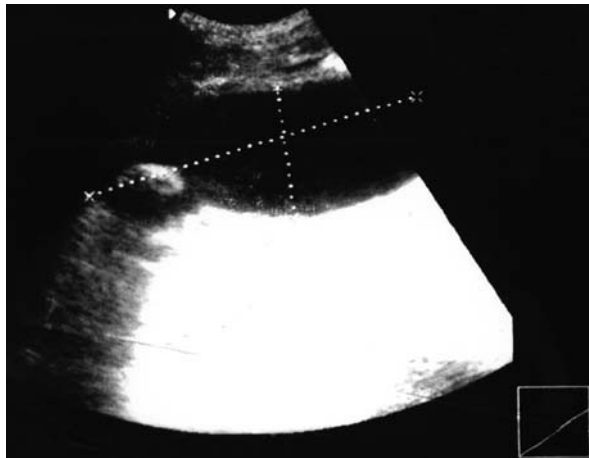


Figure 1. Abdominal ultrasonography showing enlarged gallbladder with thickened wall and stone

Acute cholecystitis was diagnosed and intravenous fluid, broad spectrum antibiotic and analgesic administration was started. When the patient was re-examined eight hours after admission, the complaints of right hypochondrium pain and muscle guarding were increased despite analgesic therapy. In view of the ultrasonographic findings, gallbladder volvulus was suspected, and an emergency laparotomy was performed. At operation a very large (13x8 cm), distended and gangrenous gallbladder was found. The gallbladder had rotated counterclockwise 180°. Detorsion was done and cholecystectomy performed. The mesentery of the gallbladder covered only the cystic duct and artery; the gallbladder was almost completely intraperitoneal (Figure 2). Postoperatively a wound infection developed and open wound dressing was performed. The patient was discharged 22 days after surgery uneventfully.

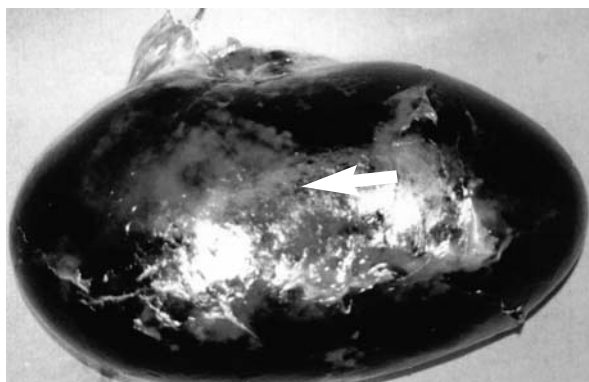


Figure 2. Ischemic gallbladder following torsion

DISCUSSION

A volvulus is the twisting of a nonsolid organ around its mesenteric axis. Volvulus most commonly occurs at the sigmoid colon, cecum, and small intestine and, rarely, the stomach. Gallbladder volvulus is an extremely rare disease in which immediate surgical intervention is lifesaving. It was first described by Wendel a century ago in 1898 (1). The true incidence is not exactly known. Eighty-five percent of gallbladder volvulus cases occur between the ages of 60 and 80 years, with a female-to-male ratio of 3:1 (5).

Etiologically, two types of gallbladder have a tendency to volvulus - those with a wide mesentery and those in which the mesentery covers only the cystic duct and artery. Both of these conditions allow the gallbladder to float and result in volvulus. Loss of fat and the liver atrophy that may occur with advancing age can cause an acquired gallbladder mesentery (6).

Other precipitating factors are violent peristalsis of the neighboring organs, namely stomach, duodenum and colon, kyphosis, and visceroptosis and atherosclerosis of the cystic artery (7). The importance of gallstones is unknown. Approximately 70-80% of patients with torsion had no gallstones. Volvulus interferes with blood supply and bile flow. Consequently, gallbladder wall thickening, hydrops, and finally, gangrene develop.

Preoperative diagnosis has been extremely elusive because the symptoms and signs are similar to those of acute cholecystitis. But some findings obtained by examination and preoperative ultrasonographic imaging and computed tomography may cause suspicion. A large anteriorly floating gallbladder (tender mobile mass) and gross wall thickening without gallstones in an aged kyphotic woman can be suggestive of gallbladder volvulus.

Laboratory investigations are usually unhelpful. An elevated white blood cell count is a frequent finding. Liver function tests are commonly normal (8).

Ultrasound studies often reveal a large floating gallbladder without gallstones and a thickened gallbladder wall. Specific ultrasound signs seen with gallbladder torsion include the presence of the gallbladder outside its normal anatomic fossa, inferior to the liver or in a transverse orientation with an echogenic conical structure - the twisted pedicle (9, 10).

Computed tomographic scan provides similar diagnostic clues with ultrasonography: the presence of gallbladder outside its fossa and inferior to the liver, pericholecystic fluid, and massively distended gallbladder with wall thickening (11, 12).

Magnetic resonance imaging findings include high signal intensity within the gallbladder wall on T1-weighted images suggesting necrosis and hemorrhage and consistent with gallbladder torsion (12).

The magnetic resonance cholangiopancreatography (MRCP) findings were defined by Usui et al.: v-shaped distortion of extrahepatic bile ducts as a result of traction by the cystic duct, tapering interruption of the cystic duct, a distended gallbladder at the end of the cystic duct which was deviated to the midline, and a difference in intensity between the gallbladder and the extrahepatic bile ducts and cystic duct (13).

Hydroxyiminodiacetic acid (HIDA) scans were reported in one study to form a "bulls-eye" configuration from the accumulation of radioactivity in the gallbladder (14).

Given the possibility of laparoscopic cholecystectomy and the increasing incidence at which torsion of the gallbladder is currently being witnessed, the importance of a preoperative computed tomographic scan is emphasized when there is a high index of clinical suspicion (11).

When we reviewed gallbladder volvulus in PubMed®, we determined that 195 new cases have been reported since 1965. (PubMed. Available at: <http://www.ncbi.nlm.nih.gov/PubMed/> Accessed May 15, 2005). The mean age was 77. Ninety-one were diagnosed laparoscopically from 1989 to 2003 and laparoscopic cholecystectomy was performed successfully in six of the cases. The hospital stays of the patients who underwent open cholecystectomy was longer because of wound infections. Similarly, the patient reported here was discharged 22 days after surgery because of a wound infection.

Thus, laparoscopic approach should be the first choice when gallbladder volvulus is suspected. Laparoscopic management is easy because of the wide gallbladder mesentery in these patients.

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