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Case Report

Torsion of the Gallbladder Diagnosed by Magnetic Resonance Cholangiopancreatography

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Torsion of the gallbladder is a rare entity that is difficult to diagnose preoperatively, the principal differential diagnosis being cholecystitis. The condition occurs most often in the elderly. Although its etiology is unknown, the presence of a redundant mesentery is a prerequisite for torsion. Computed tomography, ultrasound, and magnetic resonance cholangiopancreatography can provide important diagnostic clues. Torsion of the gallbladder occurs when it twists axially, with subsequent occlusion of bile or blood flow. Therefore, prompt surgical treatment is necessary in order to prevent necrosis and perforation. In the present study, we report a case of torsion of the gallbladder diagnosed by magnetic resonance cholangiopancreatography. This condition was successfully treated by laparoscopic cholecystectomy.

Key words: Torsion – Gallbladder – Magnetic resonance cholangiopancreatography – Laparoscopy

Torsion of the gallbladder (GB) is an uncommon event that often occurs in the elderly. It is defined as a rotation of the GB on the mesentery along the axis of the cystic duct and artery. The exact etiology is unknown, but the symptoms mimic those of acute cholecystitis. The current value of radiologic imaging is limited. Clinically, torsion of the GB is an acute surgical situation because of its attendant risk of necrosis and perforation. The treatment of choice is immediate cholecystectomy. Although the diagnosis is commonly made during surgery, a recent upward trend in reported cases testifies that earlier diagnosis is both possible and preferable in the laparoscopic era because it can assist in selecting an appropriate treatment strategy.[1–3]

Here, we report a case of elderly patients with torsion of the GB presenting with symptoms of acute cholecystitis. In most cases, the diagnosis has been

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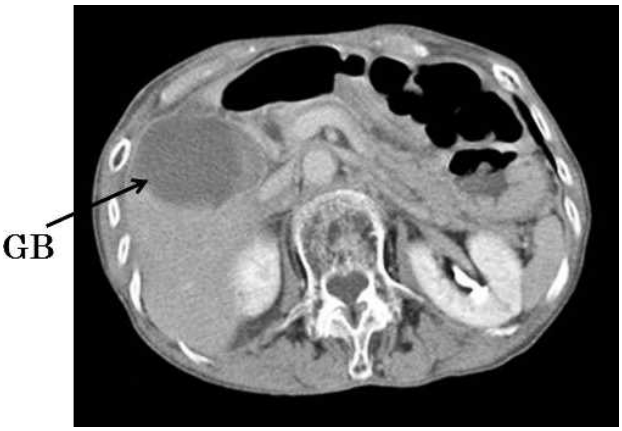

Fig. 1 Abdominal CT indicates a massively distended GB (arrow) with heterogeneous contents.

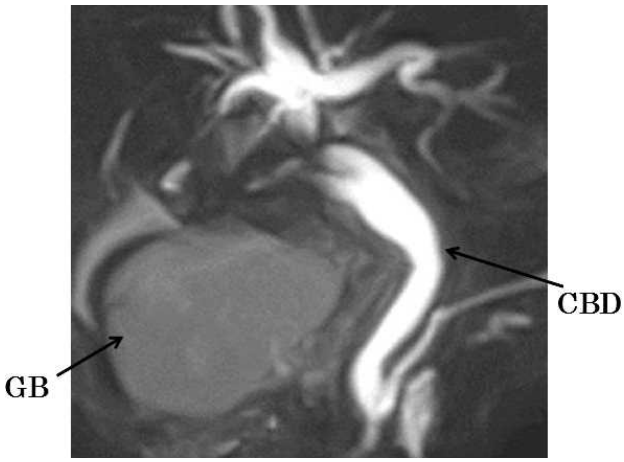

Fig. 2 MRCP shows a pulled CBD (arrow) near the neck of the GB (arrow).

made by computed tomography (CT) or ultrasound (US). Preoperative magnetic resonance cholangiopancreatography (MRCP) provided important diagnostic clues in our case. This condition was successfully treated via a laparoscopic approach.

Case Report

An 85-year-old woman was admitted to our hospital complaining of right upper quadrant pain. Physical examination revealed a very low body weight of 34.0 kg, with a temperature of 37.4°C, blood pressure of 123/89 mmHg, and a pulse rate of 93 beats per minute. On abdominal examination, the abdomen was soft and mildly distended, and there was obvious tenderness in the right upper quadrant.

Blood tests showed a white blood cell count of 10,500/mm^3 and C-reactive protein of 9.25 mg/dL. Liver function tests were normal. Abdominal US demonstrated a distended GB with a thickened wall and no stones. Abdominal CT indicated a distended GB with heterogeneous contents, suggesting acute cholecystitis (Fig. 1). MRCP revealed dilatation of the GB and a pulled common bile duct (CBD) near the neck of the GB, the neck itself not being detected (Fig. 2). These MRCP findings suggested that the GB could be twisted near the neck.

We made a diagnosis of torsion of the GB and performed laparoscopy to confirm the diagnosis. At laparoscopy, the GB was markedly distended, ischemic, and floating away from the liver bed. The GB had twisted around its axis at the level of the cystic duct and artery, forming a complete torsion with 360° counterclockwise rotation (Fig. 3a). We untwisted the GB and performed cholecystectomy (Fig. 3b). A pathologic specimen showed transmural hemorrhage and necrosis, compatible with torsion of the GB. The postoperative course was uneventful, the patient being discharged on postoperative day 7.

Discussion

Torsion of the GB has been recognized for more than 100 years, although it remains a rare event that is difficult to diagnose preoperatively. Eighty-five percent of these conditions occur between the ages of 60 and 80 years, with a female-to-male ratio of 3:1.[4] The history and physical findings are generally indistinguishable from those of acute cholecystitis, because most patients have nonspecific right-sided abdominal pain.

Torsion is defined as a rotation of the GB on its mesentery along the axis of the cystic duct and cystic artery. A variety of anatomic and physiologic factors can contribute to such torsion.[1–4] The first such factor is a congenital anomaly in which abnormal migration with an absence of GB mesentery creates a free-floating GB. Another related group of factors includes generalized visceroptosis, atrophy of the liver, and loss of visceral fat and elasticity with aging and weight loss. Some spinal deformities can predispose to torsion. Violent movements and intense peristalsis of the colon, duodenum, and stomach can also induce torsion.

The importance of gallstones is unknown, but approximately 70% to 80% of patients with torsion have no gallstones.[5] Torsion interferes with the blood supply and bile flow. Consequently, the GB wall thickens, and then edema and eventually gangrene develop.

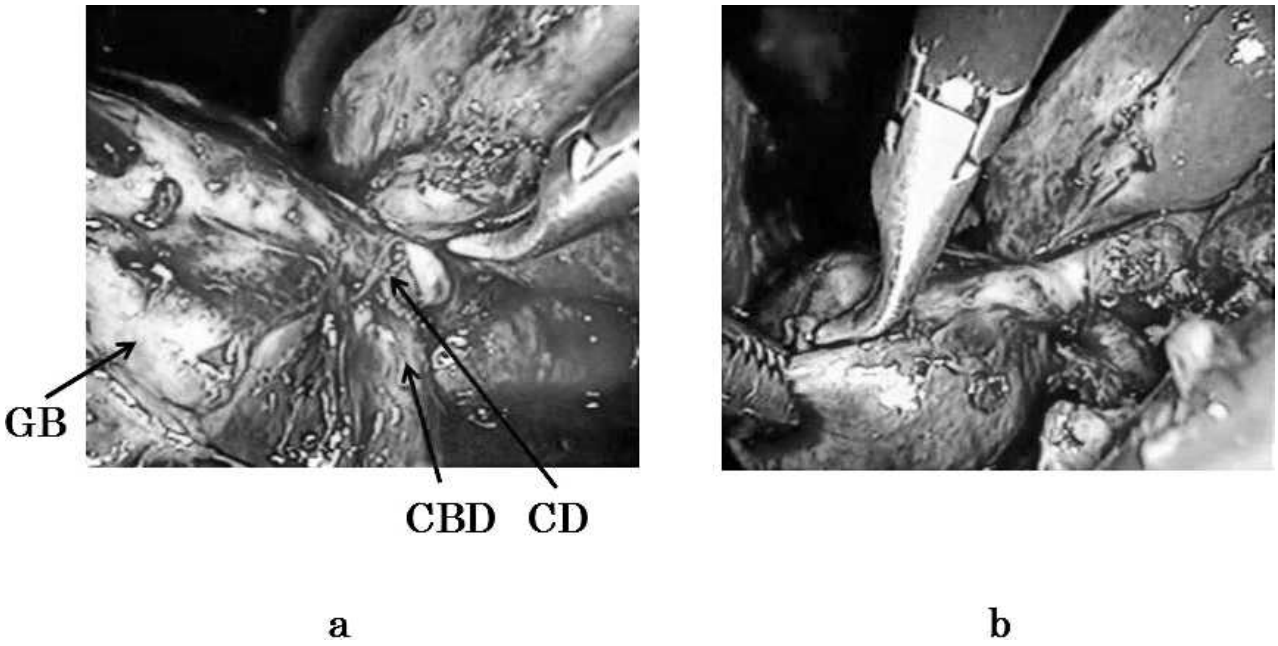

Fig. 3 During the laparoscopic procedure, the GB (arrow) was found to be ischemic and floating away from the liver bed. (a) The GB was rotated 360° counterclockwise around its axis at the level of the cystic duct (CD; arrow) and artery. (b) Untwisting followed by cholecystectomy was successfully performed. CBD is indicated by an arrow.

US often reveals a large floating GB without gallstones, and a thickened GB wall. Specific US signs seen in torsion include identification of the GB outside of its normal anatomic fossa, inferior to the liver or in a transverse orientation, with an echogenic conical structure.[6,7] CT provides diagnostic clues similar to those of US: the GB located outside of its fossa and inferior to the liver, pericholecystic fluid, and a massively distended GB with wall thickening.[1–8]

Magnetic resonance imaging findings on T1 include high signal intensity in the GB wall, suggesting necrosis and hemorrhage. Matsuhashi *et al*[9] have reported that MRCP demonstrates dilatation of the GB but fails to detect its neck. In our case, MRCP revealed a pulled CBD near the undetected neck of the GB. These MRCP studies were useful in making the diagnosis of torsion. CT or US can provide important diagnostic clues in most cases, whereas the findings of MRCP may make it easier to understand the twist of the GB. In cases where the findings of CT or US need the differential diagnosis of acute cholecystitis and torsion of the GB, the additional examination of MRCP seems to be preferable.

When torsion of the GB is suspected, an emergency cholecystectomy should be performed. Laparoscopic cholecystectomy has recently been recommended for treating torsion of the GB.[1–3] Because the GB is typically minimally adherent to the liver bed, cholecystectomy can be performed easily with minimal invasion.[10]

In summary, torsion of the GB is a benign condition if diagnosed rapidly and treated appropriately. The principal differential diagnosis is cholecystitis, especially in elderly patients. In our case, preoperative MRCP studies provided useful diagnostic clues in addition to CT and US. Moreover, the surgical treatment of laparoscopy was preferable.

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