CASE REPORT

Gallbladder volvulus: a case of mimicry

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SUMMARY

Torsion of the gallbladder resulting in a volvulus is a rare clinical finding that poses a diagnostic challenge preoperatively to both surgeons and radiologists. It is thought to occur secondary to a redundant mesentery where rotation of the gallbladder occurs along the axis of the cystic duct and cystic artery. Gallbladder volvulus commonly presents as acute cholecystitis and is rarely diagnosed preoperatively. An early emergency laparoscopic cholecystectomy is the preferred treatment. Early consideration of this diagnosis enables prompt surgical intervention and quick postoperative recovery periods.

BACKGROUND

Torsion of the gallbladder resulting in a volvulus is a rare clinical finding that poses a diagnostic challenge preoperatively to both surgeons and radiologists.¹ First described in 1889 by Wendel,² there have been about 500 cases documented in the last century.

On review of the current literature, gallbladder volvulus commonly presents as acute cholecystitis and is very rarely diagnosed preoperatively. Only one further case has been reported of gallbladder volvulus presenting as acute appendicitis in the elderly.³

We report a case of a gallbladder volvulus, which presented clinically as a case of acute appendicitis. Radiological imaging initially suspected a diagnosis of acalculous cholecystitis. In view of clinical deterioration of the patient despite broad-spectrum antibiotic treatment, review of the CT images raised suspicion of a distended tortured structure thought to be the small bowel, as a result of the long gallbladder pedicle. Intraoperatively, it was misidentified laparoscopically as ischaemic bowel, requiring conversion to emergency laparotomy.

A delay in identifying the underlying pathology can lead to serious consequences. If identified early, it can be done laparoscopically which is the recommended first choice for a cholecystectomy.¹ Furthermore, early consideration of this diagnosis may prevent progression to necrosis or gangrene of the gallbladder, which may lead to further complications and compromise the patient's clinical status and prolong postoperative recovery.

CASE PRESENTATION

A 70-year-old woman was presented to the emergency department with a 1-day history of right iliac fossa pain and tenderness. This was associated with decreased appetite and nausea, no vomiting was reported and the patient denied any urinary symptoms. There was a history of recent weight loss over the last 6 months but the patient was unable to quantify this. There was no significant medical

history to note. On examination the patient was tachycardic and tender with guarding in the right lower quadrant in the absence of any palpable masses.

Initial blood investigations yielded a C reactive protein (CRP) of 8 mg/l and white cell count (WCC) of 16.5×10^9 (neutrophils 14.6×10^9). This led to an initial diagnosis of acute appendicitis. A plain abdominal radiograph was unremarkable. In view of the patient's age and history of weight loss, to investigate any caecal pathology or underlying malignancy, a CT scan was organised. This was reported as showing a markedly distended gallbladder, without any wall thickening with some free fluid in the right para-colic area and slight bowel thickening, likely reactive in nature. The appendix could not be visualised and the images were in keeping with an acalculous cholecystitis.

The patient was started on broad spectrum antibiotics in keeping with the hospital protocol for treatment of intra-abdominal sepsis. Subsequently, the pain in the right lower quadrant worsened with concurrent changes seen on her blood investigations. The following day, her CRP increased from 8 to 300 mg/l and the WCC remained static at 16×10^9 . On rediscussion of the CT images, in light of the patients' deterioration clinically and in terms of her blood work, small bowel ischaemia was considered a likely diagnosis (figures 1 and 2). This required immediate diagnostic laparoscopy.

Intraoperatively a diagnostic laparoscopy was performed and there was evidence of severe jejunal diverticulosis that was not complicated by inflammation. A large amount of haemorrhagic free fluid was seen in the right upper quadrant and a necrotic structure, which was thought to be small bowel, led to conversion to laparotomy. This was then identified as the gallbladder, which was found to be suspended from the liver bed with a long mesenteric attachment (figure 3). The gallbladder was necrotic, attached to the liver bed and was twisted anticlockwise 360° around its blood supply. A cholecystectomy was performed.

DIFFERENTIAL DIAGNOSIS

From the initial presentation, in view of the raised inflammatory markers and signs of localised pain in the right lower quadrant the working diagnosis was that of acute appendicitis. However, with the history of recent weight loss and taking into account the patients age, a CT scan was organised to exclude any caecal pathology malignancy.

As the patient continued to clinically deteriorate, reflected in the significant rise in CRP from 8 to 300 mg/l, despite intravenous fluid resuscitation

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Figure 1 CT scan of the abdomen in sagittal section showing distended gallbladder and thickening of small bowel in the area of concern that led to emergency laparoscopy.

and broad spectrum antibiotics, the CT scan images were rediscussed and a more acute serious diagnosis was considered.

This led to a diagnosis of small bowel ischaemia and the patient was booked for an emergency laparotomy. During laparoscopic examination a distended necrotic structure was identified and thought to be the small bowel. Only conversion to laparotomy and closer inspection of the structure was this identified as the gallbladder attached to the liver bed from a long mesenteric attachment.

OUTCOME AND FOLLOW-UP

Postoperatively, recovery was slow but uncomplicated. She was discharged in good health 1 week later. She represented 1 month later with central and lower abdominal pain and was investigated for a possible intra-abdominal collection. A repeat CT scan was unremarkable and identified the jejunal and bowel diverticula seen intraoperatively. She is currently 8 months post-operation and is being followed up in the outpatient clinic.

DISCUSSION

Torsion of the gallbladder resulting in a volvulus, is a rare clinical finding with a reported incidence of 1 approximately in 365 000 hospital admissions, which poses a diagnostic challenge preoperatively to both surgeons and radiologists.¹ First described in 1889 by Wendel,² there have been about 500 cases documented in the last century.

On review of the current literature gallbladder volvulus commonly presents as acute cholecystitis and is very rarely diagnosed preoperatively.

Figure 2 CT scan of the abdomen in horizontal section showing distended gallbladder and thickening of small bowel in the area of concern that led to emergency laparoscopy.

Figure 3 Necrotic structure identified during diagnostic laparoscopy.

It commonly affects elderly patients between the ages of 60 and 80, and females, with a female-to-male ratio of 3 : 1.⁴

The underlying pathophysiology resulting in a volvulus is thought to be secondary to a redundant wide mesentery or a mesentery that covers the cystic duct and artery.⁵ This causes the suspended gallbladder to twist along the axis of the cystic duct and cystic artery and result in a volvulus.⁶ In our case, the gallbladder was suspended from a long mesentery, lying in the right lower quadrant mimicking an initial clinical presentation of acute appendicitis as a result of the local inflammatory reaction, which became widespread as a result of the gallbladder becoming gangrenous.

A delay in identifying the underlying pathology can lead to serious consequences. Early intervention reduces risk of progression to necrosis, gangrene and subsequent perforation resulting in contamination of the abdominal cavity with bilious contents. This may lead to further complications and compromise the patient's clinical status and prolong postoperative recovery.

An early emergency laparoscopic cholecystectomy is the preferred treatment currently.^{1 7} Cases reporting gallbladder volvulus removed laparoscopically report postoperative recovery periods of 2–3 days.^{8 9} In our case, although initially started laparoscopically, under direct visualisation through the umbilical port, in view of the clinical presentation, anatomical position, gross distension of the gallbladder and report received radiologically, led to the intraoperative diagnosis of ischaemic small bowel. This was in fact a tormented necrotic gallbladder removed with difficulty as a result of the long mesentery challenging accurate identification of the cystic duct and artery, on conversion to laparotomy. In retrospect, had this diagnosis been considered, early intervention and laparoscopic approach would have been more favourable.

Learning points

- ▶ Gallbladder volvulus is a rare cause of an acute surgical abdomen and should be considered as a differential diagnosis, especially in those who show clinical deterioration despite antibiotic treatment.
- ▶ Early consideration of this diagnosis enables prompt surgical intervention and quick postoperative recovery periods.
- ▶ As a result of the variable pedicle length, the gallbladder is not always within the gallbladder fossa and should be considered during radiological diagnosis.

Competing interests None.

Patient consent Obtained.

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