Rare disease

Torsion of the gallbladder

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Summary

The authors report a case of a 79-year-old female who presented with signs and symptoms of acute cholecystitis. She was taken to theatre within 24 h of acute admission to undergo laparoscopic cholecystectomy. The gallbladder was found to have undergone torsion upon its mesentery leading to its infarction and necrosis. Laparoscopic cholecystectomy was performed, and the patient made an uneventful recovery.

BACKGROUND

Torsion of the gallbladder is a rare clinical entity with less than 400 cases being recorded in the literature since 1898 and of these, only 10 having ever been diagnosed preoperatively.¹ Clinicians should be aware of its possibility in older patients, who present with symptoms of acute cholecystitis.

CASE PRESENTATION

A 79-year-old female presented with a 12-h postprandial history of right upper quadrant pain. The pain was colicky in nature with radiation to the back. It was relieved by lying still but exacerbated by movement or deep inspiration. The patient complained of nausea and had vomited twice since admission. She had no other gastrointestinal, urinary or constitutional symptoms. Her surgical history included hysterectomy 30 years earlier, for fibroid disease. In addition, she suffered from hypothyroidism

taking 75 mcgs of levothyroxine a day. She had no known allergies.

The patient appeared uncomfortable, alert and orientated and was not jaundiced. Vital examination showed that she was febrile at 38.5°C, tachycardic at 100 beats/min with a blood pressure of 105/60 mm Hg and tachypnoeic at 20 breaths/min. Murphy's sign was positive on abdominal examination.

INVESTIGATIONS

The white cell count was raised at $16.5 \times 10^9/l$ with a 90% neutrophilia. C reactive protein was elevated at 160. The remaining blood tests including liver function tests and serum amylase were normal. A CT scan of the abdomen showed a distended gallbladder with a thickened wall and pericholecystic fluid in the right anterior hepatic space, a finding consistent with acute cholecystitis. However, no biliary calculi or any biliary duct dilatation was demonstrated (figure 1).

Figure 1 Distended, thick-walled gallbladder suggestive of acute cholecystitis.

Figure 2 Distended, gangrenous and torted gallbladder.

DIFFERENTIAL DIAGNOSIS

- Acute acalculous cholecystitis
- Acute cholecystitis with gallstones
- Gallbladder empyema.

TREATMENT

The patient was given intravenous fluids and antibiotics. A urethral catheter was inserted, and over the next 12 h her measured urine output was stable averaging at 52 ml/h. She maintained a good urine output but despite fluid resuscitation and antibiotics she remained tachycardic and febrile with increasing tenderness over the right hypochondrium. Failing to respond to conservative management, she was taken to theatre for laparoscopic cholecystectomy which demonstrated acute torsion of the gallbladder (figure 2). The torsion was complete at greater than 180° in a clockwise direction. The gallbladder was distended, gangrenous and had perforated, releasing bile stained fluid into the peritoneal cavity. Laparoscopic cholecystectomy was performed.

OUTCOME AND FOLLOW-UP

The patient made an uneventful recovery and was discharged from hospital 3 days later. Histopathological assessment demonstrated complete hemorrhagic infarction of the gallbladder fundus (figure 3). The patient did not attend the follow-up appointment having moved out of the local area, but appeared to have made a satisfactory recovery on subsequent telephone enquiry.

DISCUSSION

Torsion of the gallbladder occurs when the gallbladder rotates on its own mesentery along the axis of the cystic duct and cystic artery, therefore compromising its vascular supply and preventing biliary drainage. Torsion is believed to occur in anatomically predisposed patients as a result of a precipitating event. Suggested factors include intense peristalsis of stomach, duodenum or transverse colon, spinal deformities and tortuous atherosclerotic cystic arteries (acting as rigid fulcrums for torsion). Gallstones are unlikely to cause torsion as they are only present in 20–33% of affected patients. Torsion of the gallbladder has been reported in patients between 2 and 100 years of age, however, the average incidence for gallbladder torsion is between 65 and 75 years. There is a 3:1 female to male preponderance and 84% of patients are older females. Diagnosis preoperatively is rare, as clinical examination and investigations, as in this case, often do not differentiate gallbladder torsion from other more common acute gallbladder pathology. There are no diagnostic criteria for gallbladder volvulus. Therefore, doctors should monitor the patient's response to conservative management and consider the diagnosis in those with non-resolving signs and symptoms of acute cholecystitis. Urgent surgery is required in order to prevent the high morbidity and mortality associated with consequent gangrene and perforation.²

The clinical presentation of gallbladder torsion may be due either to recurrent episodes of incomplete volvulus, or due to a single complete volvulus of the organ. The former

Figure 3 Haemorrhagic infarction of the gallbladder.

presents as recurrent episodes of slowly progressive pain, with variably associated nausea and vomiting. In the latter, there is an abrupt onset of severe right upper quadrant pain, early onset of nausea and vomiting and frequently there is a palpable abdominal mass associated with a positive Murphy's sign. The white blood cell count is usually normal at the onset of symptoms but rises as gallbladder ischaemia develops. Liver function tests are usually normal because the common bile duct and the hepatic ducts are not involved in gallbladder torsion, and jaundice is present less often than in typical cholecystitis. In our patient, arterial blood gas analysis was not performed but would have been a useful adjunct to monitor initial metabolic status and subsequent response to treatment.

Ultrasonography and CT form the main imaging modalities that are employed in this clinical scenario but it is rare for clinicians to make the diagnosis on radiographic findings. However, ultrasound and CT can reveal a 'floating' gallbladder, without gallstones, lying transversely outside its anatomical fossa. The gallbladder neck may appear conical, corresponding to the twisted pedicle. Non-specific findings include gross wall thickening, distension and pericholecystic fluid common both to torsion and acute cholecystitis.³ MR cholangiopancreatography can also aid preoperative diagnosis by demonstrating distortion of the extrahepatic bile ducts, tapering and twisting of the cystic duct and distension consistent with haemorrhage and necrosis.⁴

Urgent open or laparoscopic cholecystectomy is essential in order to avoid the potentially fatal complications of gangrene and perforation. With increasing experience, the laparoscopic approach is now recommended. It

has the benefit of confirming the diagnosis and a speedy postoperative recovery. The principles of surgery include decompression, derotation and cholecystectomy with or without intraoperative cholangiogram. This approach is well described in the literature for treatment of gallbladder torsion and affords good results.^{5 6}

Learning points

- ▶ Torsion of the gallbladder is a rare clinical entity which is difficult to diagnose preoperatively.
- ▶ Clinicians should be aware of its possibility in older patients who present with signs and symptoms of acute cholecystitis.
- ▶ The diagnosis should be considered in those patients with a palpable mass in the upper right quadrant where acute gallbladder pathology is suspected.
- ▶ Early imaging may show the severity of gallbladder inflammation and is useful to exclude other abdominal pathology. However, it may not accurately reveal a gallbladder volvulus.
- ▶ Frequent reassessment of the patient and monitoring the response to supportive treatment will guide the need for urgent laparoscopic cholecystectomy.

Acknowledgements The authors wish to thank Mr M Halliday, Consultant Surgeon, Princess Royal Hospital, Telford, for revising the manuscript.

Competing interests None.

Patient consent Not obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Ahmed M, Alibhai M, Samee A. Torsion of the gallbladder. *BMJ Case Reports* 2011;10.1136/bcr.06.2010.3116, date of publication

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