CASE REPORT

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Interruption of gallbladder wall with pericholecystic fluid: a CT finding of perforation

Abstract In this report, we present an unusual case of gallbladder perforation due to acalculous cholecystitis, masked clinically by acute pancreatitis. Severe abdominal pain referred to the patient’s back, nausea, vomiting, and high serum and urinary amylase values were compatible with acute pancreatitis. However, on contrast-enhanced CT, the size and appearance of the pancreas were normal while the gallbladder was abnormally enlarged with a wall defect indicating perforation, soon afterward confirmed by surgery.

Key words Gallbladder – Perforation – Cholecystitis – Computed tomography – Ultrasonography

Introduction

Gallbladder perforation is rare and is the most serious complication of acute cholecystitis [1, 2]. The overall mortality in cases of rupture is as high as 70%, and the prognosis depends primarily upon the time lapse between perforation and surgery [2, 3]. Thus, correct preoperative diagnosis is very important, and imaging methods play a crucial role in differentiating acute cholecystitis from its life-threatening complications. This report documents the case of an elderly patient with gallbladder perforation in whom the diagnosis was made on the basis of CT findings.

Fig. 1 Contrast-enhanced CT shows the gallbladder distended and its walls enhancing. Septated fluid collection is present in the pericholecystic space. Note an oval cystic mass medial to the gallbladder mimicking a loculated collection, which on surgery proved to be a hydatid cyst

Case report

A 76-year-old woman was admitted to the emergency service having been suffering from nausea, vomiting, and progressively worsening abdominal pain of sudden onset in the periumbilical area which then radiated to her back. Seven years previously the patient had undergone surgery for hepatic hydatid disease. Her WBC count was elevated (10,300/μl). Abnormal biochemical test results included: SGOT 119 IU/l, total serum bilirubin 4.8 mg/100 ml, serum amylase 134 U/l, and urinary amylase 5830 U/l. With these symptoms and laboratory findings the patient was assumed to have acute pancreatitis and an abdominal CT was required for further examination.

On contrast-enhanced CT, the gallbladder was seen to be distended and its walls thickened and markedly enhanced. Septated fluid collection in the pericholecystic and subhepatic spaces was noted (Fig. 1). An interruption was noted in the anterior portion of the gallbladder wall, suggesting a diagnosis of perforation due

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to cholecystitis (Fig. 2). The pancreas was normal in size with homogeneous parenchymal density. Ultrasonography confirmed these findings, including the defect in the gallbladder wall (Fig. 3).

During the surgical exploration, an enlarged gallbladder was found with a rupture in its anterior wall. The head of the pancreas had a minimally edematous appearance. In the pericholecystic space a cystic mass was discovered, and cystectomy was performed in addition to the cholecystectomy. Pathological examination of the operative specimens revealed changes in the gallbladder wall consistent with cholecystitis and a separate echinococcal cystic lesion removed from the pericholecystic region. The remainder of the patient's hospital stay was uneventful, and she was discharged without any complications.

Discussion

Perforation of the gallbladder, with its known high morbidity and mortality rates, is a feared complication of acute cholecystitis and occurs in approximately 3–10% of patients with acute cholecystitis [2, 3, 4, 5]. The pathogenesis of perforation is multifactorial; it may occur as a result of cystic duct obstruction, vascular compromise, hyperconcentrated bile, or inflammation of mucosa. The high mortality and morbidity rates are primarily related to delays in preoperative diagnosis, especially in elderly patients, because of clinical signs and symptoms that are indistinguishable from those of acute cholecystitis [2].

Imaging methods play a vital role in the diagnosis of acute cholecystitis, since it has life-threatening complications such as bacteremia, septic shock, bile peritonitis, and abscess formation [4, 5]. CT reports regarding gallbladder perforation are few because ultrasonography is the initial examination technique for gallbladder disease. Common ultrasonographic findings in ruptured gallbladder are indistinguishability of the gallbladder contours or wall irregularities, and the presence of pericholecystic fluid collection. The CT findings are analogous to the ultrasound findings, but none of these findings are pathognomonic for perforation [2, 4, 5, 6]. Nevertheless, demonstration of a gallstone outside the lumen of the gallbladder can be helpful for the CT diagnosis of perforation [5]. On the other hand, cholescintigraphy appears to be more sensitive than ultrasonography because it shows extravasation of the radionuclide from the gallbladder fossa. Radionuclide extravasation, however, can only be seen when the cystic duct is patent and the pressure within the gallbladder lumen is less than the filling pressure in the biliary ducts. Moreover, visualization of the gallbladder on a hepatobiliary scan does not rule out perforation [2, 5].

The difficulty in making the diagnosis of acute cholecystitis in our patient arose from the coincidental occurrence of both acute pancreatitis and gallbladder perforation. Abdominal CT depicted gallbladder perforation with a demonstrable wall defect. The interruption of the continuity of the gallbladder wall was taken as the sign of the rupture. However, the pancreatic head, which was found to be edematous at operation, was normal on the CT scan. In this patient, local peritonitis due to acaulcous cholecystitis or bile leakage from the ruptured gallbladder may have caused the associated focal pancreatic inflammation.

References