—Case Reports—

Response of Gallstone Ileus to Conservative Therapy

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Abstract

We report a case of cholelithiasis followed by gallstone ileus, documented with serial computed tomography (CT) scans, that responded to conservative therapy. An 80-year-old woman was admitted because of abdominal pain and vomiting. Six months previously, she had presented with abdominal pain and nausea of sudden onset. A CT scan showed thickening of the gallbladder wall and a gallbladder stone. She refused cholecystectomy, and the abdominal pain gradually improved in response to conservative treatment. On admission, plain abdominal radiographs showed obstruction of the proximal small bowel. A CT scan revealed disappearance of the gallbladder stone, fluid-filled bowel loops, and the presence in the small bowel of an impacted stone (major axis, 45 mm; minor axis, 23 mm). We diagnosed gallstone ileus. Because the gallstone was not large, we inserted a stomach tube and administered conservative treatment. One day after admission, CT showed that the impacted stone had migrated to the transverse colon. Four days after admission the impacted stone was not seen on plain abdominal radiography. Five days after admission, follow-up CT revealed pneumobilia but no impacted stone. Because the symptoms had improved the patient resumed oral intake of liquids The patient was discharged 14 days after admission and is doing well.
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Key words: gallstone ileus, computed tomography, choledocholithiasis

Introduction

Gallstone ileus, a rare complication of cholelithiasis, is mechanical obstruction of the bowel caused by intraluminal impaction of a gallstone anywhere between the stomach and the rectum. Computed tomography (CT) has been shown to be useful for the diagnosis of gallstone ileus[1–8]. We report a case of cholelithiasis followed by gallstone ileus, documented with serial CT scans, that responded to conservative therapy.

Case Report

An 80-year-old woman was admitted because of abdominal pain and vomiting. Six months previously, she had presented with abdominal pain and nausea of sudden onset. A CT scan showed thickening of the gallbladder wall and a gallbladder stone (**Fig. 1**).

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Fig. 1 A CT scan showing thickening of the gallbladder wall and a gallbladder stone **(arrow)**.

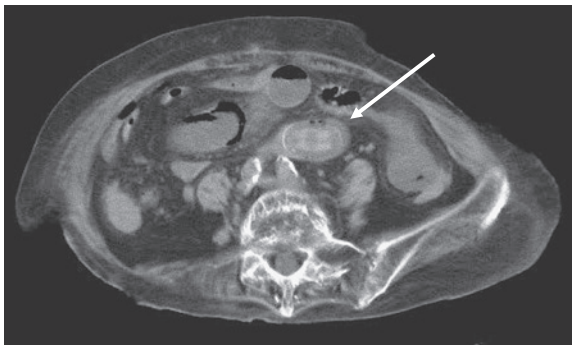

Fig. 2 On admission, CT revealed disappearance of the gallbladder stone, fluid-filled bowel loops, and the presence of an impacted stone **(arrow)** in the small bowel. The stone measured 45 mm along its major axis and 23 mm along its minor axis.

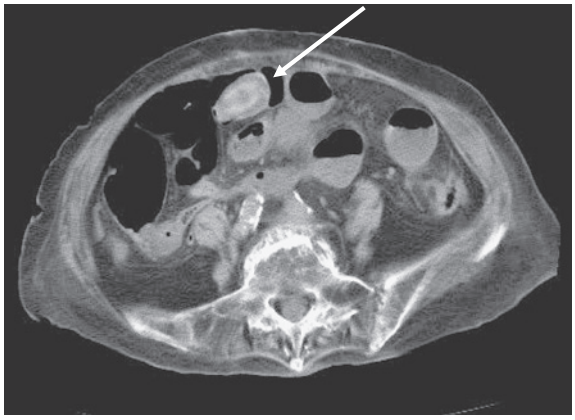

Fig. 3 One day after admission, CT showed that the impacted stone **(arrow)** had migrated to the transverse colon.

Fig. 4 Five days after admission, follow-up CT revealed pneumobilia but no longer showed the impacted stone.

She refused cholecystectomy, and the abdominal pain gradually improved in response to conservative treatment. Her medical history included oophorectomy for an ovarian cyst 52 years previously, hip-replacement arthroplasty to treat a fracture of the left femoral neck 3 years previously, hypertension, and diabetes mellitus.

Initial laboratory tests revealed the following values: serum aspartate aminotransferase, 20 IU/L (normal, <38 IU/L); serum alanine aminotransferase, 9 IU/L (normal, <44 IU/L); serum alkaline phosphatase, 285 IU/L (normal 104 to 338 IU/L); serum lactic dehydrogenase, 163 IU/L (normal, 180 to 460 IU/L); serum gamma glutamic transpeptidase, 22 IU/L (normal, 16 to 73 IU/L); total serum bilirubin, 1.2 mg/dL (normal, 0.2 to 1.2 mg/dL); serum C-reactive protein, 21.6 mg/dL (normal, <0.3 mg/dL); white blood cell count, 8,090/μL (normal, 4,000 to 9,000/μL); red blood cell count, 453×10^4/μL (normal, 427 to 570×10^4/μL); serum hemoglobin concentration, 13.7 g/dL (normal, 14 to 18 g/dL); and serum platelet count, 17.1×10^4/μL (normal, 20 to 40×10^4/μL).

On admission, plain abdominal radiographs showed obstruction of the proximal small bowel. A CT scan revealed disappearance of the gallbladder stone, fluid-filled bowel loops, and the presence in the small bowel of an impacted stone (major axis, 45 mm; minor axis, 23 mm) **(Fig. 2)**. We diagnosed gallstone ileus. Because the gallstone was not large, we inserted a stomach tube and administered conservative treatment.

One day after admission, CT showed that the impacted stone had moved to the transverse colon **(Fig. 3)**. Four days after admission, the impacted stone was no longer visualized with plain abdominal

radiography. Five days after admission, CT revealed pneumobilia but no impacted stone (**Fig. 4**). Because the symptoms had improved the patient was able to resume oral intake of liquids. The patient was discharged 14 days after admission and is doing well.

Discussion

Gallstone ileus was first described by Bartholin in 1654. It is an uncommon cause of intestinal obstruction, accounting for 1% to 4% of all mechanical obstructions of the bowel[6,7,9,10]. However, gallstone ileus is becoming more common owing to the rapid growth of the elderly population. Gallstone ileus most often occurs in elderly patients, with a median age between 65 and 75 years, and is 3 to 16 times more common in women than in men[10,11]; 40% to 50% of patients have no history of biliary disease. Gallstone ileus is correctly diagnosed preoperatively in 24% to 73% of patients[12–15], and the mean/median interval between admission and operation is 2 to 5 days[12,13,16–18].

The pathogenesis of gallstone ileus involves the presence of a gallstone in the intestinal lumen, with the most common route of entry being a cholecystenteric fistula resulting from recurrent episodes of cholecystitis. In one series of patients with gallstone ileus, a cholecystoduodenal fistula was demonstrated in 68%[12]. Fistulas between the biliary tree and stomach, small bowel, or colon have also been reported[10,12]. Bilioenteric fistulas may be created surgically and can also result from gallbladder carcinoma, duodenal ulcer, and inflammatory bowel disease. Stones passing spontaneously through the ampulla of Vater have also been reported to cause gallstone ileus[15,18].

Because of the diversity of potential causes of gallstone ileus, abdominal distension and obstipation are inconsistent findings, and diarrhea is often the presenting symptom. Stone disimpaction results in relief of symptoms and may lead to a misdiagnosis of resolving gastroenteritis. However, the diagnosis of gallstone ileus is not helped by a history of gallstone disease. The radiologic diagnosis is based on the presence of Rigler's triad of small bowel obstruction, pneumobilia, and an ectopic gallstone[19]. In our patient, all three findings were present.

Several recent studies have established the value of ultrasonography[20–22] and CT[8,23–25] for making an earlier, more precise diagnosis of gallstone ileus, for determining the location of the gallstone, and for detecting additional stones, even when changes are not seen or are missed on plain abdominal radiographs[21]. Ultrasonography can demonstrate gallstones, pneumobilia, and the presence of a cholecystenteric fistula[12,20]. Dilatation and peristalsis of the small bowel may be visualized, and the obstructing enterolith can be accurately located. The findings of CT are similar to those of ultrasonography. In our patient, serial CT scans were diagnostic. Characteristic CT findings include air within the biliary tree, bowel loops filled with fluid, and an impacted stone in the bowel.

A gallstone would normally have to be at least 20 mm in diameter to become lodged within the intestinal lumen in the absence of a stricture[12,15,18] and to have an average diameter of 32 mm not to pass spontaneously[18]. The ileum, the narrowest part of the bowel, is the most common site of stone impaction, accounting for 60.5% of all cases. Other sites include the jejunum (16.5%), stomach (14.2%), colon (4.1%), and duodenum (3.5%)[10]. The gallstone in our patient had a major axis of 45 mm and a minor axis of 23 mm and impacted in the small bowel. Treatment options for impacted stones include enterolithotomy[20,25], endoscopic removal[12], and extracorporeal shock-wave lithotripsy[11]. Because the gallstone in our patient was not large, it was treated conservatively by insertion of a stomach tube. Follow-up CT revealed that the gallstone had migrated. The stone may have passed through narrowest part of the bowel because its minor axis was 23 mm in diameter.

Conflict of Interest: None.

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