Gallstone Ileus: An Uncommon Cause of Acute Abdomen

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Abstract: Gallstone ileus is a rare cause of acute abdomen, representing less than 1% of intestinal obstruction. It is due to mechanical small bowel obstruction (SBO) by a migrated gallstone. we report this observation to illustrate the imaging findings especially in CT scan. A 62-year-old woman was admitted to emergency for acute bowel obstruction. The CT scan has confirmed jejunal bowel distension with fluid levels upstream endoluminal formation which was rounded and well limited, measuring 5 cm of long axis. This training was slightly hyperdense with hypodense areas of fat density. Moreover, there was aerobilia with multiple fistulas between the duodenum (D1) and gallbladder, which was empty. The triad of aerobilia, small bowel obstruction and migrant gallstone was suggestive of gallstone ileus diagnosis. The patient was operated with good evolution. Gallstone ileus is an uncommon presentation of gallstone disease. It is frequently observed in elderly patients with a history of cholelithiasis or cholecystitis. Early diagnosis is crucial and would avoid morbidity and mortality related to this disease. CT scan shows the classical triad of Rigler with pneumobilia, an ectopic stone and mechanical ileus. CT may improve the diagnosis providing important information regarding the exact number, size, and location of ectopic stones and the site of intestinal obstruction or direct visualization of a biliary–enteric fistula, to help clinicians in the therapeutic management of patients.

Keywords: Gallstone, Ileus, Bowel Obstruction, Pneumobilia, Acute Abdomen, CT Scan

1. Introduction

Gallstone ileus is an uncommon cause of bowel obstruction which mainly affects the elderly population. It is a rare and serious complication of chronic cholecystitis and occurs when a gallstone passes into the small bowel and usually impacts at the ileocaecal valve. The associated mortality is estimated to be up to 30% [1]. This high mortality is attributed to comorbidities, particularly cardiovascular, respiratory, and endocrine (diabetes and obesity), or delayed diagnosis [2, 3]. Diagnostic imaging plays an important role in the management of patients. We report a case of a woman presented with jejunal obstruction due to a migrant gallstone in order to remember the CT scan findings.

2. Case Report

A 62-year-old woman was admitted to emergency with acute abdominal pain and vomiting. Abdominal history was significant for gallstone. Physical examination revealed an afebrile patient with diffuse abdominal tenderness more marked at the right upper quadrant. The laboratory tests showed leukocytosis at 13000/μl with slight increase in C-reactive protein (CRP) and creatinine. Abdominal ultrasound found aerobilia with distended small bowel loops. Additional computed tomography scan (CT) was requested. It was made without injection of contrast material because of kidney failure. The CT scan has confirmed aerobilia and presence of multiple fistulas between the duodenum (D1) and gallbladder, which was empty, with the presence of stones in the cystic duct (figure 1).

Figure 1. Coronal reconstruction computed tomography image without IV contrast injection reveals pneumobilia with multiple fistulas between the duodenum (D1) and gallbladder.

Moreover, there was small bowel distension with fluid levels upstream endoluminal formation which was rounded and well limited, measuring 5 cm of long axis. This training was slightly hyperdense with hypodense areas of fat density suggesting a migrant gallstone by the biliary- enteric fistula (figure 2).

Figure 2. Axial computed tomography image without IV contrast injection reveals jejunal distension with endoluminal gallstone, measuring 5 cm of long axis. It was slightly hyperdense with hypodense areas of fat density.

The gallstone was radiotransparent at topogram (figure 3).

Figure 3. CT scan topogram reveals jejunal distension at the left hypochondrium without individualization of gallstone which is radiotransparent.

Ileum and colon were collapsed. The triad of aerobilia, small bowel obstruction and migrant gallstone was suggestive of gallstone ileus diagnosis. The patient was operated with good evolution.

3. Discussion

Gallstone ileus is an unusual complication of cholelithiasis, occurring in less than 0.5 percent of patients. It represents only 1 to 4% of small bowel obstruction caused by an impaction of a gallstone within the lumen of the small intestine via a cholecysto-enteric fistula. Large stones, greater than 2.5 cm in diameter, are thought to predispose to fistula formation by gradual erosion through the gallbladder fundus. Sixty percent are cholecystoduodenal fistulas, but cholecystocolonic and cholecystogastric fistulas can also result in gallstone ileus [4, 5]. Common places for gallstones include the ileum and ileocecal valve due to the anatomical narrow lumen in 60% of cases, jejunum in up to 16%, stomach in 15%, and colon (gallstone colous) in 2–8% of cases [6, 7].

The average age of patients with gallstone ileus is 70 years, with the youngest reported patient being 13 years of age. Women are 3 to 16 times more likely to be affected [8].

Typically, patients have a long history of recurrent right upper quadrant pain. The acute presentation of gallstone ileus is that of a small bowel obstruction, with colicky abdominal pain, abdominal distension and vomiting. Jaundice has been found in only 15% of patients or less. Upper gastrointestinal bleeding, secondary to duodenal erosion caused by the offending gallstone, with hematemesis and melena, can be seen in 15% and 7%, respectively [9, 10].

The diagnosis of gallstone ileus is difficult and usually depends on the imaging findings. The classic Rigler's triad

includes mechanical bowel obstruction, pneumobilia, and presence of an ectopic gallstone within the bowel lumen [11]. Plain abdominal radiographic films usually show non-specific findings, because only 10% of gallstones are sufficiently calcified [12]. CT is the gold standard for positive diagnosis. The overall sensitivity, specificity and accuracy of CT in diagnosing gallstone ileus is around 93%, 100%; and 99%, respectively. It allows detection of the stone whatever the density, its exact location and direct visualization of the biliary–enteric fistula. Typically, stones are large and measure several centimeters (2–3 cm). It is important to look for free fluid, free gas, portal venous gas, or mural gas, as signs of more advanced disease and poorer prognosis [13–16].

Gallstone ileus usually requires emergency surgery to relieve intestinal obstruction with the removal of the stone (enterolithotomy) and repair of the choledochenteric fistula, accompanied by a cholecystectomy [17, 18].

Any delay in diagnosis and treatment may lead to serious complications such as electrolyte imbalance, ischemic lesions, ulcerations of the bowel, abscess formation, and, occasionally, free perforation and peritonitis. The morbidity and mortality rate of gallstone ileus remain very high, partly because of misdiagnosis and delayed diagnosis and otherwise because of the age-related co-morbidities of the afflicted patients [19].

4. Conclusion

Gallstone ileus is a frequently misdiagnosed clinical entity. Early diagnosis is crucial and allows earlier therapy and would avoid morbidity and mortality related to this disease. The use of radiological imaging is invaluable in the diagnosis of gallstone ileus. In fact, CT scanning is a powerful and gold-standard tool to diagnose the condition and to guide its management. The combination of pneumobilia and gastrointestinal obstruction should suggest the diagnosis of gallstone ileus. In addition to the Rigler radiologic triad, CT allows detection of the exact location of the ectopic stones, the site of obstruction and direct visualization of the biliary–enteric fistula.

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