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Case Report

An authentic radiological triad of Rigler allowing the diagnosis of gallstone ileus: A case report ^{☆,☆☆}

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ABSTRACT

The Rigler's Triad consists by three radiological signs, including intestinal obstruction, pneumobilia, and an aberrant gallstone in the bowel. It is an inconstant triad considered being pathognomonic of gallstone ileus. Gallstone ileus is an exceptional complication of cholelithiasis due to the passage of one or more gallstones from the bile ducts into the lumen of the bowel through a biliodigestive fistula. We report the case of an 83-year-old female patient with a history of ischemic heart disease and an asymptomatic large gallstone. The patient was admitted to the emergency department for bowel obstruction, abdominal pain, and bilious vomiting. A clinical examination found a patient with an alteration in general condition and a distended abdomen with tenderness. An abdominal CT scan revealed Rigler's triad, allowing the diagnosis of gallstone ileus. A midline exploratory laparotomy was performed to find a giant gallstone blocked in the last ileum loop. A simple enterolithotomy was performed, allowing the extraction of giant lithiasis from an 8-cm major axis. The postoperative evolution was uneventful, and the patient was discharged 4 days after surgical treatment.

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Introduction

Gallstone ileus is a mechanical bowel obstruction caused by migration into the intestinal lumen of a gallstone through a biliodigestive fistula. It is responsible for about 1% of all cases

of mechanical bowel obstruction and up to 25% of all bowel obstruction in the population over 70 years [1]. Gallstones measuring more than 2.5 cm in diameter are a risk factor for the occurrence of this condition [2]. The majority of elderly patients frequently have concomitant diseases and show relatively poor clinical signs, leading to a delayed diagnosis.

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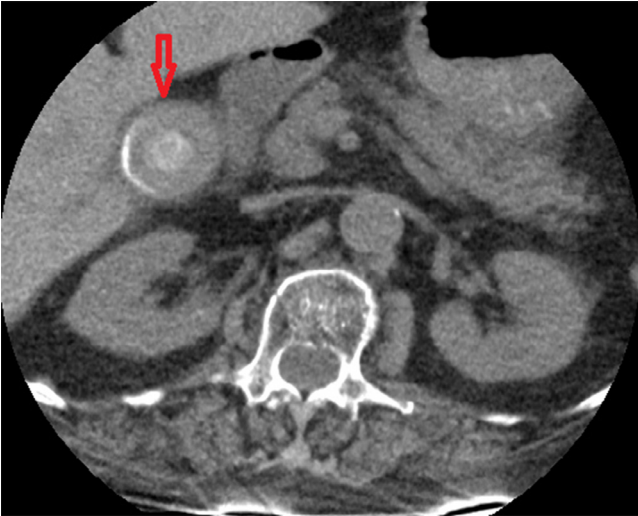


Fig. 1 – Previously CT scan, showing an asymptomatic large gallstone in Gallbladder (red arrow).

The delay in diagnosis and treatment increases the rate of operative morbidity and mortality [3]. The distal ileum loop is the most common site of gallstone impaction.

We report a case of gallstone ileus in an 83-year-old female admitted with a small bowel obstruction. A CT scan revealed Rigler's triad. The patient was operated on, underwent laparotomy, and an enterolithotomy was performed. Postoperative evolution was unremarkable.

Case presentation

83-year-old female patient with a history of ischemic heart disease and an asymptomatic large gallstone, revealed incidentally by a CT scan performed 1 year ago (Fig. 1). She was admitted to the emergency department of our hospital with a complaint of bowel obstruction. She also complained of abdominal pain and bilious vomiting for 48 hours. The clinical examination found a patient with an alteration in general condition and dehydration. An abdominal examination revealed a distended and tender abdomen. Laboratory tests revealed hypokalaemia, hyponatremia, and functional renal failure. An emergency abdominal CT scan revealed the distension of the small intestinal bowel upstream of a giant gallstone blocked into the distal ileum loop to be responsible for small bowel obstruction (Fig. 2). The abdominal CT scan also revealed pneumobilia (Fig. 3) and a fistula between the thickened gallbladder and duodenal walls (Fig. 4). We concluded with Rigler's triad, and the diagnosis of gallstone ileus was given. After adequate resuscitation measures, the patient was admitted to the operating room for surgery. An exploratory midline laparotomy revealed a giant gallstone in the lumen of the distal ileum loop. A simple enterolithotomy was performed, allowing the extraction of giant lithiasis on the 8-cm major axis (Fig. 5). We did not perform cholecystectomy because of significant inflammation and adhesions around the gallbladder.

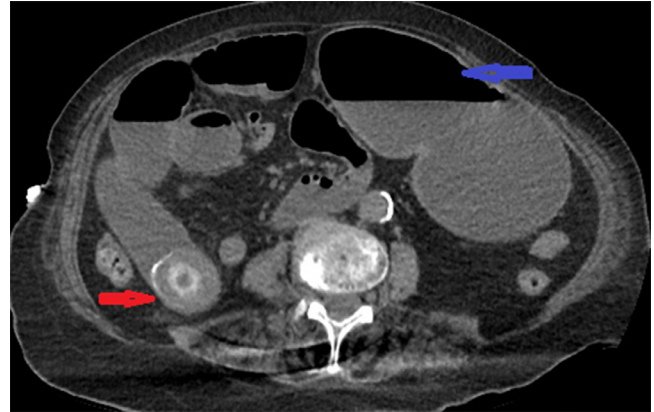


Fig. 2 – CT scan of the abdomen showing a distension of small bowel (blue arrow) and ectopic gallstone in the distal ileum (red arrow).

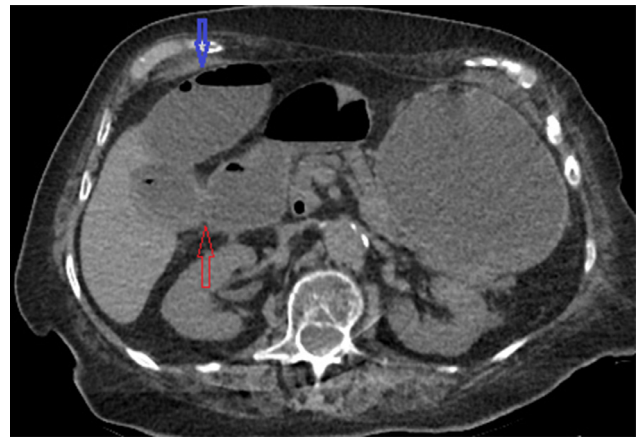


Fig. 3 – Axial non contrast CT scan showing Pneumobilia (red arrow).

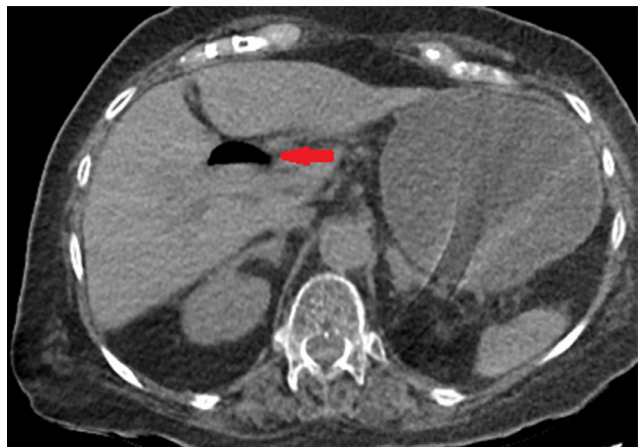


Fig. 4 – Axial non contrast CT scan showing Cholecystoduodenal (red arrow) fistula and gas in the gallbladder.



Fig. 5 – The impacted Gallstone.

The postoperative evolution was unremarkable, and the patient was discharged from the hospital 4 days postoperatively.

Discussion

Gallstone ileus is an uncommon and delayed complication of neglected cholecystitis. Obstructing gallstones generally migrate to the bowel through biliodigestive fistulas. The most common of which is a fistula between the gallbladder and duodenum (85% of cases) [3]. This fistula forms following chronic erosion of the gallbladder wall by the gallstone and chronic inflammation of the gallbladder wall. The commonest site of gallstone impaction is the distal ileum (60% of cases). The gallstone may be blocked in the duodenum, causing Bouveret's syndrome. The gallstone can also pass and be spontaneously evacuated with faecal matter (1.3% of cases) [4]. Gallstone ileus is more common in women older than 70 years and represents 1% of all bowel obstruction causes [1]. According to some authors, it constitutes 25% of mechanical intestinal occlusions in older adults [2]. The symptoms of gallstone ileus are not specific, and most patients present with bowel obstruction, abdominal pain, and vomiting. The patient may have a known or unknown history of gallstones. The delay in diagnosis is frequent and is responsible for the high rate of morbidity and mortality in this condition [5]. Contrast-enhanced CT is considered the gold standard for the diagnosis of gallstone ileus. The classic Rigler's triad (pneumobilia, aberrant gallstone, and intestinal obstruction) was reported to occur in about 77% of cases [3]. A CT scan may describe the location of the fistula, offending gallstones, and intestinal obstruction with better precision and help in therapeutic decisions [6]. Contrast-enhanced CT allows the detection of ischemia or necrosis of the bowel. The surgical approach is the appropriate therapeutic option if the patient's condition permits such surgery [7]. Surgical management of gallstone ileus includes 3 options: simple enterolithotomy; enterolithotomy plus cholecystectomy plus fistula closure

(a 1-stage procedure); or enterolithotomy and cholecystectomy performed later (a 2-stage procedure). Bowel resection is necessary in cases of bowel necrosis [8]. A simple enterolithotomy can reduce operative morbidity and mortality [9].

Conclusion

Gallstone ileus is a rare clinical entity and is more common in patients older than 70 years. The symptoms of gallstone ileus are nonspecific. High morbidity and mortality rates could be attributed to delayed diagnosis and coexisting concomitant medical diseases in elderly patients. An early CT scan improves the accuracy of diagnosis. The mainstay of management is surgical treatment.

Patient consent

Informed consent was obtained from the patients.

Authors' contributions

All authors approved the version to be published and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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