



(CASE REPORT)



Non-typical gallstone ileus: case report

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Abstract

Gallstone ileus (GI) is a complication of gallstone disease causing mechanical intestinal obstruction due to impaction of gallstone in the gastrointestinal tract. It accounts for less than 1-4% of the cases. It is more common among elderly female. Nowadays diagnosis of GI became more reliable and easier using radiological modalities such as abdominal CT/MRI scanning although still the mortality and morbidity considered to be high in such diagnosis. This is a case of gallstone ileus in a 73-year-old woman. Initially, plain X-ray showed signs of intestinal obstruction with large radiopaque shadows seen in right upper and lower quadrant of the abdomen. The diagnosis was made by MDCT scan which showed unfamiliar findings that are: unusual stone location that impacted in the jejunum, incomplete Rigler's triad as there was no pneumobilia and a 2.6 cm ectopic stone that appeared to be larger postoperatively. Patient underwent urgent laparotomy with enterotomy where a 4 cm gallstone was removed and intraoperative exploration for the rest of the bowel revealed another stone in the sigmoid colon that was initially detected by MDCT which milked toward the rectum. Post-operative course was uneventful. Abdominal X-ray can be used a preliminary tool for intestinal obstruction in general. Although abdominal CT scan is the investigation of choice to diagnose gallstone ileus, accurate size and number still under debate. Pneumobilia is not a common finding and Rigler's triad advised to be revised. Intraoperative exploration is necessary to rule out other stones.

Keywords: Gallstone ileus; Rigler's triad; Pneumobilia; Diagnostic imaging

1. Introduction

This is a case report of 73-year-old female who diagnosed with gallstone ileus by MDCT scan. A rare complication of cholelithiasis is gallstone ileus. It occur when a stone passes from a gallbladder into the intestinal tract, due to a biliary-enteric fistula mostly cholecystoduodenal fistula[1].

2. Case report

A 73-year old female presented to the emergency department with a six days history of progressively worsening generalized colicky abdominal pain which increase after eating with no relieving factors. It was associated with repeated bilious vomiting, nausea and constipation 6 days before admission. She denied fever or any previous biliary colic. She had a past medical history of hypertension and underwent spinal surgery 6 months ago and had previous cesarean section 20 years ago. Clinical examination revealed conscious oriented patient, temperature was 37 °C, blood pressure 84/55 mmHg, respiratory rate 21 cycles / min, heart rate 90 beats per minute. Abdominal examination revealed mildly distended abdomen with generalized tenderness. The rest of the clinical examination was normal. The white blood count was 12.5/μL, K 3.08 mmol/L, Na 121 mmol/L, blood urea nitrogen 16 mg/dL and creatinine 148 mmol/L. The

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other laboratory tests were unremarkable. A plain abdominal film revealed obvious mainly small bowel dilatation with two large rounded shaped calcified shadows; one seen in the Right hypochondrial region likely gallbladder stone, with another large laminated calcified shadow at the Right lumbar region (Figure 1; A).

Multidetector CT (MDCT) abdomen and pelvis was obtained; the MDCT was performed using 64 channel MDCT scanners beginning 50-60 seconds after the initiation of contrast material injection, no oral or rectal contrast was used in the study. Images are acquired with 0.75-2.5 mm collimation, a pitch of 1-1.5, 120 kVp, 100-140 mAs and a section thickness of 3-5 mm and a reconstruction interval of 3-5 mm.

MDCT images revealed dilated small bowel loops with a stone in the distal jejunum measuring 2.6 cm and collapsed small bowel loops distal to the stone with well localization of the transition zone. There is mild fecalization within the small bowel. There is mild dilatation at the rectum with small non-calcified lesion see at the distal part of the sigmoid likely non-calcified stone. It also detects the associated intrahepatic biliary dilatation, CBD dilatation and another stone measuring 2.7cm at the GB, that appeared inflamed, thickened walled, however no detectable pneumobilia in plain x ray or MDCT images. This may be attributed to the inflammatory process of the GB and surrounding structures that occlude the common bile duct. Associated there is minimal free pelvic collection (Figure 1 B-E).

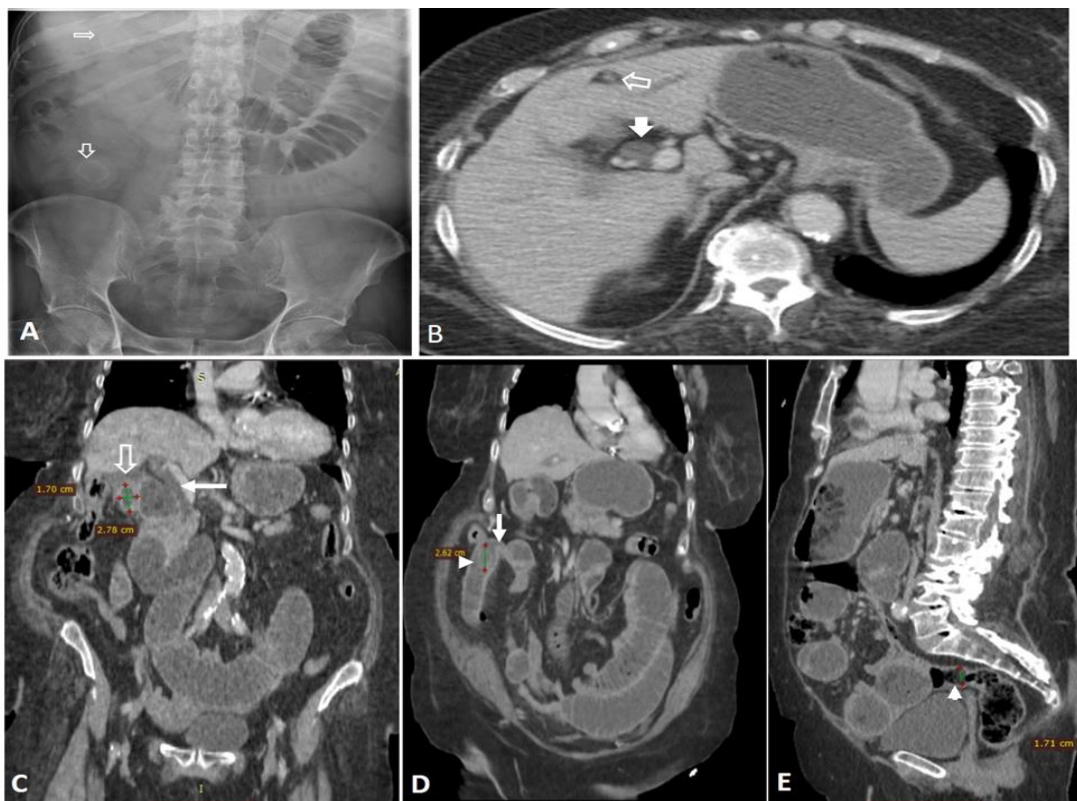


Figure 1 (A-E); A: Plain x ray shows dilated small bowel loops with two calcified shadows in the Rt. Hypochondrial and Rt. Lumbar regions (open arrows). B-E MDCT Abdomen; B: Axial MDCT image shows intra hepatic biliary channels dilatation (open arrow) with dilated common bile duct (small white arrow) with no pneumobilia. C: Coronal MDCT shows partially calcified stone within the GB (open arrow), with surrounding inflammatory process and dilated common bile duct (long arrow). D: Coronal MDCT shows dilated small bowel loops with a stone in the distal jejunum measuring 2.6 cm (arrowhead) and collapsed small bowel loops distal to the stone with well localization of the transition zone (arrow). E: Sagittal MDCT shows small non-calcified shadow at the distal sigmoid 1.7cm (arrowhead) with distended distal rectum, it could be another non calcified stone.

The diagnosis of gallstone ileus was made, and she underwent an urgent laparotomy (after electrolytes disturbance correction and cardiovascular preparation). Intraoperatively, a midline incision done, and adhesions found between the small bowel and the pelvic wall which get lysed. A stone of 4 cm found in the jejunum 10 cm distal to the ligament of Treitz (Figure 2). Enterotomy done proximal to the stone and milked retrogradely and the bowel closed in 2 layers. Exploration done for the rest of the bowel and another stone was found in the sigmoid colon which milked toward the

rectum (passed with stool through the anus). The patient stayed postoperatively for 9 days and her hospital stay was uneventful. She is arranged to follow up in the outpatient clinic to arrange for the cholecystectomy in another session.



Figure 2 A stone of 4 cm removed from the jejunum.

3. Discussion

Gallstone ileus is an uncommon and potentially serious sequela of cholelithiasis. It is defined as the intestinal impaction of a gallstone passing through a bilioenteric fistula mainly cholecystoduodenal (60%), there may be other fistulous communications (cholecysto-colonic, cholecysto-jejunal, cholecystogastric, and more rarely, choledocus-duodenal [1]. It accounts for 1%-4% of all cases of mechanical intestinal obstruction [2-4].

It is most common among elderly female and it may lead to increased mortality rate[5]. Biliary-enteric fistula may lead to passage of the gallstone into the GI tract through a fistula between it and a gangrenous gallbladder, which is the main pathologic mechanism of gallstone ileus especially when the stone larger than 2-2.5 cm in diameter to cause intestinal obstruction[5].

For a long time, the essential tool to identify the pathology and the important signs was the plain abdominal radiographs, but nowadays CT and MRI made the diagnosis more reliable and easier. Rigler's triad which described those important signs is a classical triad made up of bowel dilatation, detection of the ectopic stone and pneumobilia [6]. Rigler's triad sometimes is not fulfilled as mentioned in the presented case. Gas within the bile ducts which is called pneumobilia is sometimes does not exist mainly due to inflammatory process that occlude the common bile duct or cystic duct [7].

In a study by Swift and Spencer 1998; they explained the radiological findings of 4 cases which were surgically proven as gallstone ileus. They notice that CT detects pneumobilia in two cases, but abdominal radiography detects it in only one case [7].

In addition, Yu et al., found that only five patients out of 14 cases of gallstone ileus corresponded with all the criteria of Rigler's triad on plain abdominal radiography (36%) [8].

Typically, the site of stone impaction is the terminal ileum as it is the narrowest part of the small intestine [9]. However, in the presented case the stone was impacted in the jejunum. Reisner and Cohen concluded that the uncommon sites of impaction are the jejunum, ligament of Treitz and the stomach. Whereas the rare sites are the colon and duodenum. A study by Lassandro et al on 40 cases of gallstone ileus showed that the stones were impacted in the ileum in 25 of them and in the jejunum in only 12 of them [9]. On the other hand, an ectopic stone found in the stomach in only one patient and another one in the duodenum (Bouveret's syndrome), whereas the last one was in the colon [9, 10].

The gold standard for the diagnosis is the CT scan. It may not accurately determine the size of stone due to the non-calcified margin of the stone. In the presented case, the measurement of the stone was 2.6 cm on CT, but the real size

was 4 cm postoperatively. Koziel et al reported a similar finding where the CT revealed a stone sized 30 mm, while the real size is 35 mm. Moreover, Koziel et al discussed a case with symptoms of intestinal obstruction, but the CT did not show the cause of obstruction. A surgical exploration was done which found an impacted stone in the ileum measuring 2 x 3 cm [11]. Another study on a sample of 14 cases found that the CT was capable enough to detect gallstone ileus pre-operatively in 13 of them. However, even the gold standard tool had a false negative case because of poor differentiation between less calcified rim of the ectopic gallstone and the enhanced bowel wall [8].

In the presented case, the choice of treatment was enterotomy and stone extraction and follow up was done for the patient in the outpatient clinic to arrange for the cholecystectomy in another session. The goal of treatment in gallstone ileus is early relief of intestinal obstruction and minimization of morbidity and mortality. The choice of a one stage or two-stage surgical procedure or enterolithotomy alone is still controversial [12]. Enterotomy with stone extraction alone remains the most common surgical method because of its low incidence of complications [13].

4. Conclusion

Abdominal X-ray is not a suitable tool for the diagnosis, and it is just a preliminary tool for intestinal obstruction in general. Although abdominal CT scan is the investigation of choice to diagnose gallstone ileus, accurate size and number still under debate. Pneumobilia is not a common finding and Rigler's triad advised to be revised. Intraoperative exploration is necessary to rule out other stones.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of ethical approval

The present research work does not contain any studies performed on animals/humans subjects by any of the authors.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] De Monti M et al. (2018). Gallstone ileus: A possible cause of bowel obstruction in the elderly population. *Int J Surg Case Rep*, 43, 18-20.
- [2] Nuno-Guzman CM et al. (2016). Gallstone ileus, clinical presentation, diagnostic and treatment approach. *World J Gastrointest Surg*, 8(1), 65-76.
- [3] Abou-Saif A and FH Al-Kawas. (2002). Complications of gallstone disease: Mirizzi syndrome, cholecystocholedochal fistula, and gallstone ileus. *The American journal of gastroenterology*, 97(2), 249.
- [4] Hussain J et al. (2018). Gall stone ileus: Unfamiliar cause of bowel obstruction. Case report and literature review. *Int J Surg Case Rep*, 49, 44-50.
- [5] Chou JW et al. (2007). Gallstone ileus: report of two cases and review of the literature. *World Journal of Gastroenterology: WJG*, 13(8), 1295.
- [6] Lassandro F et al. (2004). Gallstone ileus analysis of radiological findings in 27 patients. *European journal of radiology*, 50(1), 23-29.
- [7] Swift S and J Spencer. (1998). Gallstone ileus: CT findings. *Clinical radiology*, 53(6), 451-454.
- [8] Yu CY et al. (2005). Value of CT in the diagnosis and management of gallstone ileus. *World journal of gastroenterology: WJG*, 11(14), 2142.

- [9] Lassandro F et al. (2005). Role of helical CT in diagnosis of gallstone ileus and related conditions. American Journal of Roentgenology, 185(5), 1159-1165.
- [10] Reisner RM and JR Cohen. (1994). Gallstone ileus: a review of 1001 reported cases. The American Surgeon, 60(6), 441-446.
- [11] Koziel S et al. (2015). Gall-Stone Ileus–Own Patients and Literature Review. Polish Journal of Surgery, 87(5), 260-267.
- [12] Ayantunde AA and A Agrawal. (2007). Gallstone ileus: diagnosis and management. World journal of surgery, 31(6), 1292-1297.
- [13] Halabi WJ et al. (2014). Surgery for gallstone ileus: a nationwide comparison of trends and outcomes. Annals of surgery, 259(2), 329-335.

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