Gallstone ileus presenting as intussusception: A case report

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Abstract

Background: Gallstone ileus is a complication of acute cholecystitis that accounts for 25% of bowel obstruction cases in the elderly. To our knowledge, only one other case of gallstone ileus presenting as intussusception has been reported in the literature, and involved non-operative management with an unfavorable outcome.

Case Presentation: Here we report the case of 69-year-old woman presenting with symptoms of acute small bowel obstruction with a surgical history significant for cholecystectomy 30 years prior. Computed tomographic imaging showed a target sign in the small bowel consistent with intussusception, but intra-operative diagnosis revealed this to be a gallstone. A simple enterolitotomy was conducted and the patient has since been symptom-free.

Discussion: Gallstone ileus has a high mortality rate (12–17%) and is an important differential diagnosis to consider, especially as the elderly population throughout the world continues to grow.

Conclusion: As radiographic features of gallstones are variable we suggest maintaining a high index of suspicion for gallstone ileus in any elderly patient presenting with SBO, even with a seemingly contradictory surgical history.

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1. Background

Gallstone ileus causes 25% of small bowel obstructions (SBOs) in patients 65 years or older [1]. With the mortality rates twice as high as other causes of SBO (15–18% vs. 7%) a high index of suspicion is justified in elderly patients presenting with SBO – even with seemingly contradictory surgical history [2,3]. Pathogenesis of gallstone ileus is believed to involve the formation of a biliary-enteric fistula following acute cholecystitis, thereby allowing gallstone passage from the gallbladder to the enteric tract. [2] The formation of a fistula also introduces air into the biliary tree. The corresponding radiologic evidence of ectopic gallstone, bowel obstruction, and pneumobilia constitutes Rigler’s triad – the pathognomonic features of gallstone ileus. One case of gallstone ileus with secondary intussusception was found, with an unfavorable outcome reported [4]. Sixteen cases of gallstone ileus status post-cholecystectomy have been reported in the literature, but only one case of gallstone ileus presenting as intussusceptions. To the best of our knowledge, there are no reports of gallstone ileus presenting as intussusception in patients status post-cholecystectomy.

Surgical exploration in the setting of small bowel obstruction is paramount to the management of gallstone ileus (Fig. 2).

Radiologic and clinical signs of SBO are a current indication for exploration, and so definitive pre-operative diagnosis of gallstone ileus is not required [5]. Although a single-stage procedure combining enterolitotomy, cholecystectomy and fistula repair is possible current evidence shows that simple enterolitotomy is the initial procedure of choice in elderly populations as single-stage procedures carry greater surgical risk [6–8].

2. Case presentation

A 69-year-old woman was admitted from the emergency department for a 3-day history of progressive lower abdominal pain, accompanied with non-bloody diarrhea and vomiting. The patient denied any recent fever, cough or dyspnea. Past surgical history consisted of an uncomplicated open cholecystectomy 30 years prior for cholecystitis. The patient recalled that symptoms nearly identical to her current condition began the day after discharge for her cholecystectomy and continued intermittently ever since, causing multiple trips to the emergency department and one hospitalization. On previous hospitalization, her symptoms were managed conservatively with observation, bowel rest and hydration but no cause of symptoms was identified. The current severity of symptoms exceeded all previous episodes.

The patient appeared distressed and without jaundice. The patient’s abdomen was soft and non-distended, with normoactive bowel sounds and no palpable masses. The lower abdomen was tender to palpation. Laboratory testing demonstrated no evidence

Abbreviations: CT, computed tomography; SBO, small bowel obstruction.
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http://dx.doi.org/10.1016/j.ijscr.2016.11.036
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of pancreatitis, leukocytosis, anemia, or electrolyte disorders. Plain film x-rays revealed distended loops of small bowel. Computed tomographic (CT) scan showed a small bowel obstruction at the mid-jejunum and a concentric intraluminal ring, suggesting intussusception (Fig. 1).

A diagnostic laparoscopy was conducted to reduce what was perceived to be an intussusception. However, a hard, mobile mass was found in a mid-jejunal bowel loop (Fig. 2). The procedure was converted to an open exploratory laparotomy and the mass was removed manually via enterotomy. Pathology showed a 2.8 × 2.5 cm calcified cholesterol gallstone. The patient described immediate relief of symptoms following the procedure and was discharged shortly thereafter. The patient has had an uncomplicated follow up and not experienced any obstructive symptoms since.

3. Discussion

Rigler’s triad, the radiologic evidence of ectopic gallstone, bowel obstruction, and pneumobilia, has been reported on CT scan imaging in 77% of cases [9]. In this case the patient had a gallstone within the enteric tract that was unresolved by her cholecystectomy, causing intermittent symptoms of obstruction over the course of 30 years and an acute obstruction on presentation. The patient’s CT scan (Fig. 1) shows the gallstone as an obstructive mass at the SBO transition point, thereby fulfilling two of Rigler’s triad. Gallstone ileus is typically caused by gallstones >2 cm in diameter, a size consistent with this mass.

The ring-enhancing and radiolucent features of the mass seen on the patient’s CT scan can also be seen in gallstones (Fig. 1). Partial calcification and layering effect of cholesterol composition can cause a ring-enhancing appearance, while gas-containing gallstones may appear radiolucent. Ring-enhancement at point of obstruction in SBO may represent the double lumen “target sign” of intussusceptions. However, intussusceptions account for 1% of all bowel obstruction, and only 5% of all intussusceptions occur in adults. [10]. A lack of observed pneumobilia in this case is accounted for by either repair of the biliary-enteric fistula during the patient’s previous cholecystectomy or healing during the 30 year postoperative period.

A recent retrospective study by Halibi et al. reported a lower mortality rate in cases of gallstone ileus and attributed this to diagnosis of the condition within 2–3 days of admission, as opposed to the 4–8 day periods previously reported [3]. In addition to being an independent risk factor for mortality, earlier diagnosis lowers the risk of necessary of bowel resection, which was shown in the same study to carry a mortality risk similar to additional fistula closure [2,3]. 16 other cases of gallstone ileus post-cholecystectomy have been reported, suggesting non-definitive protection from gallstone ileus and evidence against the benefits of a single-stage procedure.
4. Conclusion

Gallstone ileus is an important differential diagnosis in elderly patients presenting with small bowel obstruction. The radiographic features of Rigler’s triad provide a useful diagnostic outline but radiographic studies must be used with clinical judgement and context of medical history. In this case, radiographic signs and surgical history of cholecystectomy were suggestive of intussusception. However the clinical elements consisting of: (1) the combination of acute obstructive symptoms in an elderly patient, (2) a chronic history of similar past symptoms, and (3) a temporal relationship between symptoms and a past episode of cholecystitis reaffirmed the intraoperative diagnosis of gallstone ileus. With timely surgical exploration and simple enterolithotomy, a favorable outcome in patients with gallstone ileus can be achieved.

Authors’ contributions

RMP and KMW participated in postoperative care, collected clinical data, performed the literature search, and prepared the manuscript; AK was the surgeon who conducted the procedure, participated in manuscript revision and conducted final review. All authors read and approved the final manuscript.

Funding

None.

Ethics approval and consent to participate

Not applicable.

Conflict of interests

The authors declare that they have no competing interests.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Gurarantor

Arunkumar Baskara, MD is the guarantor who accept full responsibility for the case report.

Acknowledgement

The authors thank the surgical residents and surgical critical nursing team for their essential assistance in surgery and postoperative management.

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