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Case Report

Gallstone ileus: A diagnostic and therapeutic challenge

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ARTICLE INFO

Article history:

Received 20 September 2016

Accepted 6 June 2017

Available online 26 July 2017

Keywords:

Gallstone

Ileus

Ultrasonography (USG)

Introduction

Gallstone ileus first described in 1654 by Dr. Erasmus Bartholin, is a mechanical obstruction caused by impaction of one or more gall stones within gastrointestinal tract.¹ Overall reported incidence is 1–4% of mechanical intestinal obstruction in small bowel and 25% in patients older than 65 years.² We report a case which was diagnosed on basis of classical ultrasonography (USG) findings and was operated upon.

Case report

56-year old male, a known patient of hypertension, diabetes mellitus, chronic kidney disease presented with sudden onset abdominal distension, pain, nausea, vomiting and obstipation for 72 h. Examination revealed severe dehydration, toxic looking patient with tensely distended tender abdomen.

Bowel sounds were sluggish and on percussion abdominal note was tympanic. Digital rectal examination revealed empty rectum. Radiograph abdomen revealed dilated small bowel loops with multiple air fluid levels (Fig. 1). On USG abdomen, gall bladder (GB) was ill-defined, air foci were seen in GB (Fig. 2), a 6 cm sized echogenic focus with distal acoustic shadowing was identified in distal ileum (Fig. 3) with proximal small bowel dilatation and weak peristalsis. Based on these classical findings diagnosis of gall stone ileus was considered. Patient was taken for exploratory laparotomy which confirmed the findings. Longitudinal enterotomy was done, stone was removed (Fig. 4), proximal distended bowel loops were evacuated and enterotomy was closed transversely. Post-operative period was uneventful and patient was discharged on tenth postoperative day after suture removal. In follow up period of more than a year, there are no fresh complaints and patient is asymptomatic.

Discussion

Gallstone ileus is an uncommon condition which results from impaction of gall stone within gastrointestinal tract. Usual underlying cause is a fistula formation between gall bladder and intestine. Among these fistulas most common is cholecystoduodenal (70%), cholecystocolic (10–20%) and followed by cholecystogastric fistula (least common).³

Classical radiological finding is Rigler triad which includes pneumobilia, intestinal obstruction and ectopic gall stone. But unfortunately it is seen only in 15% of cases on abdominal radiograph, 11% of cases on USG and 77% times on computed tomography (CT) scan.⁴ In our case this was demonstrated on

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0377-1237/© 2017 Published by Elsevier B.V. on behalf of Director General, Armed Forces Medical Services.

Fig. 1 – Radiograph abdomen AP view showing dilated jejunal bowel loops with multiple centrally placed air fluid levels.

Fig. 2 – Ultrasonography (USG) image showing ill-defined gall bladder, echogenic foci in GB with subtle dirty shadowing.

sonography and was not evident on plain radiograph. Multiple detector computed tomography (MDCT) has an advantage as details like: exact size of stone in all orthogonal planes, number of stones, exact level of obstruction and ectopic stone even before its impaction can be accurately demonstrated.⁵ Another advantage with MDCT is that it can demonstrate cholecystoenteric fistula in 12.5–26.9% of cases.⁶ Magnetic

Fig. 3 – Ultrasonography (USG) image with arrowhead showing large intraluminal echogenic focus with dense shadowing (calculus) and dilated fluid filled ileal loop (bowel wall marked with *).

resonance cholangiopancreatography (MRCP) utility is limited to a subset of patients where diagnosis is not clear because of isoattenuating stone on CT. MRCP is also useful in depicting cholecystoenteric fistula if its tract is fluid filled and in those patients who cannot tolerate oral contrast.⁷ In our case both CT scan and MRCP were not done at time of admission because patient's condition was critical and diagnosis was evident on ultrasonography. However MRCP was carried out in follow up period and it did not demonstrate cholecystoenteric fistula.

Size of stone has been implicated in causing mechanical intestinal obstruction. In absence of stenotic segment generally a stone bigger than 2.5 cm can cause obstruction and it usually impacts in terminal ileum or at ileocaecal valve.⁸ In our case stone was found impacted in terminal ileum.

Open surgery is a gold standard and remains the main preferred treatment option. Various available surgical options are: (A) enterolithotomy alone without cholecystectomy and cholecystoenteric fistula repair. (B) One stage procedure – enterolithotomy with both cholecystectomy and repair of cholecystoenteric fistula. (C) Two stage procedure – enterolithotomy followed by cholecystectomy and repair of fistula at a interval of 4–6 weeks.⁸ Though there is no consensus for type and extent of surgery however in general enterolithotomy alone is offered to most of patients. Since morbidity and mortality is higher with one stage procedure as compared to enterolithotomy alone, one stage procedure is reserved for only low risk patients or patients with complications like gallbladder gangrene or residual stones. Two stage procedure is generally offered to young patients, to those who have recurrence of symptoms or have higher risk of developing complications.^{8,9} Among nonsurgical treatment options, combining lithotripsy of impacted gall stone and its endoscopic removal is an emerging option in limited subset of patients.⁹

In our case because of various comorbidities and critical condition of patient at time of admission, enterolithotomy alone was offered. Interval cholecystectomy or cholecystoen-

Fig. 4 – Intraoperative photograph showing stone being palpated in gut lumen and being removed.

teric fistula repair was not offered because our patient had multiple comorbidities, was asymptomatic after surgery and MRCP did reveal any residual gallstone or persistent cholecystoenteric fistula.

After initial successful treatment, recurrence of gall stone ileus has been reported in 5% of cases. Since most of these patients have coexistent comorbidities and high mortality is associated with one stage procedure, enterolithotomy is recommended in these cases.¹⁰

Conclusion

Gallstone ileus is an uncommon serious condition in which mortality can be avoided with early diagnosis and appropriate treatment. As this case shows that both abdominal radiograph and USG are complementary to each other and provide early accurate information. Successful outcome in this case reemphasises that enterolithotomy remains preferred surgical option in elderly patients who have multiple comorbidities and develop gall stone ileus.

Conflicts of interest

The authors have none to declare.

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