Small Bowel Obstruction Secondary to Gallstone Ileus with Finding of Rigler’s Triad on CT Abdomen: A Case Report

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Abstract

Gallstone ileus is an infrequent cause of small bowel obstruction. It mainly affects the elderly population with a female predominance. Many individuals often have concurrent history of chronic cholelithiasis. A fistula between the gallbladder and duodenum allow for the passage of a gallstone into the small bowel potentially leading to mechanical obstruction. Diagnosis can be difficult even with the help of modern imaging modalities which can lead to a delay in management and high risk of morbidity and mortality. This case demonstrates a commonly cited sign of gallstone ileus known as Rigler’s Triad; small bowel obstruction, a gallstone outside the gallbladder, and air in the biliary tree.

Introduction

Small bowel obstruction is a serious condition which has the potential to become a surgical emergency if left untreated. The most common causes of small bowel obstruction in adults include adhesions, hernias and tumour [1]. However, rarer causes of mechanical bowel obstruction should be considered if a diagnosis is uncertain. Gallstone ileus is an important but rare cause of small bowel obstruction accounting for about 1-4% of cases of intestinal obstruction [2]. The intermittent and variable symptomatology of gallstone ileus may potentially delay diagnosis which may be a contributing factor that accounts to its relatively high rate of associated morbidity and mortality. In this case, we describe a case of acute small bowel obstruction in a 58-year-old lady secondary to an impacted gallstone at the terminal ileum. She went on to receive an open laparotomy.

Case Presentation

Background

A generally healthy 58 year old lady presented to the emergency department from the GP with a 3 day history of cramping central abdominal pain with associated nausea and vomiting. She has also noted a 1 month history of abdominal pain after eating high fat meals.

Preoperative assessment

On clinical examination, the abdomen was soft with some periumbilical tenderness. Routine blood test was significant for left shifted leukocytosis. An abdominal CT scan requested by the GP earlier in the day demonstrated what initially looked to be a central small bowel necrotic mass with distal small bowel obstruction and transition point at the terminal ileum (Figure 1). On further evaluation of the CT abdomen, free air was noted in the biliary tree (Figure 2). These findings are classically sited as Rigler’s Triad; small bowel obstruction, pneumobilia, and gallstone outside the gallbladder.

Operative technique

She subsequently went on to receive an urgent laparoscopy which was converted to open laparotomy in view of suspicious CT scan findings. A midline incision was done with careful exploration of the small bowel. A large 4 cm palpable gallstone was found in the terminal ileum (Figure 3). A wedge resection was carried out to remove the gallstone (Figure 4). Cholecystectomy and fistula closure was delayed in this case in view of the clinical situation. She will receive an MRCP at a later date before any subsequent procedure. The patient remained in hospital post surgery and was discharged on post-operative day 5 without complication.

Discussion

Gallstone disease is a common condition which usually presents with a history of biliary colic.
In the majority of cases, gallstone disease may be complicated by acute cholecystitis, gallstone pancreatitis, or cholecodocholithiasis. However, in about 0.5% of patients with gallstone disease, gallstone ileus may occur; a relatively rare cause of small bowel obstruction [3]. Our patient was a relatively elderly lady that demonstrated about a 1-month history of biliary colic prior to presenting. This prompted gallstone ileus as a possible differential.

Gallstone ileus occurs most often in elderly individuals. Approximately 70% of patients are over the age of 65. Females are three and a half times more likely than males [4].

Fistula formation between the gallbladder and duodenum is the most common explanation for gallstone ileus. A fistula may allow passage of a stone into the small bowel. Small bowel obstructions generally occur with stones >2.5 cm in size [4]. Impaction of the stone most commonly occurs near the ileocaecal valve due to a narrow lumen with less frequent peristaltic activity. In this case, the gallstone was approximately 4 cm in size and was located in its classic position near the terminal ileum.

The clinical symptoms of gallstone ileus are non-specific which often leads to a delay in preoperative diagnosis and higher rate of morbidity and mortality. Consideration should be made in any elderly female patient presenting with symptoms of small bowel obstruction with a previous history of cholelithiasis or cholecystitis. On abdominal plain film, Rigler’s triad is often sited: pneumobilia (air in the biliary tree), signs of small bowel obstruction, and radio-opaque gallstone on imaging. An abdominal CT was done in this case which demonstrated signs of small bowel obstruction and what looked like a necrotic mass rather than a radio-opaque stone. It should be noted that a preoperative diagnosis is only made in about 50-60% of cases and findings demonstrating Rigler’s Triad are generally rare. As a result, definitive diagnosis is often delayed until laparotomy.

Treatment options largely depend on a patient’s clinical status. The most common surgical approach to managing gallstone ileus is an enterotomy with stone retrieval which was done in this case. In terms of managing the gallbladder and fistula, there is controversy as to whether a delayed fistula closure versus a single stage procedure comprised of enterolithotomy, cholecystectomy and fistula closure is of benefit. In up to 50% of cases, a fistula may spontaneously close [5]. In addition, the rate of gallstone ileus recurrence is generally low (5-9%) following enterolithotomy.

Learning Points

1. In elderly females with history of cholelithiasis and biliary colic presenting with nausea, vomiting and signs of small bowel obstruction; gallstone ileus must be considered as early surgical management is critical.
2. Although CT scan is helpful, preoperative diagnosis is often delayed until laparotomy and Rigler’s Triad is not commonly demonstrated on imaging.
3. Although controversy exists, Enterolithotomy with delayed cholecystectomy and fistula closure remains an acceptable surgical option in the management of gallstone ileus.

References