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Case Report
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Gallstone Ileus: A Dramatic Presentation of an Unfamiliar Cause of Bowel Obstruction

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Abstract

Gallstone ileus is a rare, but potentially life-threatening cause of intestinal obstruction. Furthermore, the varied clinical presentation and the non-specific laboratory findings make this condition especially challenging to diagnose and manage in a timely fashion. However, due to the increased associated morbidity and mortality, maintaining a high index of suspicion, ordering the necessary imaging, and immediate surgical management are critical. Even the slightest delay in diagnosis, could lead to catastrophic complications including but not limited to bowel perforation, septic shock, and cardiac arrest. We present an interesting case of small bowel obstruction due to gallstone ileus and cholecysto-duodenal fistula.

Introduction

Gallstone ileus occurs due to obstruction of the intestinal lumen from one or more gallstones [1,2]. Although rare, this condition has been associated with an increased morbidity and mortality [3,4]. Due to the varied presentation based on the site of obstruction and the non-specific laboratory findings, a high index of suspicion is required at the time of the first encounter with the patient [3,4]. Prompt abdominal imaging with a contrast enhanced CT and an emergent surgical/endoscopic intervention would help significantly reduce the morbidity and mortality associated with this condition [3-6].

Case Presentation

A 62-year-old female presented to the emergency department with acute abdominal pain, shortness of breath and bilious emesis from one day prior to admission. Abdominal pain was diffuse, intermittent, and colicky associated with nausea and non-bloody bilious vomiting. Rest of the systemic review was unremarkable for any additional symptoms. Past medical history was notable for essential hypertension and hyperlipidemia. She had no history of prior surgeries. She denied alcohol use, smoking tobacco, or any illicit drug use. Family history was remarkable for a history of lung cancer in father and brain aneurysm in mother. Her medications included amlodipine and pravastatin.

On admission, she was in mild distress. Vitals were as follows: Blood pressure 112/67 mmHg, pulse 107 bpm, oxygen saturation 94% on room air, T 97.5 F, and a respiratory rate of 19 breath cycles/min. Abdominal exam was notable for moderately distended abdomen, mild tenderness on deep palpation, no skin rash, tympanic on percussion, with hyperactive bowel sounds. Sclerae were anicteric. Lung exam revealed decreased air entry on the base of the lungs bilaterally, with basal crackles but no rhonchi. She had no lower limb edema with good peripheral pulses. Labs revealed WBC 24.9, with a significant neutrophilic predominance, Hgb 13.1 g/dl, Platelet count 438,000/µL, serum creatinine 1.9 mg/dl, BUN 48 mg/dl, Sodium 141 Meq/l, potassium 3.9 Meq/l, Total bilirubin 0.4, AST 24, ALT 19, ALP 122, serum lactate 1.7, albumin 3.7, and lipase level of 265. Chest X-ray revealed nonspecific bilateral interstitial and airspace opacification, likely secondary to pneumonitis *vs.* atelectasis and an air-filled distended stomach. Abdominal X-ray revealed dilated small bowel loops consistent with the appearance of Small Bowel Obstruction (SBO) (Figure 1).

After admission, the patient had several episodes of vomiting and became hypotensive with worsening hypoxia which eventually led to cardiac arrest with pulseless ventricular tachycardia. ACLS protocol was initiated and Return of Spontaneous Circulation (ROSC) was achieved after 10 min. She was intubated and an Orogastric Tube (OGT) was placed with 4 L of bilious output.

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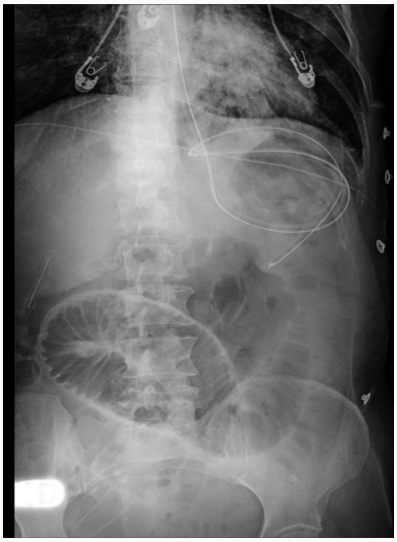

Figure 1: Abdominal X-ray demonstrating dilated small bowel loops – SBO.

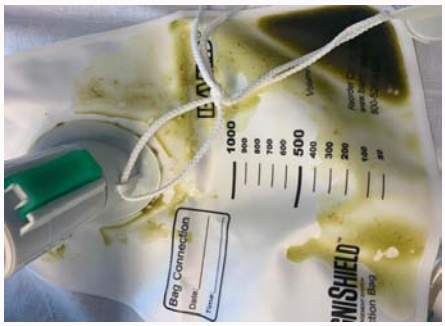

Figure 2: Rectal tube output.

Figure 3A: CT abdomen and Pelvis with contrast demonstrating SBO and Gallstone (Black arrow demonstrating gallstone and SBO).

Figure 3B: Coronal View of CT abdomen and Pelvis (Black arrow demonstrating gallstone).

Rectal tube was placed which was noted to have excessive bile colored liquid stool (Figure 2). Given her clinical presentation of SBO, CT chest, abdomen, and pelvis with contrast was performed which demonstrated findings which were concerning for gallstone ileus as an etiology for her SBO as well as the excessive bile colored stool output, which was highly concerning for cholecysto-duodenal fistula (Figure 3A, 3B). Surgery team was consulted, the patient was taken for laparoscopic enterotomy, and the gallstone was removed (Figure 4). Patient continued to clinically improve, eventually she got extubated, and was transferred out of the medical intensive care unit to the medical floor. She was subsequently discharged to a rehabilitation facility after medical optimization with scheduled follow-up in the general surgery clinic for elective cholecystectomy.

Discussion

Gallstone Ileus (GI) is a clinical condition arising from the obstruction of lumen of the intestine by gallstones, solitary or multiple [1,2]. Among all the cases of mechanical bowel obstruction, GI only accounts for 1% to 4% of cases, however, the associated mortality can reach as high as a staggering 27% [3,4]. A cholecysto-duodenal fistula is the most common type of fistula found in cases leading to GI facilitating the passage of the stone from the gallbladder to the intestine [5]. The terminal ileum is the commonest site of obstruction due to its relatively delayed peristalsis and narrower lumen diameter [6]. However, GI secondary to occlusion at sites other than terminal ileum have been reported in prior literature [3].

The male: female ratio of GI incidence is 1:3.5 [7]. This could be because gallstones are traditionally more common in females. The clinical presentation could be acute, subacute, or chronic. The symptoms and signs include abdominal distention, nausea, vomiting, abdominal pain, constipation, and obstipation. Jaundice may be present depending on the site of obstruction [8]. If a gallstone causes obstruction at the level of the ileocecal valve, the presenting symptoms are referred to as Barnard Syndrome, and if the stone obstructs the duodenum leading to gastric outlet obstruction, the ensuing clinical presentation is termed as Bouveret Syndrome [9,10]. Karewsky Syndrome is a chronic presentation characterized by recurrent episodes of abdominal pain with intermittent periods of no symptoms due to gradual stone passage through the intestine, eventually leading to a complete bowel obstruction and constant abdominal pain [9]. Due to the varying nature of the clinical presentation, there is a high likelihood of a delay in the diagnosis and a high index of suspicion should be maintained in patients who present with the Mordor's Triad (history of gallstones, signs of acute cholecystitis, and a sudden appearance of intestinal obstruction) [9]. However, other conditions such as mechanical SBO from adhesions 2/2 abdominal surgeries, abdominal intraluminal neoplasms, and incarcerated/strangulated hernia need to be ruled out prior to considering GI as the potential cause for the patient's presentation.

The laboratory studies do not always correlate with the clinical severity of GI, however, liver function panel abnormalities, WBC

Figure 4: Gallstone post enterotomy and removal.

elevation, and electrolyte imbalances can be noted. The Rigler's Triad, consisting of pneumobilia, intestinal obstruction, and ectopic gallstone on abdominal X-ray, has been demonstrated in prior literature referring to GI [11,12]. If on a subsequent abdominal X-ray, the gallstone changes position, this is referred to as the Rigler's Tetrad [13]. In the experienced hands, X-ray and Abdominal Ultrasound (USG) can increase the diagnostic sensitivity to as much as 74% [14]. It should be especially noted that barium should not be administered, due to the potential concern for aggravating the obstruction as well as the high risk of barium peritonitis in the presence of a perforation. To date, the gold standard test for GI is CT abdomen and pelvis with contrast with a diagnostic sensitivity approaching 90% [4,9,14]. Interestingly, Lassandro et al. retrospectively demonstrated that CT confirmed the bowel obstruction in 96.3% of the cases, air in the biliary tree in 89%, and the ectopic gall stone in 81.48% of the patients, which was significantly higher than those confirmed by abdominal X-rays or abdominal USGs [4]. So, in cases when an index of suspicion is very high for GI, obtaining a contrast enhanced CT earlier in the disease course or at the time of presentation can potentially be associated with lower mortality and morbidity as well as save a lot of healthcare resources by preventing other unnecessary imaging.

Our patient presented with SOB and acute hypoxic respiratory failure with incidentally noted gaseous abdominal distension on chest imaging in the presence of acute abdominal pain and bilious emesis as the only symptoms on admission from the gastrointestinal standpoint. Abdominal X-ray revealed dilated small bowel loops with the appearance of small bowel obstruction. The next morning, the patient had an episode of bilious emesis after which she went into pulseless VT. Post ACLS and intubation, OGT was placed which revealed 4 L of bilious output, with bilious output in the rectal tube as well. CT Chest abdomen and pelvis with IV contrast was performed showing SBO, dilation of up to 5.1 cm, and findings suggestive of a fistulization of gallbladder with the first part of the duodenum, transition point in the terminal ileum, and a hyperdense structure at the transition point resembling a gallstone. Gastroenterology and surgery were consulted for expert recommendations. The patient subsequently underwent exploratory laparotomy and enterotomy with gallstone removal (Figure 4).

Conclusion

This case highlights the importance of early diagnosis and treatment of GI. The delay in diagnosis is likely secondary to the ambiguous and varied presentation. A high index of suspicion, paying attention to the Mordor's Triad (history of gallstones, signs of acute cholecystitis, and a sudden appearance of intestinal obstruction), ruling out other common causes of SBO, and a prompt abdominal CT scan with contrast is essential to make the diagnosis. This is important for early diagnosis and prompt management as well as preventing life threatening complications such as biliary sepsis, fungemia, bacteremia, or as in our case, cardiac arrest. Furthermore, biliary output from the nasogastric or excessive bile colored stool output should provide an additional clue to the diagnosis, provided other common causes have been ruled out.

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