Gallstone ileus: an uncommon cause of small bowel obstruction

A 50-year-old woman presented to our emergency department with complaints of abdominal pain, recurrent vomiting and absolute constipation of 2 days duration. 2 weeks ago she had an episode of right upper quadrant and epigastric pain treated by paracetamol. She had no prior history of abdominal surgery or trauma.

Upon presentation to the Emergency Department, the patient underwent a plain film abdomen, which revealed a dilated small bowel loop (red arrow) in keeping with small bowel obstruction and pneumobilia (white arrow) (Fig. 1). A contrast-enhanced CT was performed and showed a cholecystoduodenal fistula with pneumobilia (Fig. 2), a distention of the small intestine measuring 45 mm (Fig. 3), also a rim-calcified gallstone in the distal ileum was noticed (Fig. 4). All that was consistent with the classic Rigler’s triad (pneumobilia, ectopic gallstone and intestinal obstruction).

The diagnosis was the gallstone ileus. The patient was treated surgically with enterolithotomy.

Discussion:

Gallstone ileus is an uncommon cause of small bowel obstruction, it is most common between 65-75 years of age and in the female population [1]. Gallstone ileus is frequently preceded by an episode of acute cholecystitis. The inflammation and pressure effect of the offending gallstone causes erosion through the gallbladder wall, leading to fistula formation between the gallbladder and the adjacent and adhered portion of the gastrointestinal tract, with further gallstone passage. Less commonly, a gallstone may enter the duodenum through the common bile duct and through a dilated papila of Vater [2].

In particular, a cholecystoduodenal fistula was identified in 68% of patients with gallstone ileus. The terminal ileum is the most frequent site of obstruction. However, it may be found in the duodenum causing Bouveret’s syndrome. Other obstruction points, including jejunum (30%) and colon (2.5%) may be seen [3].

Gallstone ileus clinically manifests as abdominal pain, nausea, vomiting, fever, distension and constipation [4]. A high index of suspicion will be helpful, particularly in a female elderly patient with intestinal obstruction and previous gallstone disease; Bouveret’s syndrome may be suspected in a patient with gastric outlet obstruction [5].

Plain abdominal radiographs are of major importance in establishing the diagnosis. In 1941, Rigler described four
radiographic signs in gallstone ileus:
a- partial or complete intestinal obstruction;
b- pneumobilia;
c- an aberrant gallstone or change of position of a previously known gall stone [6].
An abdominal ultrasound will be indicated for gallbladder stones, fistula and impacted gallstone visualization. It may also confirm the presence of choledocholithiasis.
The use of US in combination with abdominal films to increase the sensitivity of diagnosis has been advocated [7].
Computed tomography is considered superior to abdominal films or US in the diagnosis, with a sensitivity of up to 93%, the diagnostic criteria include [1] small bowel obstruction; [2] ectopic gallstone, either rim-calcified or total-calcified; and [3] air in the gallbladder or, when it is contracted, air in the bile duct system as well [8].
There are some occasions where the stone may not even be detectable at all on CT and this can be particularly the case with radiolucent calculi [9].
There is no consensus on the indicated surgical procedure. The current surgical procedures are: (a) simple enterolithotomy; (b) enterolithotomy, cholecystectomy and fistula closure and (c) enterolithotomy with cholecystectomy performed later. Bowel resection is necessary in certain cases after enterolithotomy is performed [10].
**Differential Diagnosis List:** Gallstone ileus (cause of small bowel obstruction), Small bowel obstruction to an adhesion, Small bowel obstruction to a bezoard, Small bowel obstruction to a foreign body

**Final Diagnosis:** Gallstone ileus (cause of small bowel obstruction)

**References:**
LEO G. RIGLER, M.D. C. N. BORMAN, M.D. MINNEAPOLIS AND JOHN F. NOBLE, M.D. ST. PAUL (1941) GALLSTONE OBSTRUCTION PATHOGENESIS AND ROENTGEN MANIFESTATIONS. JAMA 117(21):1753-1759
Figure 1

Description: Plain abdominal radiograph showed a dilated small bowel loop (red arrow) and pneumobilia (white arrow). Origin: departement of radiology, CHU Rabat
Figure 2

Description: An axial contrast-enhanced CT showed a cholecystoduodenal fistula with pneumobilia.
Origin: department of radiology, CHU ibn sina, rabat
Description: A contrast-enhanced CT showed a distention of the small bowel. Origin: department of radiology, CHU Ibn Sina, Rabat
Description: An axial abdominal CT showed a rim-calcified gallstone in the distal ileum. Origin: departement of radiology, chu ibn sina, rabat