Case 17044

Eurorad

A classic case of gallstone ileus

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Section: Abdominal imaging
Area of Interest: Abdomen Gastrointestinal tract Small bowel
Imaging Technique: CT
Special Focus: Acute Fistula Obstruction / Occlusion
Case Type: Clinical Cases
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Patient: 83 years, male

Clinical History:

An 83-year old male was admitted to our emergency room with a 7-day history of abdominal pain, constipation, nausea and vomiting. The physical exam revealed reduced bowl sounds and diffuse abdominal pain and distention. Blood tests where normal.

Imaging Findings:

Contrast enhanced computed tomography (CECT) of the abdomen showed signs of chronic cholecystitis, pneumobilia and a fistula formation from the gallbladder to the duodenum and choledocal duct. Furthermore the CECT scan showed a localized marked dilatation of the proximal small bowl and a large gallstone (3cm) in the lumen of the distal jejunum. Small amount of free fluid in the upper right quadrant

Discussion:

Gallstone ileus is a rare cause of mechanical bowel obstruction, with a significant mortality (7-30%). [1-3]

Gallstone ileus occurs as a complication of cholelithiasis. A combination of pressure from the gallstone and the inflamed wall of the gallbladder, will result in erosion, creating a cholecystoduodenal fistula tract. After the passing of a gallstone through the fistula, formed between the duodenum and the gallbladder, the stone will lodge thus creating mechanical obstruction. [1,3,4]

In most cases, the stone will lodge near the ileocecal valve (60.5%) as it’s the most narrow segment. However in some cases it will lodge in jejunum (16.1%), stomach (14.2%), the duodenum (3.5%) or the colon (5.7%). Though 40% of cases with a cholecystoduodenal fistula holds multiple stones, they will most likely pass if the stones is less than 2 cm. [1-3]

Clinical Perspective

Patients can present symptoms such as nausea, severe (colicky) abdominal pain and distention, dehydration, tachycardia, hypotension, fever, high-pitched bowel sounds, not passing gas and a history of upper right quadrant pain. The patient might have a history with gallstones (0.3%-0.5% of all gallstone patients results in ileus), is most likely woman (ratio 1:3-7) and above the age of 65 years. [1,2]

Biochemical markers may be unremarkable. If the patient is dehydrated there might be electrolyte derangement. [1,3]

Imaging Perspective

Ideal test and gold standard for gallstone ileus is a contrast-enhanced CT abdomen with a sensitivity of 93%, accuracy of 99% and specificity of 100%. [1,2,3]

Classical signs of gallstone ileus (Riegler's triad):

1. Intestinal obstruction
2. Pneumobilia
3. Gallstone within the lumen of the intestine

Other signs to look; free fluid, mural gas and portal venous gas, as these will be symptoms of advanced stage and poorer prognosis. Not every stone will calcify (12% - 48.3% in the literature), making it more difficult to find on CT scan, however, the intestines will bulge out proximal and collapse distal to the gallstone. [2,3]

Outcome

The only effective treatment is surgery. The stone must be removed by enterolithotomy preferably laparoscopic, although there is some discussion about whether or not a cholecystectomy and fistula repair will beneficial. [1]

Take-Home Message / Teaching Points

Gallstone ileus is rare and occurs primarily in elderly and/or women typically with a history of chronic choleliatis. It presents variable clinical symptoms and no specific biochemical tests making CT abdomen (contrast-enhanced) the gold standard test to provide the diagnosis. An acute operation, enterolithotomy, is the only treatment.

Differential Diagnosis List: Gallstone ileus, Ileus, Chronic cholecystitis , Cholangiocarcinoma, Duodenal/gallbladder cancer

Final Diagnosis: Gallstone ileus

References:

Morosin T, De Robles M B, Putnis S (March 15, 2020) Gallstone Ileus: An Unusual Cause of Intestinal Obstruction. Cureus 12(3): e7284. doi:10.7759/cureus.7284
Beuran M, Ivanov I, Venter MD. Gallstone ileus--clinical and therapeutic aspects. J Med Life. 2010;3(4):365-371.
Chang L, Chang M, Chang HM, Chang AI, Chang F. Clinical and radiological diagnosis of gallstone ileus: a mini review. Emerg Radiol. 2018;25(2):189-196. doi:10.1007/s10140-017-1568-5

Figure 1

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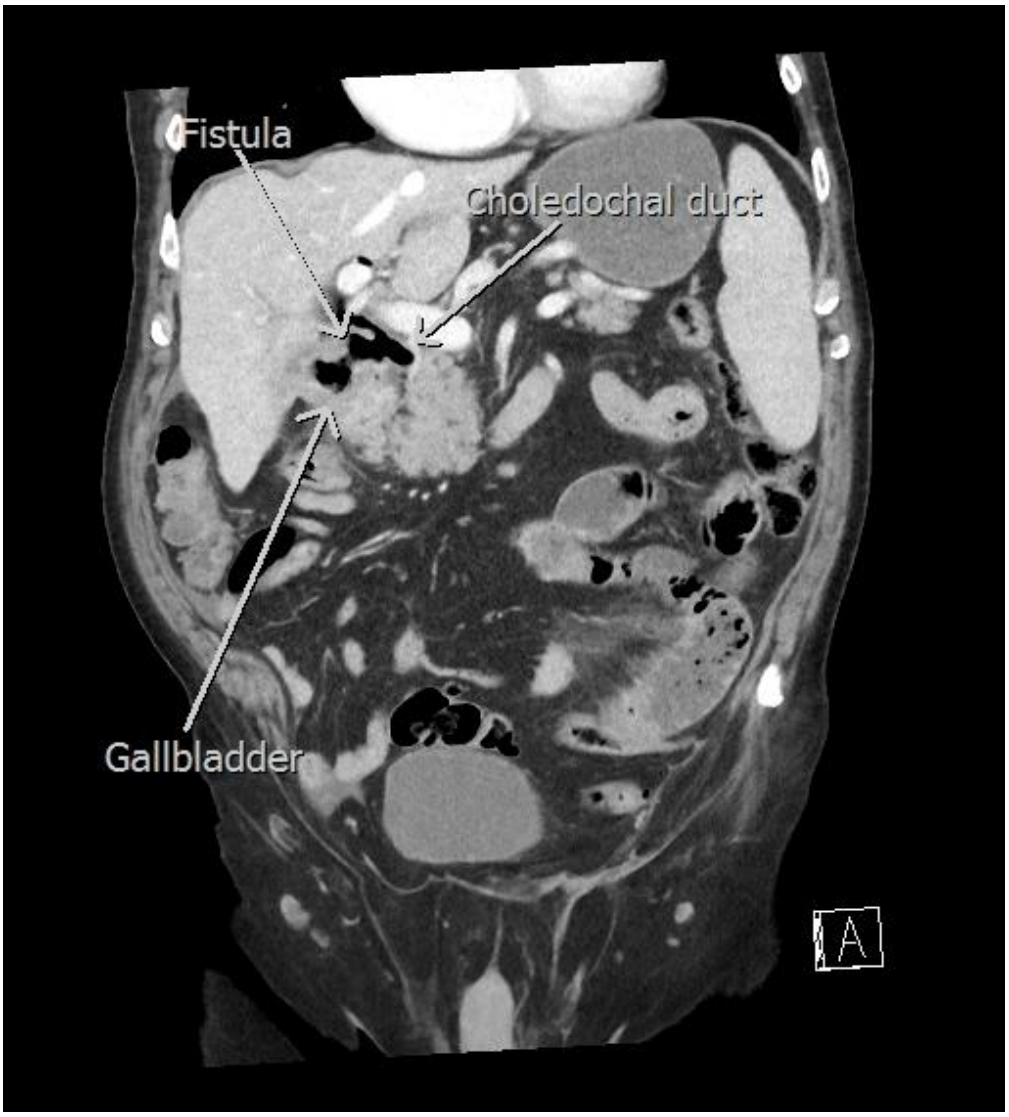

Description: Demonstrates the fistula from the gallbladder to the duodenum and the distal part of the choledochal duct. The localized distended small bowl is visualized in the left hemiabdomen. **Origin:** Department of Radiology, Herlev and Gentofte Hospital, Herlev, Denmark

Figure 2

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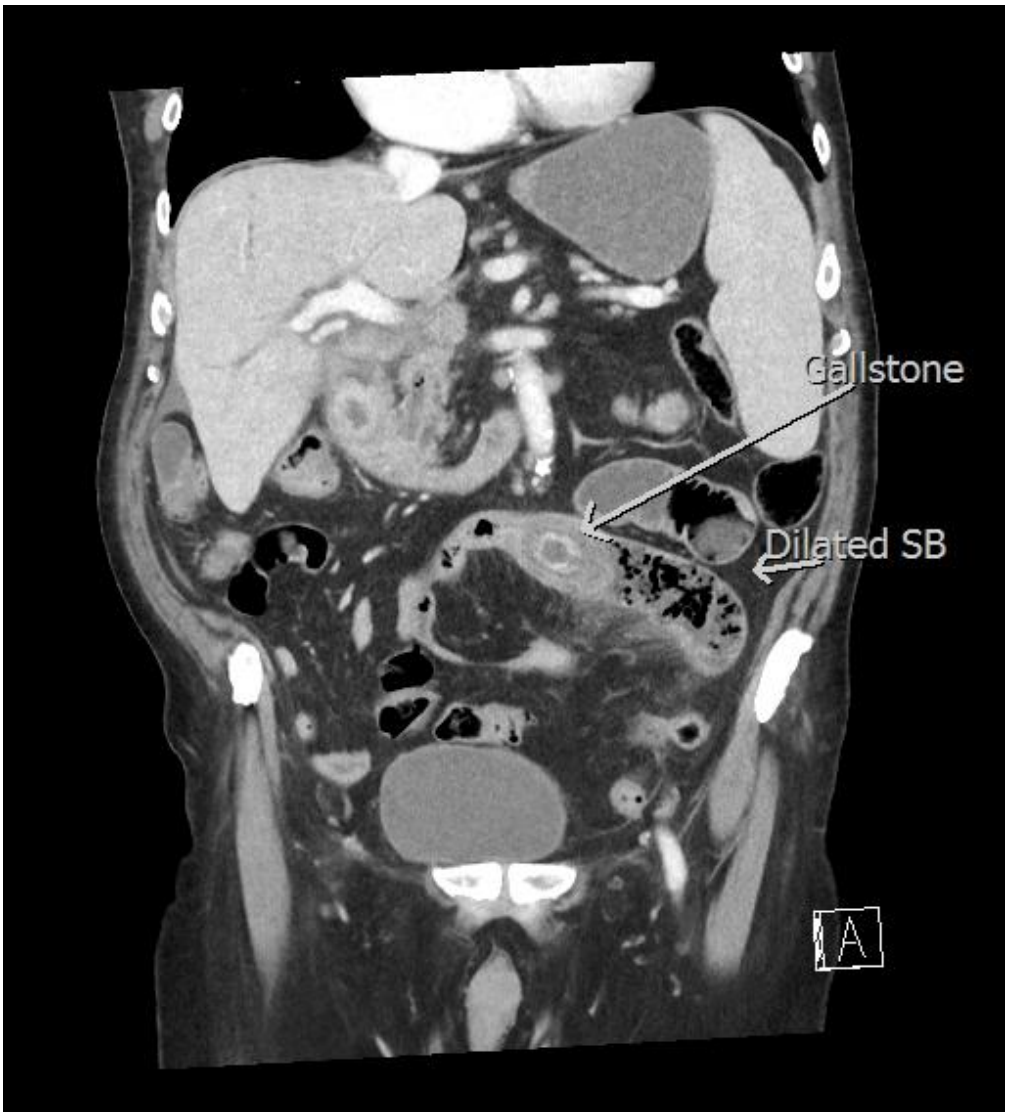

Description: The lodged gallstone in the distal part of jejunum and the distended jejunum proximal to the obstructing gallstone. **Origin:** Department of Radiology, Herlev and Gentofte Hospital, Herlev, Denmark

Figure 3

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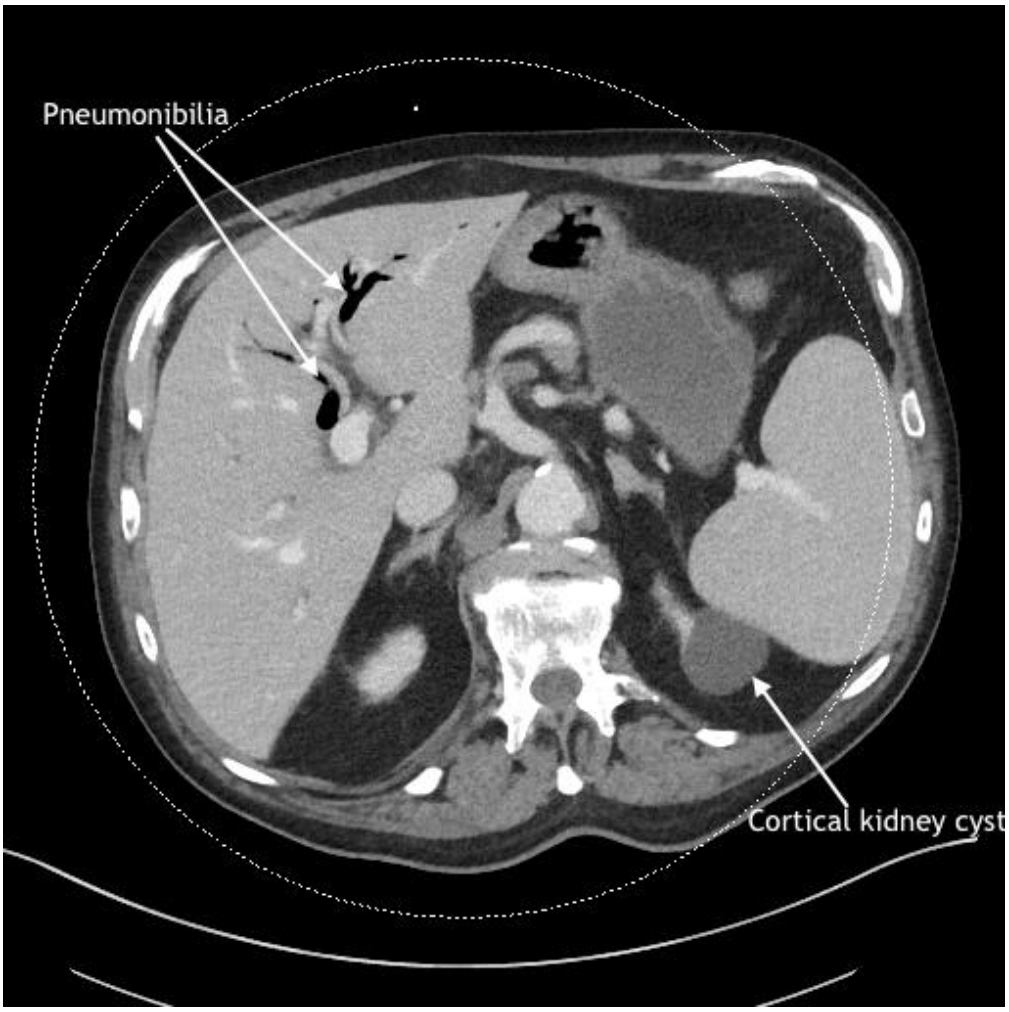

Description: Pneumobilia and the upper part of a simple cortical cyst in the left kidney **Origin:** Department of Radiology, Herlev and Gentofte Hospital, Herlev, Denmark