EMERGENCY IMAGING

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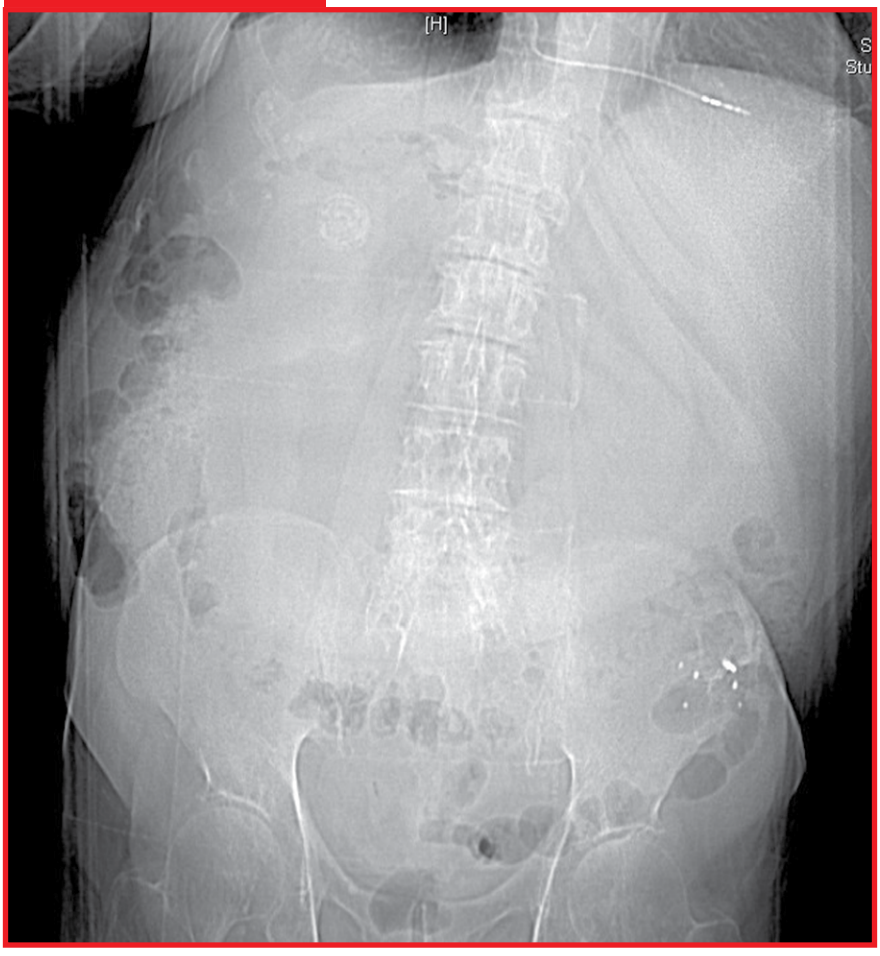
FIGURE 1



An 80-year-old man presents to the ED with diffuse abdominal pain and vomiting. On abdominal examination, tenderness is noted in the right upper quadrant. A radiograph is obtained (**Figure 1**).

What is the suspected diagnosis?
What test should you order next?

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FIGURE 2

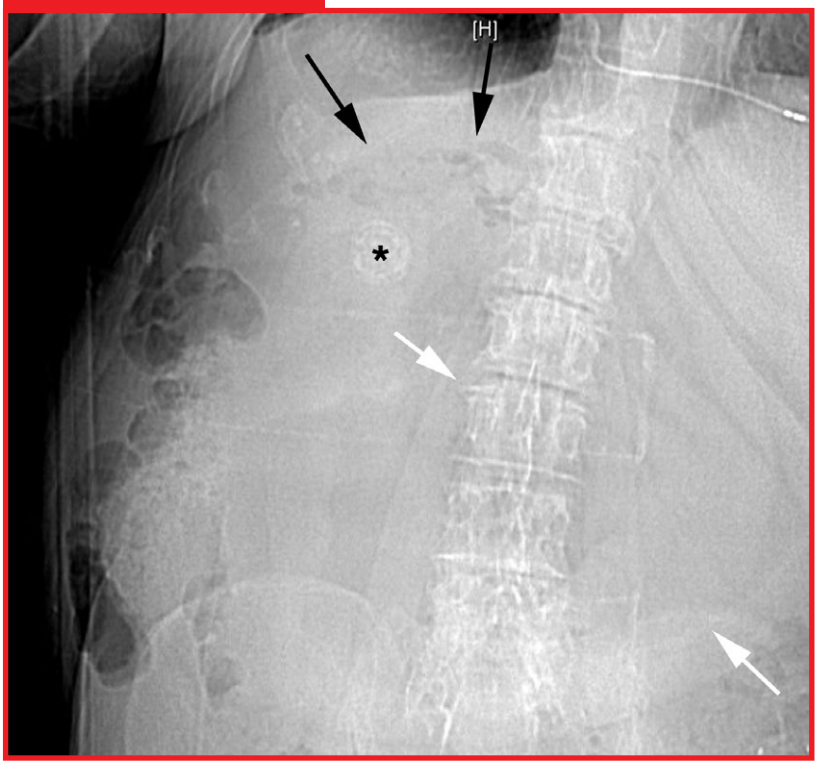

FIGURE 3

Answer

The radiograph demonstrates several findings. Figure 2 shows marked gastric distention (white arrows), a large calcified gallstone (black asterisk), and pneumobilia, or air within the biliary tree (black arrows). Typically, cholelithiasis and suspected cholecystitis are best evaluated using ultrasonography. However, the possibility of bowel obstruction and the presence of air within the biliary tree suggest the diagnosis of gallstone ileus. Therefore, CT is the preferred modality for further workup.

A coronal CT image obtained in this patient (Figure 3) confirms the markedly dilated stomach (white asterisks) and decompressed loops of small bowel (white arrows). These findings are consistent with a gastric outlet obstruction. Air within the biliary tree is also seen (red arrows). An axial CT image (Figure 4) shows the large gallstone (black asterisk) outside the gallbladder (white asterisk). On review of all images, the patient's gallstone was verified to be in the proximal duodenum. The findings of ectopic gallstone, pneumobilia, and bowel obstruction constitute Rigler's triad and establish the diagnosis of gallstone ileus. *Bouveret syndrome* is the name given to the subset of cases in which the ectopic gallstone results in gastric outlet obstruction.[1]

Gallstone ileus is an uncommon complication of cholelithiasis as well as an uncommon cause of bowel obstruction. It is most commonly seen in elderly women.[2] Typically, the displaced gallstone lodges in the terminal ileum, resulting in a distal small bowel obstruc-

tion. Bouveret syndrome, with the stone in the distal stomach or duodenum, represents only 2% to 3% of gallstone ileus cases.[1]

Patients present with nausea, vomiting, and abdominal pain and may have hematoemesis due to duodenal or celiac artery erosion. Analysis of laboratory values demonstrates elevated bilirubin and alkaline phosphatase levels.

Prompt diagnosis of Bouveret syndrome is critical, as mortality in these patients is as high as 12%.[1] Endoscopic stone extraction is the preferred method of treatment. EM

FIGURE 4

References

1. Brennan GB, Rosenberg RD, Arora S. Bouveret syndrome. *Radiographics*. 2004;24(4):1171-1175.
2. Lassandro F, Gagliardi N, Scuderi M, et al. Gallstone ileus analysis of radiological findings in 27 patients. *Eur J Radiol*. 2004;50(1):23-29.