

BOUVERET'S SYNDROME: DIAGNOSIS BY HELICAL CT SCAN

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Calculous cholecystitis severe enough to result in pyloric outlet obstruction is a rare occurrence. Impaction of a large calculus in the duodenum or stomach as a consequence of fistula formation is usually diagnosed on upper gastrointestinal series. Computed tomography is uncommonly used to diagnose this condition and was diagnostic in our patient. © Elsevier Science Inc., 1998

KEY WORDS:

Gallstone ileus; Cholecystoduodenal fistula; Pyloric obstruction; Helical CT scan

INTRODUCTION

In 1896, Bouveret (1) described two patients with gastric outlet obstruction due to gallstones. Since then, this very unusual cause of duodenal obstruction has been described by numerous authors (2–5). The diagnosis of gastric outlet obstruction secondary to a gallstone usually rests on barium contrast studies and upper gastrointestinal endoscopy (3, 6).

Although the value of these test remains unquestioned, technological advances in computed tomography (CT) have evolved, and many patients are now undergoing CT scanning of the abdomen as an early diagnostic study for abdominal pain of uncertain etiology.

To our knowledge, only five previous cases have

been described in the literature documenting the CT findings in Bouveret's syndrome (7–10). In our patient, the use of helical CT enabled us to establish the diagnosis beyond doubt.

CASE PRESENTATION

A healthy 54-year-old man, recently diagnosed with hypertension and started on a diuretic, presented to the emergency room with an acute onset of severe colicky midepigastic pain. He reported similar episodes of pain in the past year associated with nausea, anorexia, and low grade fevers, which had resolved with the administration of oral antibiotics and antacids. He did not undergo further work up of his symptoms at the time.

Shortly after arriving in the emergency room, he had an episode of coffee ground emesis with subsequent abatement of his pain. He denied history of peptic ulcer disease, gallstones, alcohol, or aspirin use. He had no prior surgery and denied melena, hematochezia, change in bowel habits, or weight loss.

On physical exam, he appeared mildly jaundiced, in no acute distress. He had a temperature of 100.8°F and was not tachycardiac or orthostatic. His abdomen was soft, not distended, with only mild epigastric tenderness. No scar, mass, or organomegaly was noted. His initial laboratory values included a white blood cell count of 22,000 with a left shift and bandemia, a hematocrit of 43%, amylase 55, and normal electrolytes. Chest X ray revealed no free air, and abdominal upright and supine films disclosed a faintly visible 3.0-cm calcified mass in the right upper quadrant. An abdominal ultrasound documented the presence of gallstones with an edematous gallbladder indicative of acute cholecystitis.

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Received May 10, 1997; accepted June 20, 1997.

FIGURE 1. Localized topographic view of the stomach. A mass is outlined in the antrum. The faintly calcified rim of a gallstone (*arrow*) is identified. Curvilinear air is seen lateral and superior to the mass impression.



Esophagogastroduodenoscopy revealed a narrowed and deformed gastric antrum with extrinsic compression. Two small prepyloric ulcers were identified. The duodenum could not be entered.

A CT scan of the abdomen and pelvis was obtained. Oral (Gastroview 2%, 1200 cc) and intravenous (Conray 60%, 150 cc) contrast were administered. A topogram of the abdomen indicated the presence of a large filling defect in the antrum of a distended stomach (Figure 1); curvilinear air shadows were identified superior and lateral to this filling defect. In addition, a calcified gallstone was faintly visualized. Oral contrast was seen in the stomach; the antrum and duodenum were occupied by a large inflammatory mass measuring 9.0 cm in vertical diameter and 8.0 cm in transverse diameter. The gallbladder itself was not identifiable. Four

well-defined calcified gallstones together with pockets of air were visualized in the area of the gallbladder fossa (Figures 2 and 3). A water-soluble upper gastrointestinal contrast study confirmed the presence of antral and duodenal deformity, and a large 3.0 cm gallstone superior to the duodenal bulb with significant crescentic compression was noted.

Institution of antibiotics resulted in normalization of his white blood cell count. The patient however, continued to have epigastric discomfort, was unable to tolerate much oral intake and was prepared for operative exploration. Because of the extent of inflammation in the right upper quadrant, an endoscopic retrograde cholangiogram was obtained to visualize and stent the common bile duct. During the procedure, free bile could be seen draining directly into the antrum, documenting the presence of a biliary fistula.

At operation, a large inflammatory mass comprised



FIGURE 2. CAT scan. Contrast is present in the stomach. Two gallstones are identified within an inflammatory mass, which occupies the gallbladder fossa. Air is seen adjacent to the superior gallstone.



FIGURE 3. CAT scan. Lower slice shows the presence of four large calcified gallstones as well as several pockets of air within the inflammatory mass.

of gallbladder, omentum, and fistulae between both stomach and duodenum was found. Four large stones were present, two in the necrotic gallbladder, and one each in the stomach and duodenum. A truncal vagotomy, antrectomy, and Bilroth II anastomosis were performed along with a cholecystectomy.

The patient's postoperative course was complicated by the development of a cystic duct bile leak, which required reoperation. He recovered without further sequela. Pathological examination confirmed the presence of a necrotic gallbladder, cholecystogastric fistula, calcified cholesterol stones, and erosive antral ulcerations.

DISCUSSION

Bouveret's syndrome is an uncommon clinical entity that falls under the spectrum of gallstone ileus. The latter usually results from repeated bouts of pericholecystic inflammation leading to adhesions and eventual fistulization to adjacent bowel. Most often a cholecystoduodenal fistula develops through which a gallstone may erode. The fate of the eroding stone is variable as it may be passed asymptotically per rectum, may be vomited, or rarely, may cause obstruction of the small bowel or colon. Whereas most gallstones that enter the gastrointestinal tract do so via the duodenum, gastric outlet obstruction is exceedingly rare.

In addition to obstruction, erosion of a gallstone through a fistula can result in hematemesis (11) as was the case in our patient. The diagnostic work up of these patients commonly includes flat plate radiographs, which may reveal calcified gallstones and extraluminal air in the right upper quadrant. In patients with symptoms suggestive of biliary tract pathology, abdominal sonography is obtained as an initial diagnostic test. The sonographic findings in Bouveret's syndrome—a large calculus in the right upper abdomen without demonstration of the gallbladder and persistent contiguity with a dilated fluid-filled stomach (12)—have been described.

Although not to decry the diagnostic value of barium studies or sonography, this report stresses the facility with which Bouveret's syndrome was diagnosed with helical CT. The presence of a distended stomach and deformed antrum or duodenum, an inflammatory right upper quadrant mass, air in the gallbladder, and cholelithiasis were all clearly documented. In addition, the examination allowed evaluation of the biliary tree as well as the liver and delineation of the upper abdominal anatomy. The use of helical CT scanning should help establish the diagnosis of Bouveret's syndrome with confidence.

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