

Emphysematous Cholecystitis: A Case Report and Literature Review

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Citation

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Abstract

Emphysematous cholecystitis is a variant of complicated, acute cholecystitis characterized by the presence of gas in the gallbladder wall and pericholecystic tissue. We present a case of emphysematous cholecystitis diagnosed with the aid of a plain abdominal radiograph and right upper quadrant sonogram. The prompt diagnosis and treatment of emphysematous cholecystitis is essential. The diagnosis is frequently made with plain abdominal radiographs, but additional imaging modalities are encouraged if the diagnosis is in question. Treatment involves cholecystectomy and broad spectrum antibiotic coverage.

CASE REPORT

A 75 year old male with a past medical history peptic ulcer disease and a prior ventral hernia repair presented to the Northport VA medical center emergency room with a complaint of acute right-sided abdominal and epigastric pain, nausea, and vomiting. Abdominal examination revealed a fullness at the point of maximal tenderness in the right upper quadrant below the costal margin. Although there was voluntary guarding of the entire right side of the abdomen, rebound and percussion tenderness were absent. CBC revealed a white blood count of 15.1 with 91% neutrophils. Electrolytes, liver transaminases, bilirubin, alkaline phosphatase, amylase and lipase were all within normal limits. Abdominal flat and upright radiographs were diagnostic of emphysematous cholecystitis (Figure 1).

Figure 1

Figure 1: Plain abdominal radiographs in this patient with emphysematous cholecystitis show characteristic gallbladder distension, a circumferential gallbladder wall gas lucency, and an intraluminal air-fluid level.



Sonographic examination revealed an ill-defined gallbladder wall, multiple stones, and a normal sized common bile duct. The patient was taken to the operating room for an open

cholecystectomy. Pathology was consistent with transmural gangrenous acute cholecystitis. Cultures of gallbladder fluid grew isolates of *Clostridium perfringens* sensitive to penicillin. Post-operatively, the patient had a normal recovery and returned home after a seven-day course of intravenous antibiotics.

DISCUSSION

Emphysematous cholecystitis is a variant of complicated, acute cholecystitis characterized by the presence of gas in the gallbladder wall and pericholecystic tissue. Cystic artery occlusion secondary to inflammation from acute cholecystitis or small vessel atherosclerosis leads to gallbladder wall ischemia and overgrowth of gas-producing bacteria. The bacteria most frequently isolated in these instances include *Clostridial* species, with *Clostridia welchii* being the most common¹. *E. coli* is isolated with the second most frequency¹. Prompt diagnosis and treatment are essential. The mortality rate for uncomplicated acute cholecystitis is approximately 1.4%. The mortality rate for acute emphysematous cholecystitis, however, is 15-20%, owing to the increased incidence of gallbladder wall gangrene and perforation in these patients^{2,3}.

Patients present with a constellation of symptoms identical to that of acute cholecystitis, with right upper quadrant pain, low-grade fever, nausea and vomiting being the most common. Peritoneal signs may be present and a mass in the right upper quadrant may be palpated in as many as half of patients³. There is a 5:1 male predominance of the disease² and as many as half of the cases involve patients with diabetes mellitus⁴.

The differential diagnosis of emphysematous cholecystitis includes cholecysto-enteric fistula, incompetent sphincter of Oddi, gallbladder lipomatosis, and periduodenal abscess⁵.

Plain abdominal radiographs reveal a typical picture of a distended gallbladder with gas dissecting within the gallbladder wall. An air-fluid level may be seen within the gallbladder lumen. Pneumobilia and even pneumoperitoneum have been reported, but less frequently⁶. Abdominal radiographs may be normal in patients with emphysematous cholecystitis^{7,8,9}. Additional imaging modalities are encouraged if the diagnosis is in question.

Abdominal ultrasound may reveal a hyperechoic ring outlining the gallbladder wall. The intramural gas may, however, make the gallbladder difficult to visualize, and false negative studies have been reported^{10,11}.

CT scan is the most sensitive test for emphysematous cholecystitis, although it is rarely necessary. Gas within the gallbladder wall and lumen are easily visualized^{1,8}. As with plain radiographs, pneumobilia may be seen.

Traditionally, open cholecystectomy has been the treatment of choice to address emphysematous cholecystitis.

Laparoscopic cholecystectomy may be attempted if there are no contraindications, with the added benefit of decreased postoperative pain and shorter hospital stays¹².

Occasionally, a patient may be too ill to go to the operating room for a definitive procedure. In this case, a percutaneous cholecystostomy tube may provide adequate drainage and decompression of the gallbladder until the patient is stable for cholecystectomy¹³. Because the organisms isolated from patients with emphysematous cholecystitis include both gram negative aerobes and gram positive anaerobes, broad spectrum antibiotic coverage is recommended until the patient is afebrile and without leukocytosis.

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