

A 59-year-old woman arrives at the emergency department due to right upper quadrant abdominal pain, nausea, vomiting, and fever since yesterday. The patient's medical history is significant for hypertension, stable coronary artery disease, and type 2 diabetes mellitus. Her temperature is 38.9 C (102 F), blood pressure is 112/76 mm Hg, pulse is 101/min, and respirations are 14/min. Examination shows marked tenderness to palpation in the right upper quadrant of the abdomen. Laboratory results are as follows:

Complete blood count

Hemoglobin	13.1 g/L
Platelets	310,000/mm ³
Leukocytes	18,300/mm ³

Chemistry panel

Serum sodium	144 mEq/L
Serum potassium	4.1 mEq/L
Blood urea nitrogen (BUN)	28 mg/dL
Serum creatinine	1.1 mg/dL
Blood glucose	250 mg/dL

Liver studies

Total bilirubin	1.9 mg/dL
Alkaline phosphatase	93 U/L
Aspartate aminotransferase (SGOT)	42 U/L
Alanine aminotransferase (SGPT)	40 U/L

Abdominal imaging demonstrates a distended gallbladder with gas in the gallbladder wall and lumen. There is no gas in the biliary tree. What is the most likely diagnosis in this patient?

☐ A. Acute cholecystitis

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Leukocytes	18,300/mm ³

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- ☐ A. Acute cholangitis
- ☐ B. Emphysematous cholecystitis
- ☐ C. Fitz-Hugh Curtis syndrome
- ☐ D. Gallstone ileus
- ☐ E. Peptic ulcer perforation

Submit

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☐ A. Acute cholangitis [12%]

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- ☐ A. Acute cholangitis [12%]
- ☒ B. **Emphysematous cholecystitis** [78%]
- ☐ C. Fitz-Hugh Curtis syndrome [1%]
- ☐ D. Gallstone ileus [9%]
- ☐ E. Peptic ulcer perforation [1%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Emphysematous cholecystitis	
Risk factors	<ul style="list-style-type: none"> • Diabetes mellitus • Vascular compromise • Immunosuppression
Clinical presentation	<ul style="list-style-type: none"> • Fever, right upper quadrant pain, nausea/vomiting • Crepitus in abdominal wall adjacent to gallbladder
Diagnosis	<ul style="list-style-type: none"> • Air-fluid levels in gallbladder, gas in gallbladder wall • Cultures with gas-forming <i>Clostridium</i>, <i>Escherichia coli</i> • Unconjugated hyperbilirubinemia, mildly elevated aminotransferases
Treatment	<ul style="list-style-type: none"> • Emergent cholecystectomy • Broad-spectrum antibiotics with <i>Clostridium</i> coverage (eg, ampicillin-sulbactam)

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This patient with fever, right upper quadrant (RUQ) pain, and gas in the gallbladder wall is presenting with clinical manifestations of acute **emphysematous cholecystitis**, a life-threatening form of acute cholecystitis due to infection with gas-forming bacteria (eg, *Clostridium*, some *Escherichia coli* strains). Predisposing factors include vascular

Treatment

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Diagnosis is confirmed with imaging demonstrating **air-fluid levels** in the gallbladder (as gas leaks into it), **gas** in the **gallbladder wall**, and occasionally pneumobilia (air within the hepatobiliary system). Laboratory findings include mild to moderate unconjugated hyperbilirubinemia (eg, from *Clostridium*-induced hemolysis) and a small elevation in aminotransferases. Treatment requires **emergent cholecystectomy** and broad-spectrum parenteral antibiotic therapy (eg, ampicillin-sulbactam).

(Choice A) Although acute cholangitis (usually from common bile duct obstruction) is also characterized by high fever and RUQ pain, jaundice is much more common (Charcot's triad), significant elevations in alkaline phosphatase and conjugated bilirubin would be more likely, and imaging would show bile duct dilation without gas in the biliary tree or gallbladder wall.

(Choice C) Fitz-Hugh Curtis syndrome (perihepatitis in the setting of pelvic inflammatory disease) is associated with RUQ pain that worsens with inspiration. Imaging would show inflammation of the hepatic capsule but no air in the gallbladder wall.

(Choice D) Gallstone ileus describes intestinal obstruction due to a gallstone that has passed through a biliary-enteric fistula. Symptoms such as RUQ pain commonly are intermittent over several days as the gallstone moves through the ileum. Imaging often shows pneumobilia and evidence of intestinal obstruction (eg, dilated loops of bowel).

(Choice E) Peptic ulcer perforation would be associated with free air under the diaphragm, not air-fluid levels or gas shadowing in the gallbladder.

Educational objective:

Emphysematous cholecystitis is a life-threatening form of acute cholecystitis that occurs more commonly in immunosuppressed patients (eg, with diabetes). It arises due to infection of the gallbladder wall with gas-forming bacteria and requires emergent cholecystectomy.

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Educational objective:

Emphysematous cholecystitis is a life-threatening form of acute cholecystitis that occurs more commonly in immunosuppressed patients (eg, with diabetes). It arises due to infection of the gallbladder wall with gas-forming bacteria and requires emergent cholecystectomy.

References:

1. **Emphysematous cholecystitis.**
2. **Emphysematous cholecystitis: a case report.**

Media Exhibit

ematomous cholecystitis

