

What Is Acalculous Cholecystitis? What Are Its Implications? How Is It Managed?

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Pearls and Pitfalls

- Acalculous cholecystitis (ACC) is usually associated with severe underlying, comorbid medical or surgical disease.
- ACC is associated with increased morbidity and mortality compared to calculous cholecystitis and is more likely to perforate or develop necrotizing complications.
- Though cholecystectomy is the treatment of choice for ACC, patients who are unstable or poor surgical candidates are often treated initially with percutaneous intervention and antibiotics.

What Is Acalculous Cholecystitis?

Acalculous cholecystitis (ACC) occurs when the gallbladder develops inflammation without evidence of gallstones or cystic duct obstruction. The inflammation becomes a nidus for infection.

ACC frequently occurs in patients with severe underlying chronic comorbid medical or surgical conditions such as malnutrition, TPN use, sepsis, significant burns, multi-trauma, and HIV [1, 2]. It is believed that these many different, unrelated underlying comorbidities cause increased bile viscosity, resulting in stagnant bile, which accumulates and becomes increasingly pressurized [3–6]. The gallbladder wall subsequently becomes edematous, inflamed, and ischemic, predisposing to gallbladder infection [3–6].

Acute or acute on chronic illness can also play a significant role in the development of ACC. Fever and dehydration

can lead to increased bile viscosity. Decreased oral intake can lead to decreased cholecystokinin production and, thus, decreased cholecystokinin-induced biliary contraction [3–6]. When these febrile and dehydrated patients with poor oral intake develop increased bile viscosity and bile stasis, the accumulated bile distends the gall bladder and places stress on the gall bladder wall, causing reactive inflammation and increasing the risk of subsequent gallbladder infection [3–6].

Likewise, poor circulation and/or organ perfusion can contribute to gallbladder edema, which weakens the gall bladder wall, leading to distension and accumulation of bile, resulting in inflammation and risk of gallbladder infection [3–6].

What Are Its Implications?

ACC accounts for 5–10% of all cases of acute cholecystitis, and it is more common among the elderly, even when comorbid conditions are taken into account. ACC is associated with increased morbidity and mortality compared to calculous cholecystitis (cholecystitis due to gallstones) [1, 2]. Mortality is more than ten times greater in ACC. Gangrenous and necrotizing complications are six times more common and gallbladder perforation more likely [1, 2].

How Is It Managed?

Rapid identification and treatment are essential in ACC. Complete blood count (CBC) and liver function tests (LFTs) are often used to screen for ACC but are frequently abnormal due to the underlying, comorbid conditions that make ACC more likely. This makes it difficult to diagnose ACC in the very patients most at risk for it. Therefore, ACC should be considered in all elderly, hospitalized, or immune-compromised patients with fever and abdominal pain, especially if the pain is localized to the right upper quadrant.

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Evaluation is based on ultrasound (US), cholescintigraphy (HIDA), and/or computed tomography (CT) based on the clinical situation. When ACC is suspected, US is usually the initial diagnostic imaging of choice. Its sensitivity ranges from 30% to 98%, and its specificity ranges from 89% to 100%. When the diagnosis is uncertain after US or when patients have vague, nonspecific symptoms, a CT may be performed to evaluate for ACC and other potential causes of fever and abdominal pain. When both US and CT are unrevealing and suspicion for ACC persists, a HIDA scan be obtained. Sensitivity of HIDA ranges from 67% to 100%, and specificity ranges from 58% to 88%.

Regardless of the imaging modality chosen, it is key to understand that imaging alone is not specific enough to make the diagnosis. Imaging should be interpreted in the context of the clinical presentation, and alternate diagnoses should be excluded.

Once diagnosed, treatment should include:

1. Immediate antibiotic coverage, as ascending infection, abdominal sepsis, and shock can develop rapidly
2. Generous fluid resuscitation, as hypovolemia and dehydration are important predisposing factors
3. Consultation with a hepatobiliary surgeon, gastroenterologist, and/or interventional radiologist
4. Management of comorbid factors and concurrent acute disease processes [7–10]

Cholecystectomy is the preferred definitive treatment, but the patients who develop ACC are often unstable or poor surgical candidates due to the comorbidities that made them susceptible to developing ACC in the first place [10]. Nonsurgical interventions may be necessary and should be considered early. Endoscopic gallbladder stent placement or endoscopic ultrasonography-guided transmural gallbladder drainage with a lumen-apposing metal stent may be performed by a gastroenterologist [11, 12]. Percutaneous cholecystostomy and drain placement may be performed by an interventional radiologist [7–9]. Though nonsurgical approaches are not better than cholecystectomy, they provide a survival benefit compared to antibiotics alone and are important considerations in poor surgical candidates [10].

Suggested Resources

- Acalculous Cholecystitis. Life in the Fastlane. Feb 2017. <https://lifeinthefastlane.com/ccc/acalculous-cholecystitis>
- Acute Acalculous Cholecystitis. Radiopaedia. <https://radiopaedia.org/articles/acute-acalculous-cholecystitis>

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