Acute Acalculous Cholecystitis
Think of Hepatitis A Infection and Do Not Underestimate Pain

Luisa Cortellazzo Wiel, MD, Anita Spezzacatene, MD,† Giulia Gortani, MD,† Alessia Saccari, MD,† Andrea Taddio, MD,*† and Egidio Barbi, MD*†*

Abstract: A 14-year-old adolescent girl presented with severe abdominal pain, tenderness, and guarding in the right upper quadrant associated with nonbilious vomiting, scleral icterus, and fever. Laboratory tests were consistent with acute hepatitis A virus–related cholestatic hepatitis. A point-of-care ultrasound showed mild gallbladder wall thickening with increased color Doppler flow and pericholecystic fluid collection, in the absence of gallstones or biliary ducts dilatation, thus suggesting acute acalculous cholecystitis. Both the clinical symptoms and the point-of-care ultrasound findings completely resolved within 1 week after admission with conservative treatment.

Key Words: acute acalculous cholecystitis, gallbladder wall thickening, hepatitis A, pain

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CASE PRESENTATION

A 14-year-old adolescent girl presented to the pediatric emergency department with a 1-week history of abdominal pain, persistent nonbilious vomiting, fever, and weight loss. Her past medical history was unremarkable. Her physical examination was notable for scleral icterus, mild hepatomegaly with tenderness to palpation, guarding in the right upper quadrant, and a positive Murphy sign. Laboratory tests showed elevated liver enzymes (aspartate aminotransferase, 3397 IU/L; alanine aminotransferase, 3630 IU/L; and normal range, 15–28 and 9–22, respectively) and hyperbilirubinemia (5.39 mg/dL; normal range, 0.18–0.88), mostly conjugated (3.44 mg/dL; normal range, 0.04–0.23), with normal liver function tests (including international normalized ratio 1.20 (normal range, 0.78–1.20), total protein (7.6 g/dL; normal range, 6.3–7.7), and albumin (3.98 g/dL; normal range, 3.90–4.90). A blood culture was negative, whereas serological tests showed elevated titers of serum anti–hepatitis A virus (HAV) immunoglobulin M, suggesting HAV-sustained acute hepatitis. The point-of-care ultrasound (POCUS) showed gallbladder wall thickening (Fig. 1) with increased color Doppler flow (Fig. 2), pericholecystic fluid (Fig. 3), and absence of gallstones or biliary ducts dilatation, suggesting acute acalculous cholecystitis (AAC) (Figs. 1–3).

The patient was admitted to the hospital and continued to have intermittent severe pain in the right upper quadrant, with Numerical Rating Scale scores between 7 and 9 out of a 10-point scale, poorly managed with on-demand ibuprofen. While liver enzymes progressively decreased, her bilirubin continued to rise. Given her worsening clinical symptoms, along with the laboratory and POCUS findings, a fixed scheduled anti-inflammatory therapy with ibuprofen was started, along with a low-fat, high-carbohydrate diet, intravenous hydration, ursodeoxycholic acid, and empiric antibiotic treatment with ciprofloxacin, because of concerns for possible superimposed bacterial cholecystitis. After regular pain treatment was started, the patient's symptoms dramatically improved and, within 1 week, she had complete resolution of her clinical symptoms and ultrasound findings (Fig. 4). Laboratory tests eventually normalized one month after the onset of the disease.

ULTRASOUND FINDINGS

Point-of-care ultrasound was performed by a pediatric ED physician using an Esaote MyLAB Class C low-frequency curvilinear transducer. The findings were eventually confirmed by a pediatric radiologist, who repeated the procedure to fully rule out the presence of gallstones or malformations. A period of fasting of about 6 hours was required to allow gallbladder distension and better visualization. Color Doppler technique was used to assess the flow within the portal vein and the hepatic veins, and the gallbladder wall vascularization.

The examination showed gallbladder wall thickening (Fig. 1) with increased color Doppler wall flow (Fig. 2), pericholecystic fluid (Fig. 3), and absence of gallstones or biliary ducts dilatation.

DISCUSSION

Although, among adults, AAC is generally limited to critically ill patients, it represents the most frequent form of acute cholecystitis in childhood, accounting for 50% to 70% of cases.[1] It can arise from either infectious (eg, infective mononucleosis,[2] measles, dengue, typhoid fever,[3] leptospirosis,[4] malaria,[5] ascariasis,[6] taeniasis[7]) or inflammatory disorders (eg, Kawasaki disease,[8] Henoch-Schönlein purpura,[9] systemic lupus erythematosus,[10] juvenile dermatomyositis[11]) and, more rarely, from malignancies (eg, hemophagocytic lymphohistiocytosis, acute leukemias[12]),

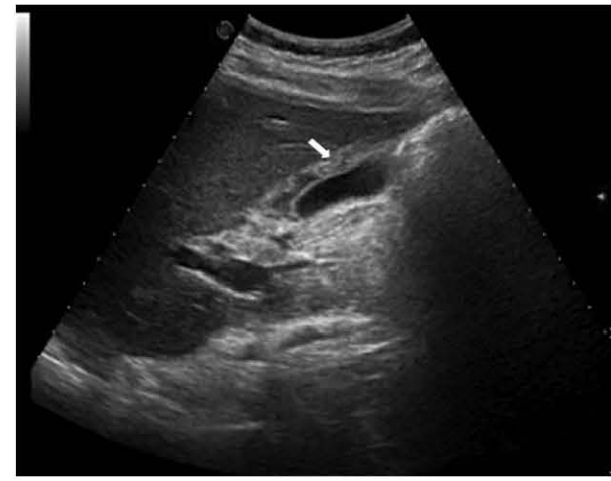

FIGURE 1. Abdominal POCUS performed at the time of the patient admission showing gallbladder wall thickening without gallstones.

From the *Pediatric Department, University of Trieste; and †Institute for Maternal and Child Health—IRCCS Burlo Garofolo, Trieste, Italy.
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Reprints: Luisa Cortellazzo Wiel, MD, Pediatric Department, University of Trieste, Piazzale Europa 1, 34127 Trieste, Italy (e-mail: luisacortellazzowiel@gmail.com).

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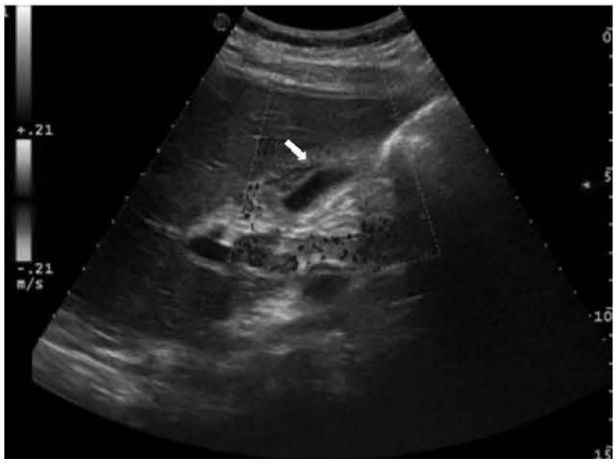

FIGURE 2. Increased color Doppler wall flow at the abdominal POCUS performed at admission.

end-stage renal disease, and genetic disorders (eg, galactosemia, cystic fibrosis[13]).

Hepatitis A virus–related AAC is a rare finding in childhood, usually occurring during the course of the disease and only rarely as the presenting feature of the infection.[14,15] However, according to a recent case series of HAV-infected children, 8% met the criteria for AAC,[2] suggesting that this condition could be underrecognized in the pediatric population. Because of the potential for misdiagnosis and mistreatment, HAV-related AAC should be considered among the possible causes of acute abdomen in childhood.[16]

The clinical picture is typically nonspecific and suggested by the presence of spontaneous and/or evoked pain in the epigastrium or right upper abdomen with guarding (Murphy sign), caused by gallbladder distension.[17] A variable association with fever, jaundice, anorexia, nausea, and vomiting can be observed. The diagnosis can be challenging, especially when AAC is superimposed on acute hepatitis, because the laboratory findings can be similar owing to the associated intrahepatic cholestasis.[18]

Point-of-care ultrasound has both high sensitivity and specificity for the detection of AAC and should be considered in HAV-infected children who have significant abdominal pain.[19] Ultrasound findings in AAC include the following: ultrasonographic Murphy sign; gallbladder distention; wall thickening (>3.5 mm); echogenic gallbladder contents; perivesical free fluid; enlarged lymph nodes in the hepatic hilum, pancreatic area, and, less frequently, the omentum; absence of bile duct dilatation; and acoustic shadow or biliary sludge within the bile ducts.[18,20–22]

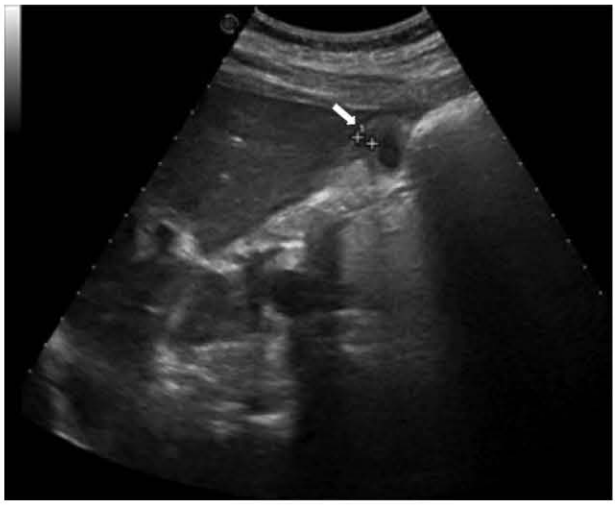

FIGURE 3. Pericholecystic fluid at the abdominal POCUS performed at admission.

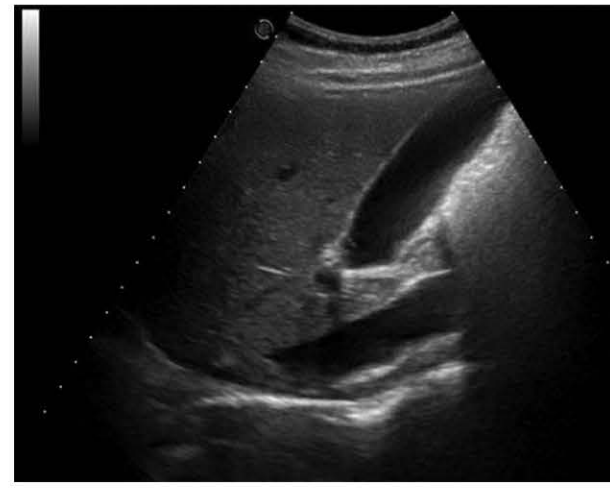

FIGURE 4. Negative abdominal POCUS scan at the patient discharge.

Although most patients have an uneventful course with spontaneous resolution in 2 to 3 weeks, rare complications including gangrene, perforation, and empyema leading to biliary peritonitis have been described.[23,24] Severe recurrent pain may be an important feature of cholecystitis; thus, a timely diagnosis is crucial for a prompt initiation of adequate analgesia.

The recommended management of AAC varies according to the clinical picture.[25] Surgery is typically reserved for rare complicated cases, whereas the vast majority of patients benefit from conservative treatment consisting of analgesia and intravenous hydration. The role of antibiotic prophylaxis, aimed to prevent the occurrence of complications, is debated.[26]

LEARNING POINTS

Acute acalculous cholecystitis can develop during HAV infection in children, occasionally as the presenting complaint, with severe recurrent pain as the main feature. Ultrasound is the mainstay for an early diagnosis and should be considered in HAV-infected children, presenting with significant abdominal pain.

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