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Indonesian Journal of
Tropical and Infectious Disease

Vol. 11 No. 1 January–April 2023

Case Report

A Young Female with Acute Acalculous Cholecystitis Associated with Hepatitis A Viral Infection: A Case Report

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Received: October 3rd, 2022; Revised: March 13th, 2023; Accepted: April 3rd, 2023

ABSTRACT

Most hepatitis A infections are acute, self-limiting, and asymptomatic. In rare instances, extra hepatic complication, such as acute cholecystitis, may emerge. Acute cholecystitis is inflammation of the gallbladder wall and is classified into calculus and acalculus. About 90–95% of cases are brought on by bile duct stones. Acute acalculous cholecystitis can be brought on by structural and functional abnormalities in the gallbladder brought on by viral hepatitis infection. Here we present a 20 years old female patient with acute acalculous cholecystitis associated with hepatitis A infection. Gallbladder distention, thickening of the gallbladder wall, absence of acoustic shadow or biliary sludge, perivesical liquid buildup, and absence of dilatation of the intra- and extrahepatic bile ducts are among the ultrasonographic criteria for diagnosing acute acalculous cholecystitis. The viral hepatitis serology revealed acute hepatitis A infection with positive anti-HAV IgM. Hepatitis A testing should be considered in patients suspected with acalculous cholecystitis of undefined etiology in markedly deranged liver function test adult patients.

Keywords: acalculous cholecystitis; acute cholecystitis; gallbladder inflammation; hepatitis A infection; viral cholecystitis

Highlights: A rare entity of extrahepatic complication from hepatitis A viral infection in the form of acalculous cholecystitis. Recognized and treated the acalculous cholecystitis could prevent the morbidy and mortality.

How to Cite: Ariobimo, B. N., Nujum, N., Saputro, A Young Female with Acute Acalculous Cholecystitis Associated with Hepatitis A Viral Infection: A Case Report. Indonesian Journal of Tropical and Infectious Disease. 11(1). 66–72. Apr. 2023.

DOI: 10.20473/ijtid.v11i1.39532

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INTRODUCTION

The hepatitis A virus, which causes hepatitis A infection, is spread by the ingestion of contaminated food and drink. Transmission through sharing needles and sexual activity is also possible, however this is unusual.[1–4] Acute cholecystitis is inflammation of the gallbladder wall and is classified into calculus and acalculus.[5] As many as 90–95% of cases are brought on by bile duct stones.[6,7] Acute acalculous cholecystitis can be brought on by structural and functional abnormalities in the gallbladder brought on by viral hepatitis infection, including gallbladder wall thickening, perivascular edema, and poor bile filling.[8,9]

There are extremely few cases of acute acalculous cholecystitis as a result of hepatitis infection. Only few previous studies have ever reported it.[1–3] Even while this condition normally resolves on its own, it can occasionally proceed to gangrene, perforation, and even death.[10] In acute acalculous cholecystitis instances that do not exhibit the traditional signs of acute cholecystitis, delayed identification and treatment can result in serious consequences and high death rates.[11] Here we reported a case of young female who was came with acalculous cholecystitis associated with hepatitis A virus infection which a rare entity that needs to be recognized and treated to prevent morbidity and mortality.

CASE REPORT

This is a 20 years old single female patient, who came to emergency department with 4-day history of epigastric pain, nausea, anorexia, and generalized fatigue. The pain increased over the last 2 days with the radiation to right hypochondriac area along with feeling of rising in body temperature. The patient also complain vomiting five times before she came. She denied any pale stool and dark colored urine. Past medical illnesses were only reported tonsillectomy procedure two years ago. Same complains in her family was denied. Upon physical examination, vital sign was in normal state with maximum temperature was 37°C, her sclera is anicteric, abdominal examination revealed epigastric and right hypochondriac area tenderness.

Blood investigations showed normal complete blood count, normal electrolytes, normal renal function test, normal prothrombin time (PT) and partial thromboplastin time (PTT), normal urinalysis, and negative qualitative pregnancy test. There was significant raise in liver function test with alanine aminotransferase (ALT) 1716 u/L (normal 0–31u/L) and aspartate aminotransferase (AST) 1564 u/L (normal 0– 30 u/L), total bilirubin 3.98 mg/dL (normal 0.1-1 mg/dL) and direct bilirubin 2.07 mgl/dL (normal <0.2 mg/dL). Her WBC is 5100, Hb is 13.8 gm/dL, platelets are 188,000, mild elevation in ESR 25 mm/hour (normal 0-20 mm/hour). Abdominal ultrasound (Figure 1) indicated a collapsed gallbladder and ±12 cc of free fluid in the pelvic cavity. No stones or sludge were seen inside the gallbladder, and neither the intra- nor extrahepatic bile duct was dilated. Abdominal CT (Figure 2) demonstrated diffuse thickening of gallblader wall (8 mm) and pericholecystic fluid without any calculus found.

The serology for viral hepatitis suggested acute hepatitis A infection with positive anti-HAV IgM and was negative for other viral hepatitis causes, where HBsAg (-) and anti-HCV (-).

Thus, the diagnosis was acute acalculous cholecystitis due to viral hepatitis. Patient was treated with supportive therapy of intravenous (I.V.) fluid, antinausea and vomiting, analgetic, hepatoprotector, and low fat diet. The abdominal pain is gradually diminishing but her scleral found to be mild icteric since the second day of hospitalization.

Repeated liver function test in day 4th showed resolution of ALT 815 u/L and AST

463 u/L. Her symptoms of abdominal pain and nausea improved gradually and settled completely by day 5th. Evaluation of liver function test in day 7th showed the following: ALT 355 u/L, AST 110 u/L, total bilirubin 1.93 mg/dL, and direct billirubin 0.97 mg/dL. The patient was then discharged with good general condition and a medical clinic appointment for follow up was given.

During the follow up at the 16th day, she had no complaint and the liver function test showed resolution ALT 31.5 u/L, AST 27.9 u/L, direct billirubin 0.6 mg/dL, and total bilirubin 1.03 mg/dL.

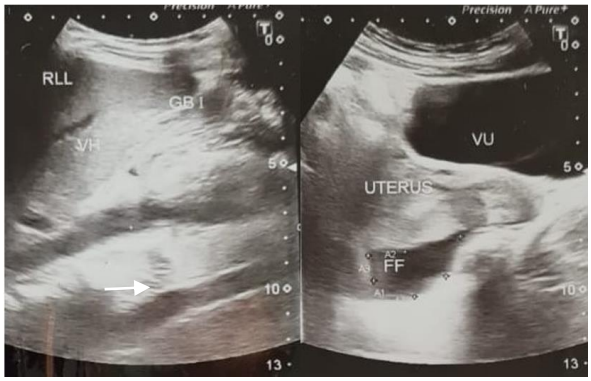

Figure 1. Abdominal ultrasound indicated a collapsed gallbladder and free fluid in the pelvic cavity. (RLL : Right Liver Lobe; VU: Vesica Urinary; GB: Gallbladder; FF: Free Fluid)

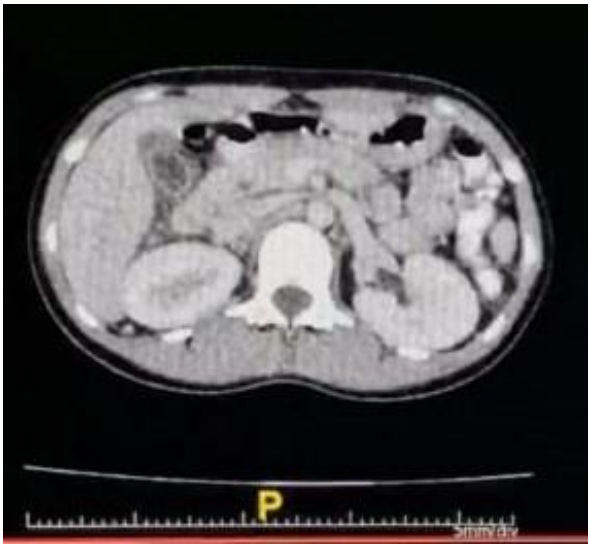

Figure 2. Abdominal CT demonstrated diffuse thickening of gallblader wall (8 mm) and pericholecystic fluid without any calculus found (white arrow).

DISCUSSION

In this report, we have described a case of severe leptospirosis or known as Weil's Disease.[1,3]On admission, the patient presented with fever, conjunctiva suffusion, dark urine, and myalgia with leucocytosis, thrombocytopenia, AKI, liver failure, and hyperbilirubinemia. Patients experience septic shock in the ER and are given norepinephrine as support. Treatment given was antibiotics and aggressive hydration. Dialysis was postponed while watchful waiting for the improvement of kidney functions by fluid therapy. Strict monitoring of kidney function and haematology was done. Symptoms and kidney function then recover with the treatment given.

Most hepatitis A infections are acute and self-limiting. Infection is usually asymptomatic, but in rare instances, fulminant hepatitis, which can be fatal, or extra hepatic symptoms, such as acute acalculous cholecystitis, may emerge.[4,12] Acute cholecystitis is an emergency that often occurs in the emergency department.[3,13] An inflammation of the gallbladder without the presence of stones or sludge is known as acute acalculous cholecystitis.[10,14] Acute acalculous cholecystitis caused by viral hepatitis has a significant morbidity and death rate due to changes in gallbladder conditions such as gangrene, perforation, and empyema, even though the precise pathophysiology of the disorder is yet unknown.[6]

Up to 95% of cases of acute cholecystitis are caused by stones that block the bile duct or gallbladder neck, with the remaining cases being inflammation without the presence of stones or sludge. About 5–15% of cases of acute cholecystitis are acalculous, and 47% of these cases follow surgery, extended immobility, prolonged starvation, such as long-term intravenous feeding, elderly patients, patients receiving care in the intensive care unit, and septic conditions.[7,10,14,15] Hepatitis A infections linked to pancreatitis and cholecystitis happen in 5% of instances as a result of the

virus's direct invasion.[16] Acute acalculous cholecystitis is a very rare condition and has not been widely reported.[6,12,17,18] acute acalculous cholecystitis is an uncommon gallbladder infection without gallstones, yet it progresses rapidly. Infection in acute acalculous cholecystitis cases progresses faster than in acute calculous cholecystitis cases, and 10% of patients also have consequences including gangrene or perforations. While acute acalculous cholecystitis instances are generally encountered in men and older adults in their sixth decade of life, acute calculous cholecystitis cases are typically seen in women in their fourth and fifth decades of life.[11]

Uncertainty surrounds the precise pathophysiology of acute acalculous cholecystitis. The influence of bile chemicals on the epithelium, ischemia in the gallbladder epithelium, formation of bile wall immune complexes leading to bile fluid stasis, and bacterial invasion are some of the claims made as the reason.[9,10,17] Hepatitis A infections can lead to the virus to invade the gallblader and bile duct epithelium because of high viral antigen levels followed by an immune complex-mediated immune response.[9,10,12,17] The existence of hypoalbumin conditions, the localized spread of the inflammatory process, and increased portal venous pressure, which results in edema of the gallbladder wall, sludge development, and reduced volume during fasting, are structural and functional alterations in the gallbladder.[6,10,18] Some of the mechanisms thought to be the pathogenesis of acute acalculous cholecystitis include direct injury to the mucous and muscular layers due to direct invasion of the hepatitis A virus in the gallbladder, impaired production and excretion of bile substances due to damage to hepatocytes, and spread of inflammatory mediators from surrounding organs due to hepatocyte cell necrosis.[8,10,19]

The majority of hepatitis A infections are asymptomatic, however common symptoms often include a mix of gastrointestinal, cholestasis, and flu-like illness.[4] While adult HAV infection rates are thought to be more than 70%, around 70% of HAV infections in children are asymptomatic.[1] Hepatitis A infection is frequently accompanied by diarrhea, stomach discomfort, fever, anorexia, nausea, vomiting, fever, malaise, dark urine, pale stool, and jaundice.[1,17] Hepatitis A infection symptoms are quite similar to those of acute cholecystitis patients in terms of their complaints.

Acute renal failure, autoimmune hemolytic anemia, pleural or pericardial effusion, acute pancreatitis, encephalopathy, ascites, and cholecystitis are only a few of the extremely uncommon extrahepatic problems that might develop.[1,3,18,19] The clearance of the hepatitis infection typically results in an improvement of the symptoms caused by these consequences.[18] Although it is mentioned that the etiology of ascites in hepatitis A infection is still unknown, it is believed to be caused by an increase in portal venous pressure because of damage to the structure and cells of the liver organ.[19] This patient had mild ascites.

It is difficult to separate hepatitis A from other viral hepatitis types solely on the basis of clinical characteristics. Serologic testing, which recognizes the presence of immunoglobulin M (IgM) anti-HAV in the acute phase of infection and immunoglobulin G (IgG) anti-HAV in the convalescent phase of infection, is necessary for a definitive diagnosis of hepatitis A.[2] Although not specific, laboratory testing of cases with acute acalculous cholecystitis as a complication from hepatitis A infection revealed an increase in white blood cells (WBC), C-reactive protein (CRP), alanine aminotransferase (ALT), aspartate aminotransferase (AST), and anti-HAV IgM.[1,11]

When acute gallbladder inflammation is unrelated to gallstones or sludge, the diagnosis of acalculous cholecystitis is established.[6] Due to its low cost, ease of accessibility, quick examination time, and absence of ionizing radiation, ultrasonography (US) continues to be the recommended first imaging modality for the assessment of suspected acute cholecystitis. High sensitivity and specificity in identifying gallstones, as well as the ability to elicit "Murphy's sign" using the ultrasonic transducer, are key benefits of US over other imaging modalities.[15] Gallbladder distention, thickening of the gallbladder wall (>3.5 mm), absence of acoustic shadow or biliary sludge, perivesical liquid buildup, and absence of dilatation of the intra- and extrahepatic bile ducts are among the ultrasonographic criteria for diagnosing acute acalculous cholecystitis.[4,12,20] Although the usual gallbladder wall is thin-hairline or undetectable, a modestly thicker wall was not included.[20] The specificity and accuracy of ultrasonography for the identification of acute acalculous cholecystitis are 97.8 and 96.1%, respectively, while the sensitivity is 88.9%.[12]

Computed tomography (CT) scans must be conducted in the event of non-contributory ultrasound imaging or clinical warning signals in order to prevent erroneous diagnoses and identify gangrenous forms necessitating a change in therapeutic approaches.[3] Overextended gallbladder, mural thickness, mural enhancement with intramural gas buildup, pericholecystic fat stranding, pericholecystic fluid, and enhanced hyperenhancement of the neighboring liver are all characteristics of acute acalculous cholecystitis on CT.[14,15,20]

The discovery of VHA antigen during immunohistochemical analysis in the gallbladder wall of a patient exhibiting ANC while VHA confirms the causal relationship between VHA and ANC.[3] Hepatitis A individuals with noticeably abnormal liver function tests should be tested if they are suspected of having acalculous cholecystitis of unknown cause.[4,6,12]

Depending on the clinical appearance, several acute acalculous cholecystitis related with acute viral hepatitis treatments are available.[12] The majority of cases are self-limited, and with therapy for the underlying systemic condition, the gallbladder may spontaneously decompress in about two weeks.[10] Surgery may be indicated by related problems such gallbladder perforation and worsening of abdominal symptoms.[10,12] When the viremia drops within a few days and gallbladder wall thickness recovers to normal under conservative care. These cases don't need to have surgery.[18] Hepatoprotective maintenance therapy is sufficient for the majority of mild and self-limiting cases.[8]

If medical treatment alone often is ineffective in treating acute acalculous cholecystitis, early cholecystectomy or percutaneous cholecystostomy application is advised as a treatment; nonetheless, cholecystectomy may be a difficult procedure for the surgeon.[11] The recommended course of treatment for complex acute cholecystitis is an early cholecystectomy performed within 7 days of the beginning of symptoms.[13]

Acute acalculous cholecystitis is an extremely rare complication of acute viral hepatitis, and the mortality from acute acalculous cholecystitis with viral hepatitis is extremely low in comparison to acute acalculous cholecystitis of other origin that needs urgent surgical intervention.[10] Some of these are self-limiting and heal spontaneously, while a limited number of cases progress to a gangrenous state, gallbladder perforation, and even to death.[14] Mortality rates range from 10%–50% due to the severity of underlying illness.[9]

STRENGTH AND LIMITATION

The strength of this study was reporting rare case which need to be recognized as soon as possible to prevent the morbidity and mortality. The limitation of this study was no

follow-up results were done in the form of ultrasound or abdominal ct scan.

CONCLUSIONS

Acute Acalculus cholecystitis is a rare condition and although it was extremely rare it needs to be considered as a complication in cases with viral hepatitis infection. On the other hand, hepatitis A testing should be considered in patients suspected with acalculous cholecystitis of undefined etiology in markedly deranged liver function test adult patients. Early diagnosis and treatment in acute acalculous cholecystitis cases that do not show classical acute cholecystitits symptoms could prevent the case progressed to emergence of severe complications and high rates of mortality.

ACKNOWLEDGEMENT

We are grateful to all medical workers and nurses in Hermina Hospital Kemayoran for their support and facilities in managing the patient. We would like to thank the Director Hermina Hospital Kemayoran for allowing us to publish our findings.

FUNDING

This study did not receive funding.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report

AUTHOR CONTRIBUTION

Data curation, writing–review and editing, validation: BNA. Data curation, writing–review, and editing: NN. Data curation, supervision, validation: DHP.

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