Acute Acalculous Cholecystitis in an Outpatient Setting

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Acute acalculous cholecystitis (AAC) typically affects hospitalized patients with critical illness. Outpatient AAC is reported to occur in elderly males with cardiovascular comorbidities. We report the presentation of acute acalculous cholecystitis in two young African men admitted for the first time within days of each other. They reported short histories of right upper abdominal pain and had tender gallbladders. Sonography revealed gallbladder wall thickening. Open cholecystectomy and histology confirmed AAC.The postoperative outcome was excellent.
Recognition of AAC in a subset of young male patients presenting de novo with right upper quadrant pain is stressed. Cholecystectomy has good prognosis in these cases.

Introduction

Acute acalculous cholecystitis (AAC) represents 5-17% of cases of acute cholecystitis[1,2,] mainly affecting old and the critically ill patients with atherosclerotic heart disease, surgery, recent severe trauma and burns[1]. In these patients, the disease presentation is non-specific. Untreated, morbidity and mortality rates may peak 82% and 41% respectively[3,4]. There have been reports of AAC occurring in non-hospitalized elderly patients. Evaluation reveals a number of the cited predisposing factors in this group as well[5,6]. Accounts of the disease in young outpatients without predisposing factors have been rarely reported[7]. This is a report of its presentation in two young males presenting as outpatients at the Kenyatta National Hospital in Nairobi, Kenya.

Case 1

A 21-years-old salesman was admitted in January 2004, following a few days' complaints of right upper quadrant abdominal pain, chills, fever and anorexia to solid foods without vomiting or icterus. He had normal bowel habits. The medical history was unremarkable for any major illness. He drunk beer occasionally, but did not smoke.On physical examination, he was in good nutritional status and neither pale nor jaundiced. The temperature was 37.5^{o} c. Other vital signs were normal. Abdominal examination revealed distension, tenderness and guarding in the right hypochondrium. The rest of the examination was normal.

The blood count revealed a lucocyte count of 3.9x10^{9}/l and a hemoglobin level of 10g %. Liver and renal function tests were normal. He tested positive for antibodies for HIVI. (CD4 cell count not done). Abdominal ultrasonography showed a distended gallbladder with thick wall, but no stones (Figure 1). The liver and surrounding organs had normal echo patterns. Laparoscopic cholecystectomy was commenced but had to be converted to open method due to marked pericholecystic adhesions. The gallbladder was distended and inflamed, it had sludge but no stone and had marked mixed inflammatory cell infiltration of the wall on histopathology (Figure 2).

Case 2

A 33-year-old teacher from Nairobi was admitted in February 2004 with right hypochondrial pain of sudden onset. He reported a similar attack of pain one year earlier but had been symptom-free since. The pain was continuous and burning in nature. He had no history of fever, vomiting, jaundice or malena stool. He had regularly consumed beer for 8 years (average of 15 litres per week) but stopped at onset of initial upper abdominal pain. He did not smoke.He was in pain but in good nutritional status at examination. He was not pale or jaundiced and recorded a temperature of 37^{o}C. There was tenderness on the right hypochondrium and Murphy sign was positive. Liver and spleen were not enlarged. Other examination was normal.

His laboratory results were normal (haemoglobin 12.2g%, leucocyte count 7.3x10^{9}/l, neutrophils 65% lymphocytes 22%, platelet count of 190x10^{9}/l, Na^{+} 143mmol/l, K^{+} 4.5mmol/l and urea 1.6 meq/l, creatinine 70 uMol/l, random blood sugar 5.2 mmol, serum amylase 125u/l, total protein 75g/l , serum albumin 35g/l, total bilirubin 12.2 uMol/l, direct bilirubin 2.7 uMol/l). ELISA for HIV I was negative. Abdominal ultrasonography showed a

distended gallbladder with thick wall without calculi and pericholecystic fluid. The liver had normal echo pattern-(Figure 3).

Esophagogastroduodenoscopy showed features of mild gastroesophageal reflux disease, but no gastric or duodenal erosion or ulceration.

At laparoscopy, the gallbladder was distended and inflamed with marked adhesions. Conversion revealed presence of sludge but no stones in the gallbladder. Histology showed mucosal ulceration, a thickened wall with intense mixed inflammatory cell infiltration (Fig. 4).

Both patients made uneventful recoveries and a six week post-operative follow up period was unremarkable.

Figure 1. Ultrasound (CASE 1)

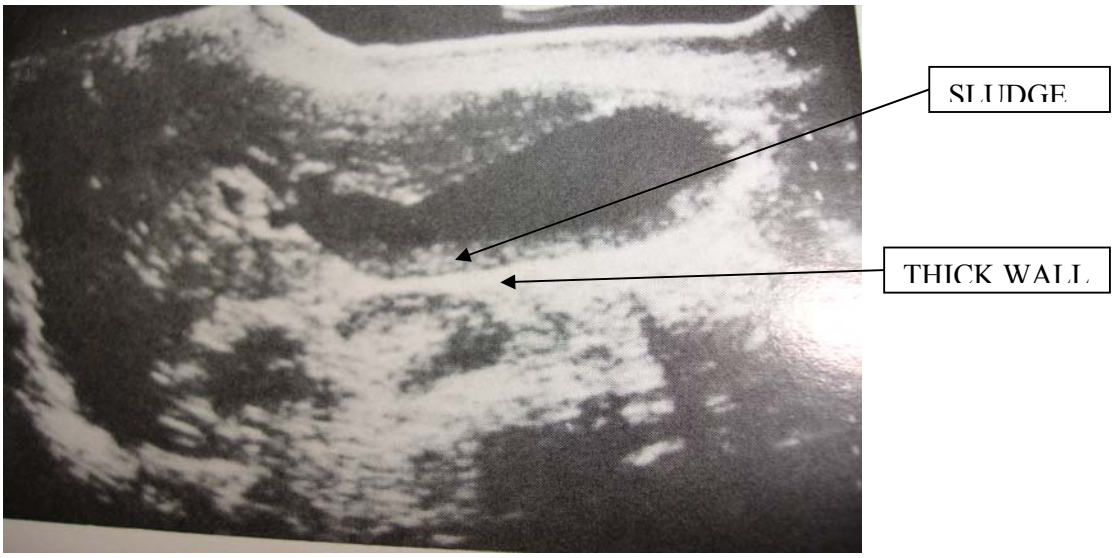


Figure 2. istopathology (CASE 1) Magnif. X1000.

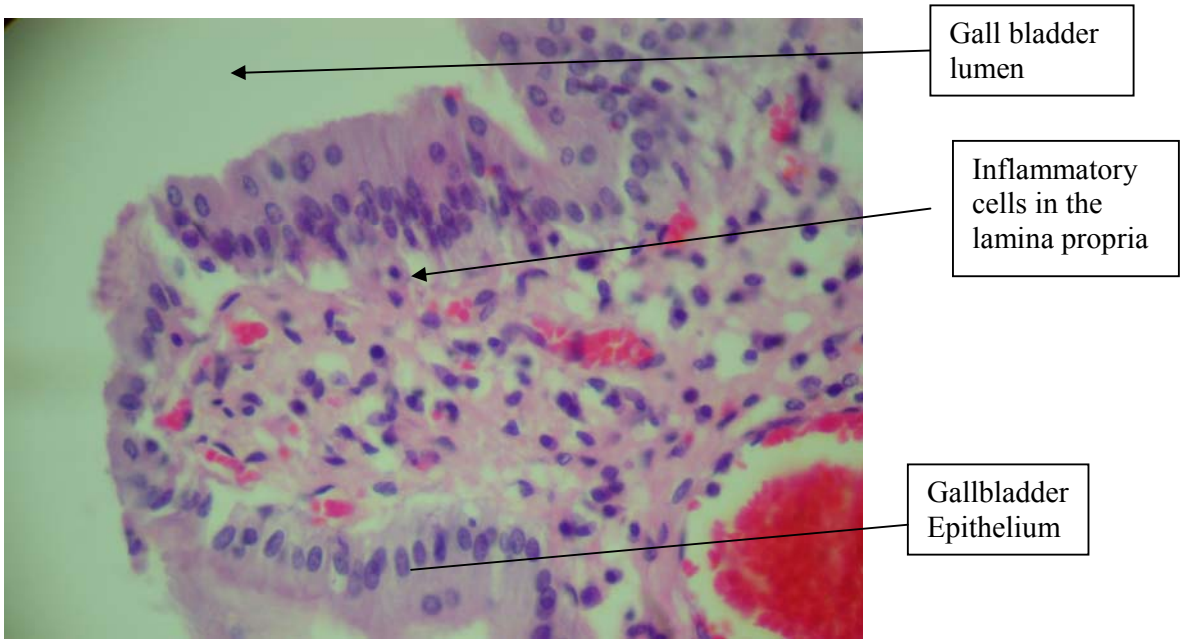


Figure 3. Ultrasound (CASE 2) Thick Gallbladder Wall (arrows) and Pericholecystic Fluid (f).

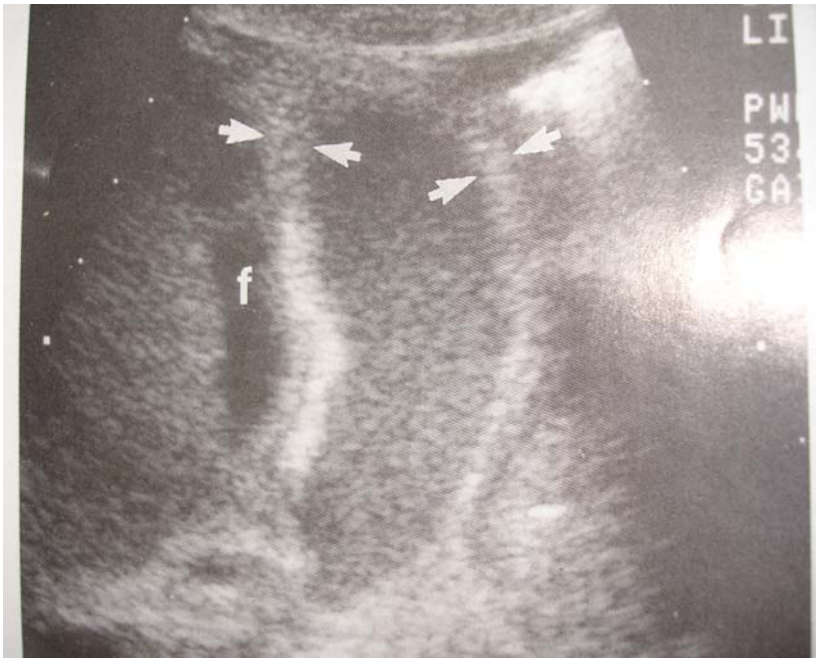
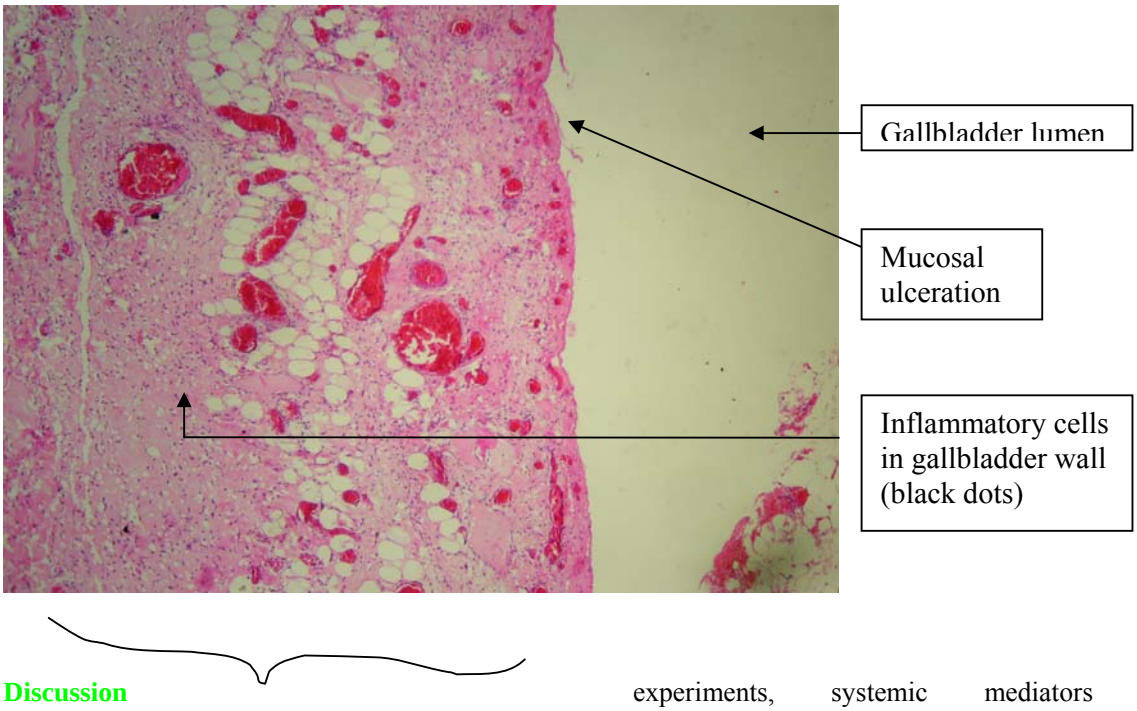


Figure 4. Histopathology (CASE 2) Magnif. X350.



Discussion

Both male patients in this study lacked the usual factors that trigger acalculous cholecystitis. AAC typically occurs in elderly patients with major trauma, surgery and other critical illnesses[3,4]. The pathogenesis is complex. From both human pathological studies and animal experiments, systemic mediators of inflammation, reperfusion injury, trauma, biliary stasis and general or local ischaemia appear to be central mechanisms. However positive pressure ventilation, opioid therapy total parenteral nutrition, have also been implicated[4,8].

In less critical settings, a large proportion of patients still present with cardiovascular co-morbities including diabetes, hypertension and atherosclerosis[5,6]. In the account of outpatient AAC by Ryu et al[5], most were males in their 60's and the atherosclerosis rate was 35%. At Yale, 36 of 47 patients treated for AAC over 7 years developed ACC at home without evidence of acute illness or trauma (6). Significant vascular disease was observed in 72% of the outpatients. The patients we report were three decades younger and we consider a vascular background an unlikely trigger in their cholecystitis. . Reports of AAC in young patients without predisposing conditions are rare[7]. Isolated accounts have associated AAC with infectious conditions including Q fever[9], salmonellosis[1] and malaria (11). There are however no specific signs and symptoms to lower threshold for investigating for these diagnoses. We did not investigate for them.

One of our patients tested positive for HIV antibodies with no other suggestive clinical features. Although acalculous cholecystitis can develop in patients with HIV, its usual setting is advanced disease with CD4 counts less than 200[12]. Since the initial report by Pitlik et al[13], many cases of patients with the Acquired Immunodeficiency Syndrome (AIDS) developing AAC have been reported[14,15]. The most common presentation is right upper quadrant (RUQ) pain and tenderness. Cryptosporidia and other opportunistic species cause infections when the CD4 counts are low[14,15]. In one study, the incidence of ACC in AIDS patients with CD counts < 200 was 52% but no patients with counts >200 developed acalculous cholecystitis[16].

We consider the presentation in our patient atypical in this sense. Nonetheless, the recent report by Ikeda et al[17] of AAC in an HIV sero-negative patient with decreased CD4/CD8 ratio lends to possibility of immunosuppression of whatever degree having a trigger role in the causation of acute acalculous cholecystitis.

The preoperative diagnosis of AAC in our patients was achieved by clinical history, physical examination and liver ultrasonography. Sonographic criteria thought to be reliable in the diagnosis of AAC include gallbladder wall thickness of 3.5 mm or greater, distension, sonographic Murphy sign and pericholecystic fluid[3,4]. Other evaluation modalities include computerized tomography and cholescintigraphy[4,18]. There is data to suggest ultrasonography may not be an adequate diagnostic modality in AAC of critical illness[3,19,20]. The underlying concern in these cases is the non specific nature of the signs and symptoms and the need for sensitive and specific diagnostic tests. Diagnostic delays impact negatively on outcome.

Puc et al[19] compared the performance of ultrasound and cholecyntigraphy and found ultrasonography to perform less optimally (sensitivity 30%) as compared to hepato-iminodiacetic acid (HIDA) scan (sensitivity100%). The data by Kalimi et al[20] also supported the initial use of scintigraphy in the diagnosis of cholecystitis. The reported sentitivities were 48%, 86% and 90% for ultrasonography, HIDA scan and a combination of the two respectively.

Both acalculous cholecystitis and a dysfunctional gall bladder present with upper quadrant pain. Their clinical differentiation may be challenging. The pain in gall bladder dysfunction is thought to be due to dyskinesia and the percentage of cholecystokinin-stimulted gall bladder emptying is regarded as a sensitive test for its diagnosis[21]. Ultrasonography, HIDA or CT scan detection, alone or in combinations distinguish acute acalculous cholecystitis[18].

The intraoperative finding of massive adhesions and distorted anatomy is not unique to outpatient AAC. The conversion rates are higher in AAC as compared to calculous cholecystitis. In the study by Ryu et al, the laparoscopic rate was 54.5% for AAC but 80.8% for calculous cholecystitis (5). The critical illness, co-morbidities, severe disease and the male gender are likely contributing factors. In our case however, the male gender was presumably the underlying factor. In cholecystitis caused by cholelithiasis, patient gender is a predictive factor for rate of conversion with higher rates in males.

The pathology report confirmed cholecystitis. There were no features to distinguish AAC from calculous cholecystitis as the inflammatory cells, epithelial defects and muscle necrosis overlap with the picture in calculous cholecystitis[22]. We did not assess the bacteriology of the bile for both patients. Reported spectrum ranges from the usual E.coli

and Klebsiella sp[3] to cryptosporidium, cytomegalovirus, fungus, mycobacterium in AIDS[12,13,14] and Coxiella burnetti and salmonella in special cases[9,10]

Our patients survived to discharge and had no complications. Generally morbidity in AAC averages 65% but reduces to 7% with early diagnosis. In the Yale outpatient group[6], morbidity peaked 38% and mortality 6%. In the series by Wang et al[4], morbidity was 52% and mortality 12%. Kalliafas et al[3] reported the highest rates with mortality (41%) and morbidity (82%). We contend that the excellent morbidity profile in our patients was due to their youth and absence of vascular morbidity.

In conclusion, AAC occurs in young male patients presenting as outpatients. The combination of upper abdominal pain, right upper quadrant tenderness, and a suggestive ultrasound enables successful surgical treatment. We should recognize this subset of patients in our outpatient pool.

Acknowledgments

To the Kenyatta National Hospital, Firm I General Surgery where the patients were cared for. These cases were presented at the surgical grand rounds of University of Nairobi.

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