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Case Report

A case report of acalculous cholecystitis due to *Salmonella paratyphi* B

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ABSTRACT

Acute acalculous cholecystitis (AAC) is a rare condition occurring in only 5%-10 % of patients with acute cholecystitis. Systemic illness caused, for example, by *E coli, Klebsiella pneumoniae, Vibrio cholera*, and Salmonella species can result acute inflammation of gallbladder wall. It is a surgical emergency and if left untreated can lead to high mortality due to gangrene or perforation of gallbladder. We managed a 60-year-old female with clinical presentation of acute cholecystitis caused by Salmonella-induced gastroenteritis. Prompt use of radiological modalities such as computer tomography (CT scan) and ultrasound played an important role in pathologic diagnosis, overall follow up, and management of the patient.

Introduction

Acute acalculous cholecystitis (AAC) is a rare condition occurring in only 5%-10 % of patients with acute cholecystitis [1–3]. It is more likely to be found in patients with severe burns, trauma, critical illness, cardiovascular surgery, or total parenteral nutrition [4]. The important risk factors are bile stasis, gallbladder ischemia, cystic duct obstruction, and systemic illnesses, for example, *E coli, Klebsiella pneumoniae*, EBV, Salmonella species, and *Vibrio cholera* [5]. It is a surgical emergency and if left untreated can lead to perforation or gangrenous cholecystitis with a very high mortality rate of up to 65% [6]. This is the first case of acalculous cholecystitis in a patient with Salmonella gastroenteritis encountered by us with treatment directed towards bacterial gastroenteritis and good clinical outcome.

Case report

A 60-year-old previously well female was admitted to our hospital with generalized abdominal pain, watery diarrhoea, and vomiting. She had returned from a holiday in Southeast Asia 2 weeks prior to the onset of symptoms. During assessment, her body temperature was noted to be 35.5°C with ongoing lethargy and chills. Her abdomen was soft with generalized tenderness and guarding. Laboratory tests showed mild elevation of white cell count, neutrophils and C-reactive protein

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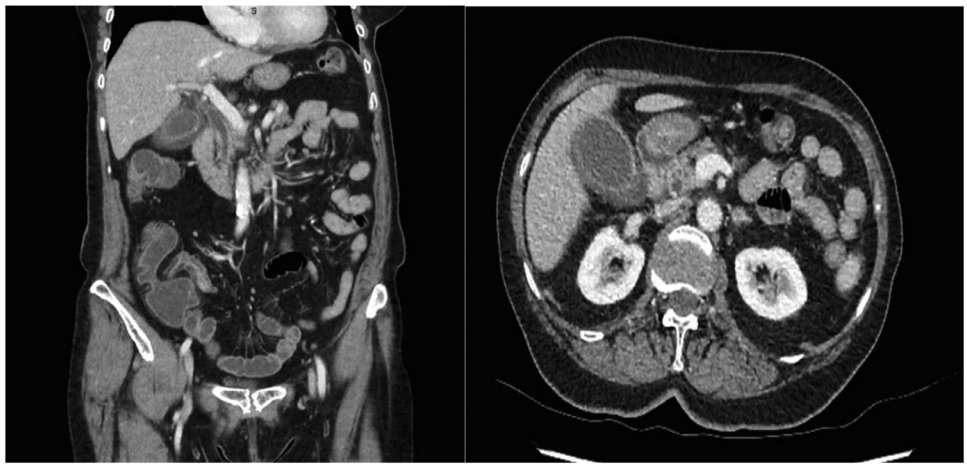

Fig. 1 – Axial and coronal CT scan post administration of intravenous contrast shows inflamed gallbladder.

with normal hemoglobin and platelet levels. Her biochemical studies including liver function, renal function, and electrolyte levels were normal.

CT scan of the abdomen (Fig. 1) showed evidence of pericholecystic fluid with no gallstones and no gallbladder wall thickening. Only several small lymph nodes scattered throughout the mesentery were seen. At this stage, the patient was treated for viral gastroenteritis and discharged home with symptomatic treatment. A follow-up with an outpatient abdominal ultrasound was also planned.

The following day she returned to the emergency department with ongoing abdominal pain, more noticeable in the epigastric and right upper quadrant region associated with nausea, vomiting, and postural dizziness. She was found to be afebrile, normotensive but tachycardic at 120 beat/min. Empirically intravenous antibiotics ceftriaxone and metronidazole were commenced for acalculous cholecystitis prior to formal abdominal ultrasound. She was also treated with IV fluids, analgesia, and antiemetics with a strict fluid balance. Her abdominal ultrasound (Fig. 2) showed evidence of a diffusely thickened gallbladder wall measuring up to 6 mm with some mobile sludge but no gallstones. The common bile duct was not dilated and there was no intrahepatic biliary dilatation noted. The diagnosis of acalculous cholecystitis was confirmed on ultrasound while the faecal specimen tested positive for *Salmonella paratyphi* B.

Once salmonella was confirmed on stool microscopy and culture, she was put on a regime of intravenous azithromycin for a total of 5 days while her ceftriaxone and metronidazole were ceased. Her abdominal pain and diarrhoea gradually dissipated and she was discharged home with a plan for a surgical review follow-up with a repeat abdominal ultrasound. Her repeat ultrasound was done 8 weeks post discharge and showed a normal gallbladder with no evidence of biliary sludge or pericholecystic fluid.

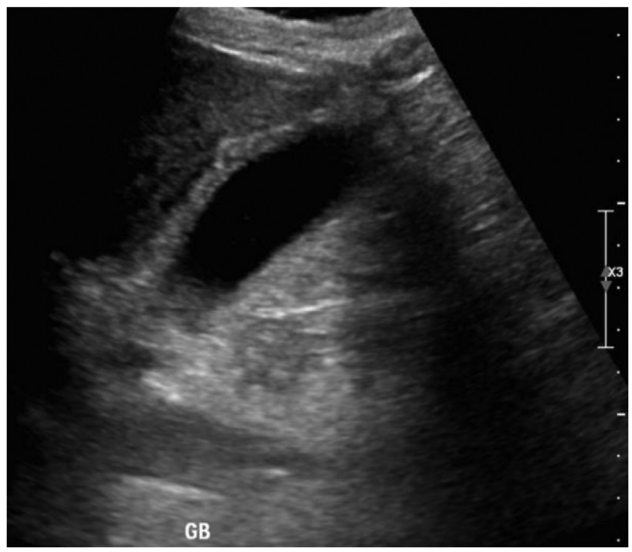

Fig. 2 – Longitudinal view of gallbladder on ultrasound showing diffusely thickened wall.

Discussion

Salmonellosis caused by species enteritidis can cause intestinal neutrophilia, localized inflammatory diarrhoea, electrolyte and fluid imbalance, and possibly death due to sepsis in immunocompromised patients [7,8]. This infection can reach the gallbladder by hematogenous spread or through ascending infection via bile ducts from a gastrointestinal source. It can cause acute cholecystitis or persist in the bile-rich environment, mesenteric lymph nodes, and bone marrow long after the symptoms have subsided [9]. Normally the main treatment of AAC is cholecystectomy or cholecystostomy for patients too ill to have general anesthesia, but in case of salmonellosis, cholecystectomy is not needed as most patients have good prognosis with intravenous antibiotics [10].

However, according to some studies, 3%-5% of population infected with salmonella become chronic carriers with or without the presence of gallstones, with the gallbladder serving as a reservoir and cause of further infectious episodes. These patients are also 8.47 [11] times more at risk of development of gallbladder carcinoma than noncarriers [12–14].

In conclusion, although acalculous cholecystitis can be a complication of *Salmonella enteritidis* and treated successfully with intravenous antibiotics, it is unclear if cholecystectomy should be performed for complete eradication of infection given its increased risk of gallbladder carcinoma.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.radcr.2018.07.013.

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