



CASE REPORT

Acalculous cholecystitis due to *Salmonella enteritidis*

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Abstract

Acute acalculous cholecystitis (AAC) is defined as an acute inflammation of the gallbladder in the absence of stones. We herein report a case of a young man who developed AAC after a *Salmonella enteritidis* gastrointestinal infection.

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INTRODUCTION

Acute acalculous cholecystitis (AAC) is defined as an acute inflammation of the gallbladder in the absence

of stones. Traditionally, it was considered a fatal disease almost exclusively of critical ill patients; however, there are recent reports of cases of AAC affecting less severe patients with good prognosis treated with antibiotics, in the absence of cholecystectomy.

We herein report a case of a young man who developed AAC after a *Salmonella enteritidis* gastrointestinal infection.

CASE REPORT

A 27-year-old man was admitted to hospital with abdominal pain, diarrhoea, persistent vomiting and 38°C temperature. On physical examination, he was febrile, but in a good state of health. His abdomen was mildly tender to palpation with guarding in his lower right area. Laboratory tests disclosed a white cell count of $5300 \times 1000/\mu\text{L}$ with 50% neutrophils and 32% lymphocytes, and haemoglobin and platelets were normal. The biochemical studies including liver and renal tests, electrolyte panel and coagulation profile, were normal. An abdominal X-ray film showed gas in several loops of a moderately dilated small bowel, and an abdominal sonography disclosed marked mucosal thickening in the right quadrant affecting ileon loops, cecum and ascending colon with small lymph node enlargement; the remainder of the abdominal contents, including the gallbladder were normal. Serology for *Salmonella typhi* H and O, Yersinia and Shigella were negative, as were blood cultures. The coproculture obtained on admission was positive for *Salmonella enteritidis*.

The patient was treated with intravenous fluids, analgesics and antipyretics and became afebrile on the second day; in a week time, the abdominal pain subsided and he was able to restart oral diet so he was discharged from hospital.

The following day he returned to the Emergency Department due to epigastric and right hypochondria pain, nausea and fever. He had no diarrhoea. On physical examination, he presented a temperature of 38°C, a tender upper abdomen, and Murphy's sign. The laboratory tests showed mild normocytic-normochromic anaemia with $7900 \times 1000/\mu\text{L}$ white cells. The biochemical tests were normal. A new abdominal sonography disclosed normal intestinal loops, but his gallbladder was distended and presented a markedly thick wall (7 mm) with no stones, and was surrounded by a little fluid collection.

He was then administered intravenous antibiotics

(ciprofloxacin and metronidazole) and showed no signs of fever on the second day. The abdominal pain slowly subsided. Blood, urine and faeces cultures taken on admission showed negative results. He was discharged 10 d later on oral antibiotics and controlled as an outpatient. A new abdominal ultrasound disclosed a normal gallbladder without lithiasis or sludge.

DISCUSSION

AAC accounts for 5%-14% of all cases of acute cholecystitis^[1,2]. Patients tend to be predominantly male and older than 50 years of age.

The pathogenesis of AAC is not well defined as the precise mechanism is unknown to date. It seems that several factors such as ischemia, infection and bile changes are involved. Ryu *et al*^[1] found that patients with visceral atherosclerosis may be at increased risk for acute acalculous cholecystitis due to an impaired mucosal resistance. Systemic sepsis with release of mediators and bile stasis with alterations in the chemical composition of bile are another implicated potential pathogenic mechanisms involved. Multiple risk factors such as previous surgery and trauma or burn injury have been associated, but none of them were present in our patient.

However, as in our patient, AAC may also occur from secondary infection of the gallbladder following a systemic infection by bacteria^[3], virus^[4], parasites^[5] or fungi.

AAC due to primary bacterial infection is rare. Several cases have been reported complicating *Salmonella typhi* infection^[3,6] and after non-typhoidal salmonellosis^[7,8] as well.

During the past two decades, an increase in the number of *Salmonella enteritidis* isolates has been observed even in developed countries^[9], and there are also rare complications of this common disease described in medical literature^[10]. Some of these complications are extra-intestinal such as septic arthritis^[11] or meningitis^[12], but most of them are intra-abdominal^[13] due to blood or lymphatic spread of the bacteria.

Among the latter, AAC is infrequent and can occur even weeks after the diarrhoea has stopped^[13] (our patient was discharged from hospital asymptomatic and developed symptoms 24 h later). The diagnosis is based on clinical symptoms, and ultrasound provides the definite diagnosis.

Salmonella enteritidis can be absent in blood cultures and be cultivated in faeces and bile^[8,14]. The bacterium, like any other intestinal pathogen, can not only reach the gallbladder through blood drainage but also directly from the bowel along the bile ducts, as could have been the case in our patient.

Most cases described in literature experienced a bad outcome due to gallbladder gangrene, and perforation^[2]. Even with early cholecystectomy in good surgical candidates^[2], or cholecystostomy or endoscopy nasobiliary

drainage in bad ones^[15], the outcomes were bad. However, this has changed as the disease is now described in less severely ill patients with no adverse prognosis factors. In this setting, a 4-6 wk course of broad spectrum antibiotics, as indicated in our patient, is recommended. If symptoms cease and a control ultrasound shows a non-dilated gallbladder with a thin wall, cholecystectomy is not needed.

In conclusion, this case shows that AAC, a rare complication of *Salmonella enteritidis*, can also be present in non-critically ill patients. In this setting, the prognosis is better, cholecystectomy is not always needed and patients treated with a long course of wide spectrum antibiotics can obtain a good prognosis.

REFERENCES

- 1 Ryu JK, Ryu KH, Kim KH. Clinical features of acute acalculous cholecystitis. *J Clin Gastroenterol* 2003; **36**: 166-169
- 2 Kalliafas S, Ziegler DW, Flancbaum L, Choban PS. Acute acalculous cholecystitis: incidence, risk factors, diagnosis, and outcome. *Am Surg* 1998; **64**: 471-475
- 3 Avalos ME, Cerulli MA, Lee RS. Acalculous acute cholecystitis due to *Salmonella typhi*. *Dig Dis Sci* 1992; **37**: 1772-1775
- 4 Basar O, Kisacik B, Bozdogan E, Yolcu OF, Ertugrul I, Koklu S. An unusual cause of acalculous cholecystitis during pregnancy: hepatitis A virus. *Dig Dis Sci* 2005; **50**: 1532
- 5 Anthoine-Milhomme MC, Chappuy H, Cheron G. Acute acalculous cholecystitis in a child returning from the Ivory Coast. *Pediatr Emerg Care* 2007; **23**: 242-243
- 6 Axelrod D, Karakas SP. Acalculous cholecystitis and abscess as a manifestation of typhoid fever. *Pediatr Radiol* 2007; **37**: 237
- 7 Garrido-Benedicto P, Gonzalez-Reimers E, Santolaria-Fernandez F, Rodriguez-Moreno F. Acute acalculous cholecystitis due to *Salmonella*. *Dig Dis Sci* 1994; **39**: 442-443
- 8 Sese Torres J, Morlans Molina G, Capdevila Cirera A, Valls Camp X, Herrero Reche A. [Acute alithiasic cholecystitis caused by infectious gastroenteritis] *Med Clin (Barc)* 1985; **84**: 672
- 9 Mishu B, Koehler J, Lee LA, Rodrigue D, Brenner FH, Blake P, Tauxe RV. Outbreaks of *Salmonella enteritidis* infections in the United States, 1985-1991. *J Infect Dis* 1994; **169**: 547-552
- 10 Ochoa J, Ricarte E, Carrasco M, Simon MA, Cabello J, Yanguela JM. [Complications of acute gastroenteritis caused by *Salmonella* no typhi] *Rev Esp Enferm Apar Dig* 1989; **75**: 262-266
- 11 Meldrum R, Feinberg JR. Septic arthritis of the ankle due to *Salmonella enteritidis*: a case report. *South Med J* 2004; **97**: 77-79
- 12 Aissaoui Y, Azendour H, Balkhi H, Haimeur C, Atmani M. [Postoperative meningitis caused by an unusual etiological agent: *Salmonella enteritidis*] *Neurochirurgie* 2006; **52**: 547-550
- 13 Fernandez Rodriguez R, Moreno Sanchez D, Martinez Fernandez R, Medina Asensio J, Ferrero Collado A. [Enterocolitis caused by *Salmonella enteritidis* complicated by acute cholecystitis without lithiasis] *Rev Esp Enferm Apar Dig* 1988; **74**: 477-479
- 14 Sese J, Mas J, Pujol R, Capdevila A. [Acute non-calculous *Salmonella enteritidis* cholecystitis, diagnosis by percutaneous puncture] *Med Clin (Barc)* 1986; **87**: 564-565
- 15 Owen CC, Jain R. Acute Acalculous Cholecystitis. *Curr Treat Options Gastroenterol* 2005; **8**: 99-104