

CASE REPORT

Non-typhoidal salmonellosis presenting as acute calculus cholecystitis

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SUMMARY

Non-typhoidal *Salmonella* spp. are Gram-negative bacilli, which typically cause a clinical picture of gastroenteritis and, less commonly, patients may become a chronic carrier of the pathogen within their gallbladder. We describe a rare clinical presentation of a non-typhoidal *Salmonella* spp. infection as acute calculus cholecystitis in an adult patient. *Salmonella enterica* subsp. *Salamae* (ST P4271) was grown from cholecystostomy fluid, and the patient subsequently underwent a laparoscopic cholecystectomy that demonstrated a necrotic gallbladder fundus. We advise that microbiological sampling of bile is essential, especially in the context of foreign travel, to detect unusual pathogens as in this case or common pathogens that may have unusual antimicrobial resistance. Given the necrotic gallbladder as in this case, we also advise that early cholecystectomy should be strongly considered in these patients.

BACKGROUND

Salmonella spp. are Gram-negative bacilli that may cause gastroenteritis or enteric (typhoid) fever following consumption of contaminated food or water.^{1,2} Complications are usually limited to dehydration and electrolyte disturbances although less commonly toxic megacolon, bowel perforation, distant seeding or more systemic effects may occur.^{1,2} Following infection with *Salmonella enterica* serovar typhi or Paratyphi (*S. typhi* or *S. paratyphi*), patients may become an asymptomatic chronic carrier within their gallbladder,² which has long-term sequelae such as gallbladder malignancy.³ This paper describes a rare clinical presentation of a non-typhoidal *Salmonella* spp. infection as acute calculus cholecystitis in an adult patient.

CASE PRESENTATION

A 41-year-old man presented the day after returning from a prolonged stay in Guinea with a 5-day history of severe epigastric and right upper quadrant pain associated with fevers, vomiting and loose stools. His only medical history was of reflux for which he took esomeprazole 40 mg once daily. On examination, he was tachycardic at 117 bpm, tender in the right upper quadrant and was Murphy's sign positive. His blood tests showed total white cell count $16.5 \times 10^9/L$ ($4.2\text{--}10.6 \times 10^9/L$), C reactive protein 323 mg/L, bilirubin 22 (0–21 $\mu\text{mol/L}$), alanine aminotransferase 106 (0–45 IU/L), alkaline phosphatase 97 (30–130 IU/L) and amylase 131 (0–90 IU/L). Erect chest and abdominal radiographs

were unremarkable. The clinical impression was of acute cholecystitis, and the patient was commenced on intravenous amoxicillin-clavulanate.

INVESTIGATIONS

An ultrasound scan demonstrated a thick-walled (1.3 cm) gallbladder with pericholecystic fluid and a solitary 1.7 cm gallstone at the neck of the gallbladder. The patient's antimicrobials were escalated to gentamicin and piperacillin-tazobactam after persisting fever. The patient had a magnetic resonance cholangiopancreatography on day 3, which confirmed calculus cholecystitis with no biliary duct dilatation or filling defect within the common bile duct.

OUTCOME AND FOLLOW-UP

After 4 days of persisting sepsis, the patient underwent a cholecystostomy for source control. The bile grew *Salmonella enterica* subsp. *Salamae* (sequence type P4271), and on day 7, the patient's antibiotics were switched to ceftriaxone and metronidazole. On day 9, the patient underwent a laparoscopic cholecystectomy, which demonstrated a necrotic gallbladder fundus (figures 1 and 2). The patient recovered and was discharged postoperative day 4 on oral ciprofloxacin.

DISCUSSION

Salmonella spp. are endemic in many areas worldwide and are responsible for significant mortality and morbidity. While deaths from salmonellosis are infrequent in the UK, it is a not uncommon cause of enteritis. Salmonellosis typically presents as either an enteric (typhoid) fever (*S. typhi* or *S. paratyphi*) or gastroenteritis (non-typhoidal *Salmonella* spp.).^{1,2} Up to 5% of acute enteric (typhoid) fever infections will go on to develop chronic carriage of *S. typhi* or *S. paratyphi* within their gallbladder.⁴ However, it is very rare for non-typhoidal *Salmonella* spp. to present as an acute calculus *Salmonella* spp. cholecystitis.

Acute acalculus cholecystitis occurring in association with enteric (typhoid) fever may occur as a secondary event complicating the predominating endotoxin-mediated sepsis.⁵ Calculus cholecystitis caused by enteric (typhoid) fever is only slightly more common yet just 5 in a series of 6250 cases of salmonellosis presented in this manner.⁶ For non-typhoidal *Salmonella* spp., acute calculus cholecystitis (as in this case) is a much rarer clinical picture and has only been reported in a young



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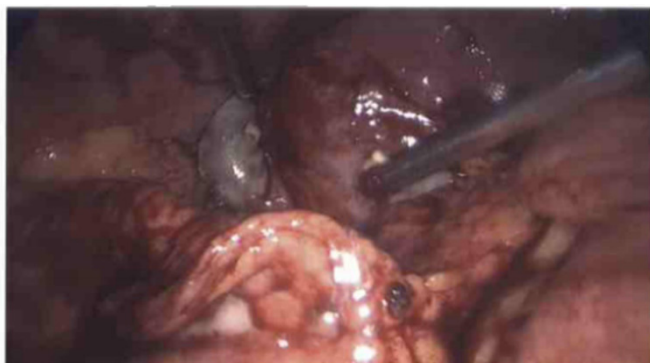


Figure 1 Necrotic fundus of gallbladder visualised during laparoscopic cholecystectomy.

child⁷ and in an Intensive Therapy Unit (ITU) patient.⁸ While *S. typhi* and *S. paratyphi* have been cultured from between 0.6% and 5.8% of gallbladders following cholecystectomy/biliary drainage,⁴ the epidemiology of non-typhoidal *Salmonella* spp. from these sample types is not clear.

Current evidence and guidelines advocate acute cholecystectomy for acute cholecystitis within 1 week of symptom onset.⁹ Conservative management followed by delayed cholecystectomy is appropriate if there is a longer delay to surgery, in view of the development of significant inflammatory sequelae. In this case, a laparoscopic cholecystectomy was performed 14 days after symptom onset, and given the gallbladder necrosis seen intraoperatively (figure 1), this likely avoided further complications.



Figure 2 Dissection of necrotic fundus of gallbladder during laparoscopic cholecystectomy.

Learning points

- ▶ In the context of foreign travel, microbiological sampling of bile from cholecystostomies or intraoperatively is essential.
- ▶ Detecting unusual pathogens, or common pathogens with unusual antimicrobial resistance, necessitates alternate antimicrobial regimes that can avert significant morbidity and mortality.
- ▶ The higher chance of necrotic complications in *Salmonella* spp. cholecystitis means early cholecystectomy should be strongly considered.

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