Unusual presentation of more common disease/injury

Salmonellosis as a differential diagnosis

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Summary

With a low incidence of *Salmonella* infection, salmonellosis is an uncommon problem in Scotland. It occurs in both immune-compromised and immune-competent patients. We present two cases of salmonellosis in immune-competent patients who had had a history of gastroenteritis. Diagnosis was delayed in one patient; however, both patients received appropriate treatment and made good recovery following their respective illnesses. Apart from acting as a reminder to consider salmonellosis as a differential diagnosis when managing patients with infective process, the cases also highlight the importance of concise history taking, and the importance of cultures-and-sensitivities in managing infectious cases.

BACKGROUND

Salmonellosis occurs in <5% immune-competent population, with a much higher incidence in immune-compromised group. As it is relatively uncommon in our day-to-day practice, its diagnosis is often delayed, leading to a delay in appropriate treatment.

We hope that our two cases will increase awareness and consideration of its diagnosis when faced with a patient with a common infective condition resistant to the usual standard treatment or surgical management.

INTRODUCTION

Distant infection as a result of *Salmonella* is uncommon. We report two cases of patients with *Salmonella* infection.

CASE PRESENTATION

Case 1

A 19-year-old student presented unwell with fever, left upper quadrant and shoulder tip pain. This was preceded with 2 weeks of general malaise, fever and self-limiting diarrhoea. He had also lost a stone in weight, which he attributed to anorexia and reduced oral intake. On examination he was feverish, with left upper quadrant tenderness. His white cell count (WCC) was normal; however, his C reactive protein (CRP) was elevated at 87 mg/l. In view of this, blood cultures were taken and he was commenced on intravenous ceftriaxone, which at that time was the empirical antibiotic for intra-abdominal sepsis.

A CT scan was performed on account of his marked tenderness, and this showed an abnormal area in the spleen, measuring 2.4 cm × 3.6 cm × 3.2 cm which was thought to be a splenic abscess (figure 1).

Blood cultures subsequently grew *Salmonella enteritidis*, sensitive to amoxicillin, ceftriaxone and ciprofloxacin. Stool culture was negative. An echocardiogram ruled out underlying endocarditis. Microbiology advice was sought following blood cultures results, and it was advised that the patient remain on the same antibiotics until complete radiological resolution of the abscess had occurred. A repeat CT scan at 2 weeks showed a reduction in the

size of the abscess (to 2.1 cm × 2.8 cm × 2.1 cm). A further ultrasound scan 2 weeks later again showed reduction in size of the abscess to 2.5 cm × 1.6 cm, and the patient was then converted onto oral cefalexin. A final ultrasound scan 12 weeks after his initial presentation showed complete resolution of the abscess, at which point the antibiotics were stopped.

Case 2

A 57-year-old man with a history of alcohol excess initially presented to his general practitioner (GP) with right-sided rib pain following a fall. The GP noted that he was cachectic, with hepatomegaly and a right-sided posterior chest wall swelling, thought to be a haematoma as a result of his fall. Blood results showed a cholestatic derangement of liver function tests. His inflammatory markers were raised, with a WCC of $16.2 \times 10^9/l$ and CRP of 141 mg/l. In view of all these findings, the patient was referred to the general surgical clinic. Following his clinic appointment, he went on to have an abdominal ultrasound, CT of chest, abdomen and pelvis, and magnetic

Figure 1 CT image showing a 2.4 cm × 3.6 cm × 3.2 cm area in the spleen, thought to be a splenic abscess.

Figure 2 CT image showing a 10 cm×9 cm×5 cm well-defined, superficial fluid collection on the posterior chest wall.

resonance cholangio-pancreatogram (MRCP), which all demonstrated a 12 mm common bile duct, with no obvious cause for the duct dilatation. The posterior chest wall haematoma was noted on CT imaging as a 10 cm×9 cm (5 cm well-defined superficial fluid collection (figure 2).

While waiting for his follow-up clinic appointment, the patient presented as an emergency with worsening of right-sided chest wall pain, general weakness and malaise, which had been preceded by a week history of diarrhoea and vomiting. The patient was slightly hypotensive on admission. His inflammatory markers were raised, which was felt to be due to his recent gastroenteritis. As he continued to complain of right-sided pain especially over the haematoma, an ultrasound scan was performed to ensure that the haematoma had not solidified and was amenable to aspiration. Needle aspiration was carried out, where instead of altered blood, green pus was aspirated. Not surprisingly, the swelling re-accumulated almost immediately after aspiration, and the patient proceeded to formal incision-and-drainage under general anaesthesia. The pus subsequently grew *Salmonella enteritidis*, sensitive to amoxicillin, ceftriaxone, ciprofloxacin and meropenem. Stool and urine cultures were negative. In view of his weight loss and deranged liver function tests, hepatitis screen and HIV serology were performed which were all negative. The patient was commenced on intravenous meropenem based on microbiology advice according to the sensitivities result and as he had been fairly unwell up to the time of diagnosis. His pain improved significantly following incision-and-drainage of the abscess. He made good recovery and was discharged a week following the procedure with oral amoxicillin. A week later, the swelling had resolved completely and his antibiotics were stopped. He unfortunately defaulted from further appointments and was lost to follow-up.

DISCUSSION

Salmonella are Gram-negative bacilli. They are well-known animal and human pathogens. For infection in human, they are divided into two main groups—typhoid and non-typhoid *Salmonella*.¹ Typhoid *Salmonella* infection causes systemic enteric fever. It is transmitted through

contaminated water, and is prevalent in developing countries with poor water sanitation. Its incidence is low in developed countries, and usually occurs in travellers to or from high-prevalent under-developed countries. Non-typhoid *Salmonella* infection on the other hand, occurs in both developing and developed countries. Transmission is usually through exposure to infected animals or ingestion of contaminated, under-cooked animal-produce. Infection commonly occurs in patients of extreme ages and in patients who are immune-compromised. Patients who have no previous history of gastroenteritis should be screened for HIV.² Incidence of salmonellosis in HIV patients is as high as 30%, compare to <5% in immune-competent individuals.³ Infection could be either systemic or distant focal infection (10%). Distant focal infection has been reported in soft tissue, bones/joints causing osteomyelitis/septic arthritis, meningitis, endovascular causing mycotic aneurysm, urinary tract, peritonitis and intra-abdominal organ abscesses.¹

Both our patients had distant focal infection. Neither of them demonstrated any evidence of being immune-compromised. The older gentleman with chest wall abscess however had a history of alcohol excess, and there are reports of *Salmonella*-induced liver abscesses in alcohol-dependent patients.⁴ Although both our patients never had *Salmonella* isolated from their stool, they had a history of gastroenteritis prior to their presenting illnesses, which presumably was caused by *Salmonella*. It has been suggested that in the absence of treatment for *Salmonella* gastroenteritis, patients are more at risk of developing distant foci of *Salmonella* infection.⁵

Learning points

- Cases of *Salmonella* causing soft tissue infections and splenic abscesses have been reported in the literature, it is still a relatively uncommon diagnosis.
- These cases highlights the importance of an accurate history.
- These cases highlights the importance of culture-and-sensitivity in all cases of infections.
- They also serve to remind us of the importance of considering the diagnosis of salmonellosis when dealing with patients with unusual infective processes.

Competing interests None.

Patient consent Obtained.

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