Sacroiliitis caused by *Salmonella typhi*: a case report

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ABSTRACT

Sacroiliitis caused by *Salmonella typhi* is rare. In India, unilateral sacroiliitis is usually caused by tuberculosis. We report a 22-year-old man who presented with a high-grade fever and positive blood culture for *Salmonella typhi*. The patient was treated with intravenous vancomycin and levofloxacin for 15 days and then oral levofloxacin for 6 weeks.

Key words: sacroiliitis; *Salmonella typhi*

INTRODUCTION

The most common pathogens in infection of the sacroiliac joint are *Staphylococcus aureus*, *Streptococci*, and *Pseudomonas aeruginosa* (more common in intravenous drug abusers). Sacroiliitis caused by *Salmonella typhi* is rare and only a few cases have been reported.2-5

CASE REPORT

In March 2010, a 22-year-old man presented with a 10-day history of pain and tenderness over the left hip and difficulty walking. He had had an episode of diarrhoea and high-grade fever one week before symptom onset. There was no recent trauma. The patient had a temperature of 39.4°C, a blood pressure of 110/80 mm Hg, and a pulse rate of 80/minute. The patient was comfortable when the left lower limb was in flexion and adduction. There was no limb length discrepancy or distal neurovascular deficit. Abdominal examination yielded no abnormality.

Blood tests revealed a haemoglobin level of 13 g/dl, a total leukocyte count of 14 500 with 68% polymorphonuclear leukocytosis, an erythrocyte sedimentation rate of 42 (normal range, 0–10) mm/hour, and a C-reactive protein level of 25.4 (normal range, <10) ng/l. Blood culture grew *Salmonella typhi*. Haemoglobin electrophoresis was negative for sickle cell disease.

Radiography of the pelvis showed no abnormality (Fig. 1). Bone scan with technetium-
99m methylene diphosphonate revealed marked uptake of the radioisotope in the left sacroiliac joint. Ultrasonography of the abdomen, pelvis and hip was normal. Magnetic resonance imaging revealed decreased and increased signal intensity on T1- and T2-weighted images, respectively, indicating effusions (Fig. 2) and abnormal signal changes in the bone marrow of the sacrum and ilium. The inflammatory changes were enhanced by gadolinium diethylenetriamine penta-acetic acid on T1-weighted images (Fig. 3).

Local aspiration revealed a small quantity of

![Figure 1](image1.png) Radiograph of the pelvis shows no abnormality.

![Figure 2](image2.png) Axial (a) T1- and (b) T2-weighted images showing decreased and increased signal intensity indicating effusions over the left sacroiliac joint, respectively (arrows).

![Figure 3](image3.png) (a) Axial and (b) coronal gadolinium-enhanced T1-weighted images showing increased signal intensity and effusion over the left sacroiliac joint (arrows).

<table>
<thead>
<tr>
<th>Time</th>
<th>ESR (mm/hr)</th>
<th>CRP (ng/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At presentation</td>
<td>42</td>
<td>25.4</td>
</tr>
<tr>
<td>At week 1</td>
<td>40</td>
<td>15.6</td>
</tr>
<tr>
<td>At week 2</td>
<td>30</td>
<td>10.2</td>
</tr>
<tr>
<td>At month 1 (discharge)</td>
<td>32</td>
<td>9.4</td>
</tr>
<tr>
<td>At 6-week follow-up</td>
<td>18</td>
<td>5.6</td>
</tr>
<tr>
<td>At 10-week follow-up</td>
<td>15</td>
<td>3.6</td>
</tr>
<tr>
<td>At 12-week follow-up</td>
<td>8</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Table

Erythrocyte sedimentation rates (ESR) and C-reactive protein (CRP) levels
turbid fluid, which was sent for culture. The patient started treatment with intravenous cefotaxime (1.5 g/8 hours). After 3 days, the fever became low grade but severe pain persisted. Culture of the aspirate grew *Salmonella typhi* sensitive to vancomycin and levofloxacin. Intravenous vancomycin and levofloxacin for 15 days were then prescribed instead. After that, oral levofloxacin was given for 6 weeks. The erythrocyte sedimentation rate and C-reactive protein level were monitored every 5 to 7 days until 12 weeks (Table). One month after presentation, the fever had subsided completely and the patient was discharged, although moderate pain persisted. He was followed-up for pain, tenderness, disability, and inflammatory markers until such markers were no longer abnormal. At the 3-month follow-up, the patient had no complaints.

**DISCUSSION**

Less than 1% of all salmonella infections involve bones and joints, and usually ensue in patients with sickle-cell haemoglobinopathies, systemic lupus erythematosus, or those in receipt of immunosuppressive therapy.6

Unilateral sacroiliitis is mainly caused by infections, ankylosing spondylitis in its early stages, a juxta-articular neoplastic lesion, and traumatic osteoarthritis. Bilateral involvement is mostly due to allergens, and collagen/autoimmune disorders. In India, almost one third of the population are infected with tuberculosis in one form or another. Thus, in patients with unilateral sacroiliitis, the first suspect is tuberculosis until proven otherwise. In our patient, high-grade fever and a positive blood culture for *Salmonella typhi* led to the diagnosis of sacroiliitis. He also had a characteristic pulse temperature deficit.5,7 All reported cases of salmonella sacroiliitis involved the left side only.

In our patient, bacteraemia was probably associated with the brief episode of diarrhoea, and sacroiliitis was due to seeding of the bacteria in the peri-pelvic region. Both salmonella and anaerobic infections of the sacroiliac joint may occur in patients who have no preceding gastrointestinal symptoms or known susceptibility to bacteraemia.2–6

Early radiography usually reveals no specific pathology; scintigraphy, computed tomography, and magnetic resonance imaging are more effective diagnostic tools.5,8–11

Cultures of blood and aspirated materials may reveal the causative organism and its susceptibility to antimicrobials. Timely treatment may prevent the complications of arthritis. As salmonella is resistant to several traditionally used antibiotics, quinolones are currently the agents of choice for managing this infection.

**REFERENCES**