Salmonella Septic Arthritis: Report of Two Cases

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SUMMARY
Salmonella species when caused bacteremia may invade any organ or tissue and may cause localized infection. Arthritis is an uncommon extraintestinal manifestation of Salmonella infection. Two cases with Salmonella associated arthritis were presented in this report.

Key Words: Salmonella, septic arthritis, Salmonella typhi, Salmonella hirschfeldii

ÖZET
Salmonella Septik Artrit: İki Olgu Sunumu

Anahtar Kelimeler: Salmonella, septik artrit, Salmonella typhi, Salmonella hirschfeldii

INTRODUCTION
Salmonella infections are seen in 5 different forms. These are gastroenteritis, enteric fever, bacteremia, chronic carrier state and localized infection. Localized Salmonella infections are generally seen following Salmonella bacteremia, but may also occur after enteric fever or gastroenteritis (1,2). We present 2 cases of Salmonella arthritis as an uncommon extraintestinal manifestation of Salmonella infection.

CASE 1
A 17-year-old female patient was admitted for fever, fatigue, pain and swelling of the left knee. She was on corticosteroid therapy intermittently due to hemolytic anemia since three years. On physical examination the body temperature was 39°C. She was tachycardic and a 2/6 systolic murmur was audible. Her left wrist was swollen, tender and painful. In her left knee, tenderness, erythema, warmth, pain and restriction of motion were present. Laboratory data showed a hemoglobin of 8.5 g/dL, leukocyte count 4600/mm³ and platelet count 37,000/mm³. Serum AST and ALT levels were detected respectively 159 U/L (normal range 0-37) and 106 U/L (normal range 0-40). Arthrocentesis yielded fluid containing abundant leukocytes with 80% neutrophils and Gram stain was negative. Salmonella typhi was isolated from the synovial fluid culture. Blood cultures were negative. In abdominal ultrasonography minimal splenomegaly was revealed and in echocardiography minimal pericardial effusion was detected. The patient was treated with ofloxacin 200 mg PO, BID. At the third day of
ofloxacin therapy she was afebrile. Her knee was immobilized. The antibiotic therapy was completed after 2 months. She showed complete resolution of the *Salmonella* infection of the left knee.

**CASE 2**

A 75-year-old female patient presented with 4 days history of fever and diarrhea. Two days ago she fell down and she had a complaint of right knee pain, swelling and restriction of motion. Physical examination showed a temperature of 38.2°C, and hepatomegaly. There was a moderate effusion with warmth and tenderness, restriction of motion in the right knee. Laboratory data showed a hemoglobin of 12.9 g/dL, leukocyte count 4200/mm³ and platelet count 182,000/mm³. Serum AST and ALT levels were detected respectively 242 U/L and 144 U/L. *Salmonella hirschfeldii* was isolated from the stool culture. Arthrocentesis yielded fluid containing abundant leukocytes with 80% neutrophils and Gram stain was negative. *S. hirschfeldii* was isolated from the synovial fluid culture. Blood cultures were negative. Surgical drainage was performed. Her knee was immobilized. The patient was treated with ciprofloxacin 200 mg BID intravenously for 2 weeks. Her body temperature turned to normal 9 days after antibiotic therapy was started. The antibiotic therapy was completed to 2 months with ciprofloxacin 500 mg PO, BID. She showed complete cure of the *Salmonella* infection of the left knee.

**DISCUSSION**

While salmonellosis is often considered to affect primarily the gastrointestinal tract, *Salmonella* species in blood may invade any organ or tissue and may cause *Salmonella* arthritic infection. Theoretically, all *Salmonella* species may cause localized infection, but the most common serotypes isolated were *Salmonella typhimurium* (22%), *S. typhi* (12%), *Salmonella choleraesuis* (8%) (1,2). As septic arthritis is an uncommon extraintestinal manifestation of *Salmonella* infections, there are few cases reported in literature. Kaya et al, reported a septic arthritis case due to *S. typhimurium* (3).

*Salmonella* arthritis was first described in 1896 by Achard and Bensuade. Saphra and Winter reported that *Salmonella* arthritis occurred in 0.24% of patients with *Salmonella* infection (2).

Most cases of *Salmonella* arthritis occur in children, immunosuppressed individuals or patients with sickle cell disease. Many of the patients with localized *Salmonella* infections had predisposing conditions, which may favor infection. Prior to development of *Salmonella* arthritis 18% of patients were on a regimen of corticosteroids or other immunosuppressive agents (2,4,5). In one of our case, predisposing factors were autoimmune hemolytic anemia and corticosteroid treatment. In the other case trauma history was present after the diarrhea had begun.

The most commonly affected joint is the knee (57%); followed by hip (23%) and shoulder (9%) the involvement of only one joint is the most common presentation (2). In both of our cases knee involvement were present.

Synovial fluid is generally purulent and Gram stains are positive only in half of the synovial fluid samples (2). In our cases synovial fluid was found purulent but no bacteria was observed at Gram stains.

Positive blood cultures were reported in 65% and positive stool cultures in 43% of patients (2). In one of our case *S. hirschfeldii* was isolated from both synovial fluid and stool cultures, in the other case *S. typhi* was only isolated from synovial fluid. Blood cultures were negative in both of our cases.

Most patients have radiographic evidence of demineralization or osteolytic lesions of adjacent bone (2). In our patients no significant change was observed in radiographic examination.

Patients with *Salmonella* septic arthritis often have a good outcome with medical therapy alone. Parenteral antibiotic therapy for 2 to 4 weeks with repeating arthrocentesis to remove purulent fluid is recommended. Surgery is indicated if needle aspiration does not achieve adequate drainage (1-3,6-8). Needle aspiration plus prolonged antibiotic therapy in one of our case, and surgical drainage in addition to antibiotic therapy in the other were performed in order to yield complete cure. In our cases duration of antibiotic therapy to yield complete cure was longer than recommended in the literature.

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