

Case Report

Salmonella species causing hip septic arthritis

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ABSTRACT

Salmonella infection has been associated with various presentations depending on the system that has been affected and *Salmonella* species that invaded the body. Usually present with gastroenteritis symptoms and bacteremia. Rare cases had been recorded that *Salmonella* causing septic arthritis. We are reporting a rare case of *Salmonella* causing septic hip arthritis. Case report of a 31-year-old lady, known case of: systemic lupus erythematosus, anti-phospholipid syndrome, chronic kidney disease from National Guard Hospital, Riyadh, Saudi Arabia, 2018. We found the possibility of *Salmonella* species that causes various diseases can cause septic hip arthritis. *Salmonella* gram-negative bacilli has been associated with broad spectrum of illnesses as gastroenteritis, typhoid fever and septicemia. In the developed countries *Salmonella* cause self-limiting diarrhea with risk of developing bacteremia. Rare cases reported as a case of *Salmonella* causing septic joint arthritis. Following the recommendations of treating *Salmonella* osteomyelitis would help eradicate the infection and decrease the relapse rate period.

Keywords: *Salmonella*, Systemic lupus erythematosus, Hip septic arthritis

INTRODUCTION

Salmonella infection has been associated with various presentations depending on the system that has been affected and *Salmonella* species that invaded the body. *Salmonella* infection usually present with gastroenteritis symptoms due to food poisoning, with small incidence of reactive arthritis (5-14 per 100,000 cases), however, sickle cell patients in particular are more likely to develop bacteremia, osteomyelitis and septic arthritis due to *Salmonella* species.¹⁻³ Less than 10 cases have been reported with *Salmonella* species causing vertebral osteomyelitis or spondylodiscitis in the literature from 2013 to 2018.⁴⁻¹⁰ Moreover, new cases in different countries were reported with *Salmonella* species infection that follows different orthopedic procedure including total knee arthroplasty, leading to Prosthetic joint infection.^{11,12} *Salmonella* Typhi is a human-restricted and

highly adapted invasive disease, but rarely causes infection in immunocompetent patient.¹³

CASE REPORT

We are reporting a case from National Guard Hospital, Riyadh, Saudi Arabia. A 31-year-old lady, known case of: systemic lupus erythematosus, anti-phospholipid syndrome, chronic kidney disease and a renal biopsy showing thrombotic microangiopathy, had three first-trimester abortions in the past. Patient got pregnant again and was on aspirin and enoxaparin during her pregnancy. In the 6th month of pregnancy she started to have abdominal pain, headache, bilateral swollen legs with hypertension and proteinuria. As a consequence, patient had intrauterine fetal demise. In few days patient got sicker in form of severe fatigue and was admitted to another hospital. During that admission, patient developed hemolytic anemia, change in sensorium with

decrease level of consciousness, acute kidney injury with dilated cardiomyopathy and labeled as systemic lupus erythematosus with thrombotic thrombocytopenic purpura based on biopsy of acute kidney injury. Following deterioration and decreased level of consciousness, patient intubated and treated with plasma exchange, Intravenous immunoglobulin 1g for two days, methylprednisolone 1g for three days, vincristine 1 mg, rituximab 1g and hemodialysis. The patient improved and transferred to National Guard Hospital under internal medicine department for investigations. After one month of her admission in our hospital, patient started to have on and off diffuse non-specific pelvic pain. Magnetic resonance Imaging done and revealed left hemipelvis osteomyelitis period. Thereafter, she developed severe left hip pain. The pain intolerable in the last two days and patient could not bear weight. Magnetic resonance Imaging repeated and revealed left hip joint effusion likely representing septic arthritis. The orthopedic team was consulted, then patient transferred to orthopedic floor immediately for evaluation and intervention.

Physical examination to the left hip showed marked swelling over the left greater trochanter, petechial rash over both legs. There was tenderness on palpation over the left greater trochanter with no difference in temperature between left and right hips. Range of motion of left hip could not be done due to severe pain with any movement.

INVESTIGATIONS



Figure 1: Ultrasound.

Laboratory tests included a leukocyte count of $4.80 \times 10^9/L$, erythrocyte sedimentation rate (ESR) of 85 mm/h, Platelet: $15 \times 10^9/L$ (reference: $150-400 \times 10^9/L$), neutrophils automated count: 2.43/L (reference: 2.00-7.50 $\times 10^9/L$), lymphocytes automated count: 1.00/L (reference: 1.00-4.40 $\times 10^9/L$), human immunodeficiency virus antigen: negative and C-reactive protein level of 547 mg/L. Blood culture was negative. Ultrasound showed heterogeneous left hip effusion and MRI reported

marked hip joint effusion with collections within the obturator muscle, as well as the adductors, with the largest collection seen measuring approximately 6.7 cm, close to adductor origin. The interventional radiology aspirated the collection and in it showed *Salmonella*.

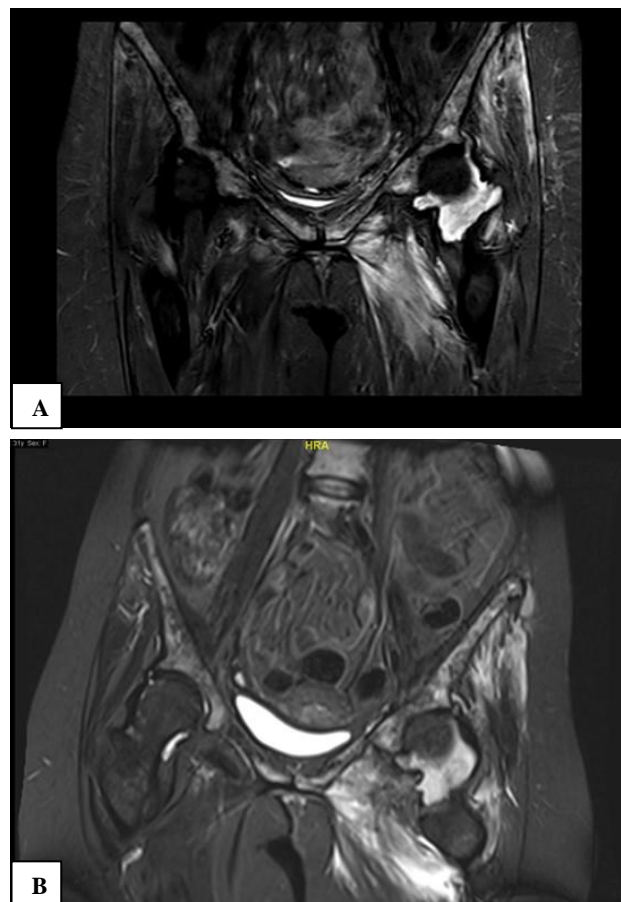


Figure 2 (A and B): MRI.

HOSPITAL COURSE

Following the first MRI, patient was started on intravenous Tazocin 2.25 grams every 6 hours and Ciprofloxacin 400 mg every 12 hours as per the suggestion from infectious diseases department. Following second MRI that showed left hip osteomyelitis, patient was taken to the operating room as an emergency case for Irrigation and debridement with arthrotomy of the left hip. Using Hyarding approach a gush of pus came out from the joint as it was opened; the pus was drained out and sent to the laboratory for gram stain, culture and sensitivities. Culture showed that there was a light growth of *Salmonella* species, Group B. The strain was susceptible to Ampicillin, Ceftriaxone, Ciprofloxacin and Trimethoprim/Sulfa. Three days later, patient was taken again for second look irrigation, debridement of the left hip.

Subjective and objective improvement was noticed on the patient as she started a pain free range of motion for the left hip and weight-bearing starting the second day

postoperatively. ESR and CRP normalized at one-week post-op.

DISCUSSION

Salmonella gram-negative bacilli has been associated with broad spectrum of illnesses as gastroenteritis, typhoid fever and septicemia. The rate of *Salmonella* infection increases in the underdeveloped countries as a fecal contamination of food or water. It can be associated infection in people who had recent trip to endemic areas. The *Salmonella* infection shows significant mortality and morbidity when it causes Bacteremia worldwide. In the developed countries *Salmonella* cause self-limiting diarrhea with risk of developing Bacteremia. Using PubMed, we reviewed more than 50 case reports of *Salmonella* infection that cause illness to musculoskeletal system, cardiovascular system and central nervous system. Most cases, especially in the elderly had predisposing factors including diabetes, hypertension, immunosuppression and sickle cell disease. Rare cases of *Salmonella* infection with vertebral osteomyelitis are reported.⁴⁻¹⁰ Our patient is a 31-year-old lady, known case of: systemic lupus erythematosus, anti-phospholipid syndrome, thrombotic micro-angiopathy and chronic kidney disease on hemodialysis three time per week was under Internal medicine and then develop painful left hip. Following the initial imaging we decided to start Intravenous antibiotics to treat left hip osteomyelitis period. After diagnosis of left hip septic arthritis, patient took for arthrotomy irrigation and debridement and took second look with tissue culture for both surgeries. The antibiotic fluoroquinolones and the third-generation cephalosporin are the drug of choices for the treatment of *Salmonella* infection.¹³ Early identification and management of osteomyelitis include the recommendations for treatment of osteomyelitis with proper diagnosis that include microbiological, histological and laboratory tests and antimicrobial therapy with surgical irrigation and debridement would help eradicate the infection and decrease the relapse rate period.¹⁴

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