

CASE REPORT

A Child with Septic Arthritis of Hip: A Rarely Encountered Cause

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SUMMARY

We report a rare case of septic arthritis in a healthy child caused by *Salmonella enteritidis*. No predisposing factor was detected. *Salmonella enteritidis* was isolated from the infected joint tissue obtained following surgical drainage. Based on the culture and sensitivity report, he was treated with a 6-week course of antibiotic. He improved dramatically without any detrimental sequelae at end of one year.

KEY WORDS:

Septic Arthritis; Hip; Salmonella enteritidis; Healthy child

INTRODUCTION

Ever since the introduction of *Haemophilus influenzae* type b conjugate vaccine, *Staphylococcus aureus* and streptococci account for 70% of culture-confirmed cases of septic arthritis. The knee is most often affected followed by hip and shoulder joints. Gram-negative bacillary septic arthritis is rarely encountered in young and healthy host, for it is more commonly associated with immunosuppression and underlying chronic debilitating diseases. Likewise, *Salmonella* septic arthritis rarely affects immunocompetent hosts. We describe a case of septic arthritis in a healthy child caused by *Salmonella enteritidis*.

CASE SUMMARY

A 4-year-old boy was referred to our center for immediate surgical intervention following unresolved septic arthritis of the right hip. He presented with a 5-day history of high fever and refusal to bear weight on his right leg. The patient had always been in good health prior to the illness. There had been no preceding trauma to the affected limb. He was empirically treated with intravenous ceftriaxone, metronidazole and cloxacillin. Despite the multiple antibiotics regimen, he failed to show response at fifth day of therapy.

On admission, he appeared ill. His temperature was 39.0° C. His right hip was held at 30° flexion, slightly abducted and externally rotated, with pseudoparesis. Systemic examinations were unremarkable and did not reveal any concurrent infections of other sites. Blood investigations showed mild leukocytosis ($10.2 \times 10^9/L$) and raised C-reactive protein (3.66 mg/dL). There was no evidence of sickle cell disease form the peripheral blood picture. Blood culture was not done in view of prior antibiotics therapy. Plain radiograph of the right hip showed no osteomyelitic changes. Magnetic resonance imaging (MRI) of the right hip done by

the referral hospital demonstrated effusion, suggestive of unresolved septic arthritis.

We proceed with right hip arthrotomy and washout. Synovial fluid, tissue and swab of debris were obtained for bacterial culture. No organism was seen on initial Gram stain. However, cultures of synovial tissue yielded *Salmonella enteritidis*, susceptible to amoxicillin-clavulanic acid, ceftriaxone and ampicillin. The swab and synovial fluid specimens demonstrated moderate polymorphonuclear cells but did not yield any bacterial growth after 48 hours incubation. We assessed the patient's predisposing factors for *Salmonella* infections upon receipt of laboratory report. There were no preceding episodes of symptoms consistent with *Salmonella* gastroenteritis in this patient.

The patient's symptoms improved dramatically following surgical drainage. The empirical polytherapy was switched to intravenous amoxicillin-clavulanic acid to complete a 7-day parenteral course. Upon discharge, he was prescribed with oral amoxicillin-clavulanic acid to complete a 6-week course of therapy. He tolerated to the therapy and CRP had declined to 0.03 mg/dL. Over 1 year follow-up, the affected joint had return to full function. Serial right hip radiographs did not demonstrate avascular necrosis of the femoral head. To date, he is still under regular review for permanent sequelae.

DISCUSSION

Apart from gastroenteritis and enteric fever, *Salmonella* organisms are known to metastasize to distant sites. They have a predilection for any skeletal sites causing either osteomyelitis or septic arthritis. Septic arthritis of the hip caused by *Salmonella enteritidis* is rare in healthy children. Very few cases have been reported so far^{1,2}. In our case, this diagnosis was unexpected.

In most reported cases, *Salmonella* septic arthritis is either associated with immunodeficiency or related to endemic area of *Salmonella* infection³. Our patient had no significant medical illness since birth, nor was he immunocompromised. We also did not identify any concurrent infections at other sites that might have attributed to the metastatic infection. There was no symptom consistent with salmonellosis despite regular consumption of meat, poultry, eggs and dairy products in his diet.

Blood culture may be positive in 10%-20% of cases only. We preferred tissue specimen for culture and sensitivity testing. Swab is the least preferred specimen in view of its low

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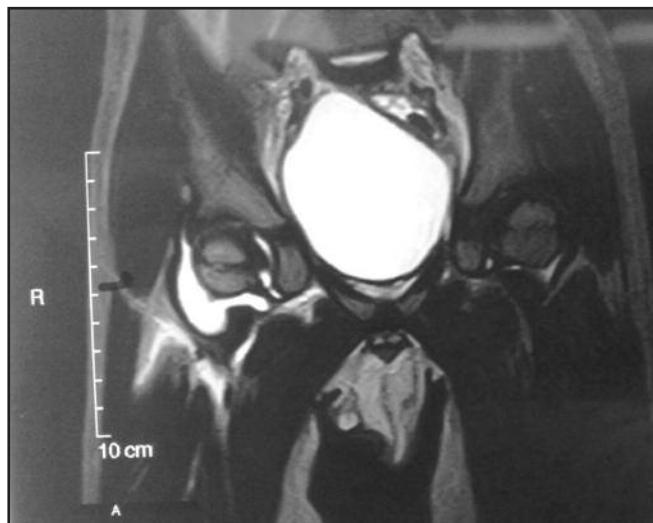


Fig. 1: MRI of right Hip showed effusion due to septic arthritis

sensitivity. In this case, the yield for synovial fluid culture is reduced due to prior antibiotics therapy.

This case illustrated the importance of both adequate surgical drainage and administration of appropriate antibiotic therapy to ensure total eradication of infection. Septic arthritis affecting the hip is a known risk factor for poor outcome. However, we did not embark on follow-up smears or cultures as patient responded to initial surgical drainage.

Gram-negative bacillary arthritis is recognized for its poorer prognosis compared to gram-positive joint infections⁴. Hence, the duration of amoxicillin-clavulanic acid therapy was extended to 6 weeks. Moreover we are cautious with the likelihood that antibiotic penetration into synovial fluid is lesser, later in the course of septic arthritis when the degree of inflammation had reduced. The duration of therapy depends on the organisms (gram-positive versus gram-negative) and for gram negative bacilli, a minimum of 3 weeks have been suggested⁵.

CONCLUSION

Septic arthritis of hip caused by *Salmonella enteritidis* is very rare among healthy children. Therapy requires both surgical drainage and administration of appropriate antibiotics. Sending the tissue specimen for culture is crucial as the joint fluid culture may be negative especially after a course of antibiotics.

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