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Short Communication

Salmonella Typhi Septic Arthritis of Hip - A Case Report

Nalini Agnihotri, Mandeep Singh Dhingra, Vikas Gautam[2]*,
Varsha Gupta, Rishi Kaushal[1] and Deepak Mehta[1]

Department of Microbiology and
[1]Department of Orthopedics, Government Medical College and Hospital and
[2]Department of Medical Microbiology, Postgraduate Institute of Medical Education and Research, Chandigarh, India.

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SUMMARY: A case of rarely encountered *Salmonella* Typhi septic arthritis of the hip in a child with no preexisting disease is reported. *Salmonella* etiology was not suspected in this case, and the diagnosis was made only after bacterial isolation. Arthrotomy was done as an initial mode of management, followed by intravenous ciprofloxacin therapy to which the child responded favorably.

Although septic arthritis due to salmonellae is reported in large numbers, *Salmonella* Typhi as its causative agent is rare, and even rarer in children. Only one pediatric case report of septic arthritis caused by *S*. Typhi and involving the hip has been reported, from Taiwan (1). To the best of our knowledge, this is the second case report of septic arthritis of the hip caused by *S*. Typhi in a child but with no preexisting disease. A case of septic arthritis caused by *S*. Typhi in a child and involving the elbow has been reported from India (2).

A 7-year-old female child was admitted to the Orthopedics Ward of Government Medical College and Hospital, Chandigarh, India with chief complaints of pain, inability to move and to bear weight on the left hip. The patient had developed an episode of high-grade fever 5 days prior to admission. Fever had a sudden onset without any associated chills or rigors and was relieved by medication prescribed by a private practitioner (details not available). The patient also had one episode of abdominal pain. Pain was localized in the left subcostal region and was severe in intensity. There was no history of trauma, injection, or any such episode in the past. Local examination showed tenderness with increased local temperature and flexion deformity and restricted movement of the left hip joint. Laboratory findings included a hemogram level of 8.2 g/dl, total leucocyte count of 6,800/mm^3 (67% polymorphonuclear cells, 29% lymphocytes, 2% monocytes, and 2% eosinophils), platelets $1.8 \times 10^3/mm^3$, blood urea 25 mg/dl, and serum creatinine 0.8 mg/dl. Peripheral blood film was negative for sickle cells. Pus aspirated from the hip joint was processed as per standard protocol (3). Gram-stained smear showed Gram-negative bacilli and yielded non-lactose fermenting (NLF) colonies on culture. Clinical diagnosis of septic arthritis was confirmed, and arthrotomy was subsequently performed. Another sample of pus drained during arthrotomy, on the 2nd day after admission, showed the same NLF growth with typical biochemical reactions, gram reaction and motility. Further confirmation was obtained by agglutination test with specific antisera, and the organism was identified as *S*. Typhi. It was found susceptible to ampicillin, co-trimoxazole, chloramphenicol, ciprofloxacin, cefotaxime and ceftriaxone by the Stokes method. A retrospective blood culture was found to be sterile but the Widal test showed titers of 1:640 for TO and TH. Surgical intervention (arthrotomy) was done as an initial mode of management followed by ciprofloxacin therapy intravenously for 5 days and then orally for 10 days, subsequent to which the patient showed signs of recovery.

Salmonellosis can result in four types of clinical syndromes: enteric fever, septicemia with or without local suppurative lesions, gastroenteritis, and the carrier state. The localized infection can involve any site in the body including bones and joints (4-6). However, the majority of such infections occur in patients with preexisting disease, which may be hemoglobinopathy, especially sickle cell disease; prior joint disease, including rheumatoid arthritis, osteoarthritis and gout; previous trauma; cranial surgery; hematologic neoplasm; immunosuppressive therapy; or impaired cell mediated immune response as in AIDS (7-9). While *Salmonella* osteomyelitis is commonly caused by *S*. Typhimurium and *S*. Typhi, the most frequently isolated serotypes in *Salmonella* septic arthritis are *S*. Typhimurium and *S*. Cholerasuis (4,7). In most of such cases, *Salmonella* etiology is not suspected and diagnosis is made after its isolation. However, 10 - 20% of clinically diagnosed bacterial arthritis cases are never confirmed by positive synovial fluid or blood culture (10). On confirmation of *Salmonella* etiology by its isolation and treatment with appropriate antibiotics combined with joint aspiration/surgical drainage depending upon the joint involved, salmonellosis is associated with a good prognosis. In children with septic arthritis, the knee is the most commonly affected joint followed by the hip and shoulder (8).

In our patient septic arthritis occurring with no previous history, positive culture for *S*. Typhi, and a high serum Widal titer (TO and TH) of 1:640 is suggestive of septic arthritis of *Salmonella* etiology. In the present case there was no preexisting disease, and the inadequate treatment prescribed by a private practitioner for fever may have resulted in prolonged exposure to the organism. Further, infectious arthritis usually follows hematogenous inoculation of the pathogenic organisms (8,9). It has been reported that several children have developed *Salmonella* reactive arthritis about 2 weeks after initial diarrheal episode and enteric fever (2), but in the

*Corresponding author: Mailing address: S/O Dr S P Gautam, 3243/21 D, Chandigarh 160022, India. Tel: +91-172- 2706310, E-mail: r_vg@yahoo.co.uk

present case the child had no diarrhea and complained of pain in the hip with one concurrent episode of abdominal pain. Definitive therapy is based on the identity and antibiotic susceptibility of the bacteria isolated in culture. Most enteric Gram-negative infections can be cured in 2 - 4 weeks by second- or third-generation cephalosporins given intravenously or by a fluoroquinolone. Intraarticular antibiotic instillation is not required and such therapy may cause chemical synovitis. Septic arthritis of the hip is best managed with arthrotomy, especially in young children, in whom infection threatens the viability of the femoral head (9,11).

In summary, septic arthritis of the hip due to *S*. Typhi appears to be a very rare complication, and no case has yet been reported from India. This case is being reported to highlight the unusual presentation of *S*. Typhi. Since bacteremia is a constant feature of enteric fever and its dissemination may lead to localized foci of infection including bones and joints, all cases of pyrexia of unknown origin with or without bone involvement should be properly investigated, and blood culture should always be performed before antibiotic treatment is started. Timely intervention and correct diagnosis and treatment in this child's case saved the affected hip joint, which otherwise would have been damaged for her lifetime.

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