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## CASE REPORT

### Salmonella Typhi Septic Arthritis Of The Hip - A Case Report

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#### ABSTRACT

*Salmonella* infection is endemic in developing countries. Although the commonest manifestation of *Salmonella* infection is acute gastroenteritis, the infection may spread through the blood stream and the illness can present with focal lesion in almost any organ with or without septicaemia. Isolation of *Salmonella* species from aberrant sites with a variety of clinical syndromes where they are hardly expected has been reported. We describe here, a case of rarely encountered *Salmonella typhi* septic arthritis of hip in a 16 years old female. She was treated with ciprofloxacin therapy to which she responded favourably.

**Key Message:**Septic arthritis of hip, Arthritis due to *Salmonella typhi*

**Key Words:** Septic arthritis, arthritis of hip, *Salmonella typhi*

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#### Introduction

*Salmonella* consists of a large heterogeneous group of gram negative bacilli that affect animals and humans. As a group, they are enteroinvasive and enteropathogenic organisms. Human beings are infected with *Salmonella*, mainly by ingestion of contaminated food or drink [1]. Salmonellosis can result in four types of clinical syndromes: enteric fever, septicaemia with or without suppurative lesions, gastroenteritis and the carrier state [3]. Bacteraemia is a constant feature of enteric fever [8]. Its dissemination may lead to localised foci of infection even in the bones and joints [3],[10]. Organisms which are commonly responsible for septic arthritis are *Staphylococcus aureus*, *Haemophilus influenzae* type b and *streptococci* [4],[6],[7],[14]. *Salmonella* arthritis occurs very infrequently,

accounting for only approximately 1% of all cases. It usually presents as one of the metastatic infections in children with non-typhoidal *Salmonella* bacteraemia following earlier episodes of gastroenteritis. *Salmonella* that causes septic arthritis is almost invariably a non-typhoidal species. Septic arthritis is an extremely rare complication of *S. typhi* infection [6].

#### Case Report

A 16 year old female was admitted to the orthopaedic ward of AJ Hospital and Research centre, Mangalore, with complaints of pain in the right hip joint since two months. The patient had a past history of viral encephalitis two months prior to the episode and also a history of typhoid fever one month ago, for which she was treated. There was no history of any trauma. On examination, the patient had a temperature of 99<sup>0</sup>F, a pulse rate of 80/min and blood pressure - 130/60 mm Hg. On systemic examination, there was no abnormal finding. Chest X-ray was normal. Whole body scan showed increased uptake over the head and at the proximal neck of the right femur. The right acetabulum suggested bony inflammation. The total blood count was 10,400/cu.mm., with normal differential count. ESR was 16mm/hour. Haemoglobin was 9.82 mg/dl. The peripheral smear showed normocytic normochromic anaemia. PCR for

tuberculosis was negative. Widal test was positive, with a titre of 320 for both *Salmonella typhi* O and H antigens.

Aspiration of pus was done. Gram stain of pus showed plenty of pus cells and a few gram negative bacilli. Culture of the pus sample was done, which grew gram negative, non-fermenting bacteria. The isolate was identified as *S.typhi* by standard biochemical tests and it was confirmed by the slide agglutination test by using polyvalent and monovalent antisera[11], [12], [13]. Antibiotic susceptibility testing was done and was interpreted as per Clinical Laboratory Standards Institute Guidelines [11]. The isolate was sensitive to Amoxicillin, Chloramphenicol, Cotrimaxazole, Ciprofloxacin, Cefixime, Ceftriaxone, Cefotaxime and Ofloxacin. The patient was treated with ciprofloxacin with which she recovered completely.

### Discussion

Enteric fever is the most common presentation of *Salmonella typhi*. In enteric fever, there is bacteremia and seeding of bacteria to all the parts of the body including the bones and joints. The other presentations like neuropsychiatric, cardiovascular, hepatobiliary and genitourinary manifestations have also been seen. Occasionally, focal lesions such as osteomyelitis, sacroiliitis, brain abscess, and spleen and liver abscess have also been reported [1]. Although any skeletal site can become infected, *Salmonella* infections of the bone typically involve the long bones, the chondrosternal junctions, the knee, the shoulder, the hip, the sacroiliac joints and the spine[1].Septic arthritis of the hip caused by *S.typhi* is very rare[3]. More than 100 cases of *salmonella* arthritis were reviewed, which revealed a disease primarily of children and young adults, with a favourable response [2].All the cases reported were culture positive. Some of the cases showed a high widal titre as in this case. The correlation between the widal test and culture positive cases are shown in the [Table/Fig 1].

(Table/Fig 1)

Case	Author	Publication year	Positive culture	Widal
1	Mehmet Ulug(1)	2009	Blood	S.typhi O :1 in 320 S.typhi H : 1 in 320
2	Agnihotri N(3)	2004	Synovial aspirate	S.typhi O :1 in 640 S.typhi H : 1 in 640
3	Chiu S(6)	2000	Synovial aspirate	S.typhi O :1 in 80 S.typhi H : 1 in 1280
4	Present study		Synovial aspirate	S.typhi O :1 in 320 S.typhi H : 1 in 320

In the present case, there was a history of typhoid fever one month before the joint involvement and also a history of viral meningitis, approximately two months prior to this. The continuous ill health and the debilitated state may be the underlying cause for this focal sepsis. Correct diagnosis and treatment at the right time saved the affected hip joint in this case.

### Conclusion

To conclude, in areas where enteric infections with *salmonella* are endemic, bacteremia can occur in immunosuppressed individuals and in children, with congenital diseases in whom infection has a tendency to spread haematogenously to larger joints [2], [5], .So, physicians should be aware of this rare manifestation of *S.typhi* infection. All cases of pyrexia of unknown origin with or without bone involvement should be properly investigated and treated.

Widal test should be done along with the culture, which will help reinforce the diagnosis. Early diagnosis, surgical intervention and administration of appropriate systemic antibiotics play a pivotal role in successful treatment.

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