

Salmonella Paratyphi A Infection in a Child with Limp: an Incidental FindingSrishti Munjal¹, Ashitha P², Mrudul Randive³, Desma D'souza⁴, Sonam Todkar⁵, Dilip Turbadkar⁶¹Junior Resident, Department of Microbiology, Lokmanya Tilak Municipal Medical College & General Hospital, Sion, Mumbai 400022, India²Senior Resident, Department of Microbiology, Lokmanya Tilak Municipal Medical College & General Hospital, Sion³Associate Professor, Department of Microbiology, Lokmanya Tilak Municipal Medical College & General Hospital, Sion⁴Associate Professor, Department of Microbiology, Lokmanya Tilak Municipal Medical College & General Hospital, Sion⁵Lab Technician, Department of Microbiology, Lokmanya Tilak Municipal Medical College & General Hospital, Sion⁶Professor and Head of Department, Department of Microbiology, Lokmanya Tilak Municipal Medical College & General Hospital, Sion

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Conflict of interest: Nil

Abstract:

Salmonella is a common cause of fever, especially in pediatric age group. As most of the symptoms are non-specific, an evidence-based clinical diagnosis of enteric fever cannot be made. For confirmation of diagnosis, isolation of Salmonella species from blood, stool, urine, or other body fluids is required. Though bone marrow culture is the gold standard for diagnosis, blood culture remains the mainstay practically feasible method for diagnosis of enteric fever. The present case is a 5 year old child who presented primarily with fever, swelling over left knee and limps after a fall and was initially diagnosed clinically as transient synovitis. Subsequently Salmonella paratyphi A was isolated from blood culture during the second visit of the child to the hospital. The case highlights the importance of blood culture as a primary investigation in children with nonspecific presentation along with fever.

Keywords: Salmonella paratyphi A, nonspecific presentation, blood culture, enteric fever.

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Introduction**Case:**

A 5-year-old girl presented in the outpatient department with complaints of pain and swelling over left knee with inability to stand following a fall two days back. She subsequently developed fever and difficulty in weight-bearing. On general examination, the patient was febrile.

Local examination of the knee revealed swelling and tenderness on the left knee with normal range of motion and no neurovascular deficit. USG left knee and X-ray showed no local effusion and no bone involvement, respectively. A clinical diagnosis of transient synovitis was made. The patient was given oral antipyretics and was sent back home. After 2 days, the child again presented

to the emergency department, predominantly with complaints of fever, vomiting and passage of semi formed black coloured stools.

A detailed work up was done which included complete blood count, ESR and CRP. She had leukocytosis (WBC $11 \times 10^3/\mu\text{L}$) and a raised erythrocyte sedimentation rate (ESR 45 mm/hr), whereas CRP was normal, 2.5mg/L.

Blood sample was also sent for culture and sensitivity in BacT Alert Bottle to the department of Microbiology. Blood culture grew Salmonella enterica subspecies enterica serotype group A (S. paratyphi A) (Figure 1). Identification and confirmation of isolate was done using standard microbiologic techniques.

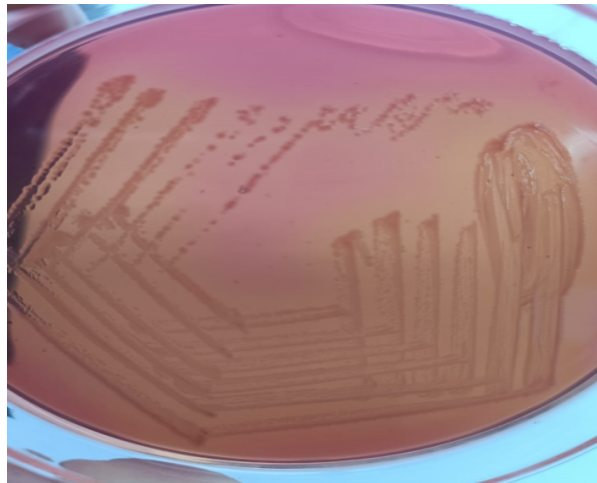


Figure 1: Macconkey agar showing non lactose fermenting colonies of similar morphology

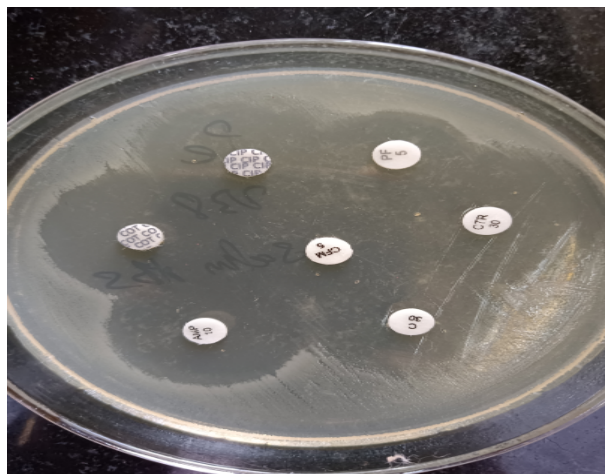


Figure 2: Mueller Hilton agar showing antibiotic susceptibility pattern

Antibiotic susceptibility testing as per CLSI guidelines (2023) showed that the isolate was susceptible to Ampicillin, Ceftriaxone, and Trimethoprim-Sulphomethoxazole and resistant to Ciprofloxacin (Figure 2).

No other samples for microbiological testing were received. The patient was treated with I.V. Ceftriaxone for 7 days following which she improved symptomatically. On discharge, the patient was prescribed oral cephalosporin (Cefixime) for 14 days along with bed rest and ice fomentation of the left knee.

Discussion

Transient synovitis is a part of the differential diagnosis in a young child presenting with fever and limp. Transient synovitis usually presents in children aged 3 to 10 years and may be preceded by a viral prodrome. The current case was clinically diagnosed as transient synovitis at the time of first presentation. However, at the time of second presentation, due to raised white blood cell count and ESR, there was a high index of suspicion for infective conditions. *Salmonella enterica* subspecies *enterica* serotype group A (*S. paratyphi*

A) was isolated from blood culture. No other sample was sent for culture.

Blood culture is the mainstay of diagnosis for *Salmonella* infection as it is widely available, inexpensive and not technically difficult. Though the bone marrow culture is the gold standard for typhoid diagnosis (due to the larger number of micro-organisms present in the bone marrow), the test is highly invasive and expensive and hence is not routinely used for the diagnosis of *Salmonella* infection [1] .

Enteric fever (EF) is a systemic infection caused by *Salmonella enterica* serotype typhi (*S. typhi*) or serotype paratyphi A, B, or C (*S. paratyphi* A, B or C). The clinical features are indistinguishable in both of them [2]. *S. paratyphi* A was thought to cause a smaller portion of EF cases in the past with *S. typhi* as the major problem worldwide.

Over the past decade, *S. paratyphi* A was shown to be an increasingly reported cause of EF worldwide. Surveillance reports over time showed an overall increasing trend in paratyphoid fever in South Asia and the East Asia and Pacific. Reports from India also showed an increasing incidence of EF due to *S.*

paratyphi A in many regions such as the urban slums at New Delhi, Mumbai, Nagpur, Kolkata, South India (Karnataka), and north India [4,5,6,7,8,9]. Most cases present with nonspecific symptoms and, often in outpatient settings, as also seen in the current case. Hence, an evidence-based clinical diagnosis of EF cannot be made.

An infective etiology was not suspected as the child presented initially only with fever and limp. However, at the time of second presentation, fever persisted in the child with development of vomiting and diarrhea, therefore a detailed work up was done and *Salmonella paratyphi A* was detected in blood culture which was successfully treated with a long course of cephalosporins.

This case re-emphasizes that blood culture should be a mandatory investigation particularly in children with varied presentation so as to rule out an infectious etiology.

Authors' Contribution

SM contributed in conceptualization, methodology, investigation and majorly contributed in writing this manuscript. AP contributed in conceptualization, methodology and investigation. MR contributed in conceptualization, validation, formal analysis, resources, visualization and supervision. DD contributed in conceptualization, validation, formal analysis, visualization and supervision. ST contributed in methodology and investigation. DT contributed in formal analysis, providing resources and supervision.

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