

## *Salmonella* Septic Arthritis of the Knee in a Child

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Citation: Yadav R, Nachiappan N, Yadav H (2014) *Salmonella* Septic Arthritis of the Knee in a Child. J Case Rep Stud 2(6): 601. doi: 10.15744/2348-9820.2.301

Received Date: June 27, 2014 Accepted Date: November 26, 2014 Published Date: December 03, 2014

### Introduction

Infection with *Salmonella spp* can result in a variety of presentations such as enteric fever, septicemia, gastroenteritis, and septic arthritis. The common organisms seen in septic arthritis are *Staphylococcus aureus* and *Streptococci* which accounts for about 67% and 20% respectively [1-3]. *Salmonella spp* however is less commonly seen in septic arthritis [1] and it is usually associated with immunosuppression conditions and underlying chronic debilitating diseases such as malignancy, hemoglobinopathy, diabetes mellitus, and HIV [4]. We report a case of septic arthritis in a healthy child caused by *Salmonella spp* in a hospital. A similar incidence of *salmonella spp* arthritis is reported in Africa [5-8].

### Case Summary

A 1 year 3 months old boy was referred to the tertiary hospital from a private medical centre with a low grade fever (38 °C) and unable to walk. There was no history of preceding trauma, no prior surgery, and no history of traveling recently. His immunizations status was normal and he had no prior illness. On admission, his temperature was 38 °C and his right knee was swollen and tender. Systemic examination was found to be normal and there was no concurrent infection of other sites. Initial X-ray and ultrasound of both knees showed no remarkable changes. Blood investigations showed increased in the white blood cells ( $7.4 \times 10^9$  L) and raised C-reactive protein (33 mg/L). He was initially treated with Cloxacillin and Gentamicin in the private medical centre for seven days. Since there was no response to the treatment he was referred to our tertiary hospital for further investigations of the septic arthritis. On admission to the hospital he was noted to have had six to ten episodes of diarrhoea with no associated vomiting. His fever persisted and he was treated symptomatically with an intravenous drip for the diarrhoea after admission. The Widal test was negative and the white blood counts increased to ( $10.15 - 22.43 \times 10^9$  L) and C-reactive protein increased to (58.54 mg/L).

The swelling of the right knee increased and he developed a fixed flexion deformity and he refused to bear weight. A repeat ultrasound was done and it showed a right suprapatellar haematoma with an intramuscular component possibly underlying the infection. Arthrotomy washout of the right knee was done under aseptic technique and 40 mL of straw coloured bloodstained fluid was removed. The synovial fluid was slightly turbid with few pus cells and a cell count of 250cells/mm<sup>3</sup>. Cultures of the synovial tissue yielded *Salmonella spp* susceptible to Cefuroxime. The blood, stool and urine cultures did not reveal any growth and his full blood picture did not reveal a sickle cell disease. The patients' symptoms improved following surgical drainage. He was given intravenous Cefuroxime for 7 days. Upon discharge, he was prescribed oral Cefuroxime to complete a 6-week course of therapy. He tolerated the therapy and C-reactive protein declined to 13.5 mg/L. He is currently under regular follow up and being reviewed for any permanent sequelae.

### Discussion

The *Salmonella* groups of bacteria are gram negative bacilli that can affect both humans and animals. The most common species is *Salmonella typhi* and it is seen in developing countries, and fever is the most common manifestation. It is well known that the infection can spread through the blood stream in any organ with or without suppuration. These infections at metastatic sites usually occur in patients with pre-existing disease such as haemoglobinopathies especially sickle cell disease [9-11].

Septic arthritis of the knee caused by *Salmonella spp* is rare in children [8]. *Salmonella* organisms are known to metastasize to other sites causing more than just gastroenteritis and enteric fever, but very few cases have been reported so far [6,7]. In most reported cases, *Salmonella* septic arthritis is either associated with immunodeficiency or related to endemic area of *Salmonella* infection [8]. However our patient had no significant illness since birth, nor was he immunocompromised and there was no concurrent infections at other sites that could have attributed to the metastatic infection. Although an organism specific antibiotic in sufficient dosage, decompression of the joint abscess is regarded as the main therapy in many cases we had to do arthrotomy because there was little improvement in symptomatic treatment. It is well known, however that arthrotomy or arthroscopy with lavage is still unresolved [12].

## Conclusion

Septic arthritis of the knee caused by *Salmonella spp* is rare in children. This case illustrates the importance of appropriate antibiotic therapy and adequate surgical drainage to ensure total eradication of the infection. However since gram-negative bacillary arthritis is known for its poorer prognosis compared to gram-positive joint infections [8], the duration of antibiotic therapy in this case was extended to six weeks.

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