



MULTI DRUG RESISTANT NON TYPHOIDAL SALMONELLA OSTEOMYELITIS IN A NON-SICKLE CELL PATIENT.

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KEYWORDS :

INTRODUCTION:

Salmonella causing bone and joint infections have been frequently reported. The majority of these infections occur in persons with pre-existing disease¹. The association between salmonella osteomyelitis and haemoglobinopathy, especially sickle-cell disease is well-known^{5,6}. Salmonella osteomyelitis is commonly caused by S.Typhimurium and S. typhi⁴. A chronic osteomyelitis by an unusual multidrug resistant Non typhoidal "Salmonella group E H" in a non-sickle cell patient is reported here.

Case report:

A 23 year-old-male presented with a five-year history of chronic, intermittent, pus discharge from the antero-medial aspect of the right distal thigh. He had a history of open fracture right distal femur following a road traffic accident five years back. He underwent debridement and trans-articular external fixator application on the same day of injury. After 8 days open reduction and internal fixation (Dual plating) was carried out as a definitive management. On 20th postoperative day he had noticed pus discharge from the wound for which he was treated with IV antibiotics for three weeks and followed by implant exit and debridement. The pus discharge was persistent and for the same, he underwent repeated debridement, (totally eight procedures) to eradicate the infection. However, his infection persisted. He had no other co-morbidities there was no past history of typhoid fever or gastrointestinal infection.

At the time of admission to our hospital after five years of injury, he had a fused right knee and 2 sinuses with sprouting granulation tissue, one on the antero-medial aspect and another one on the medial aspect of the right distal thigh, with active pus discharge, the area around the sinus showed discoloration. Radiograph of right femur with knee showed signs of chronic osteomyelitis of the distal third of the femur with sequestrum. Sinusogram showed sinus tract extending up to the medullary canal ending with a cavity. Preoperative laboratory studies included sickle cell prep (Specimen Type: EDTA blood; Analytical Method: Sodium metabisulphite reduction and Microscopy) which was negative, complete blood work up was normal and blood born viruses were non-reactive. The superficial pus culture sensitivity showed scanty gram-negative bacilli and Staphylococcus which was sensitive to most of the antibiotics.

The patient was taken to the operating room, the previous scar was used for medial approach to right distal femur and the sinus tract excised in toto- which was leading to cavity in right distal femur. The cavity saucerized & curetted thoroughly, small pieces of sequestrum, along with the infected soft tissue was sent for culture and sensitivity. 10 cc Stimulan(absorbable calcium sulfate) and mixed with 1gm of Vancomycin & 240mg Gentamicin and made into pellets and packed into the cavity, wound closed in a single layer with the suction drain in place.

The infected tissue and sequestrum grew Non-Typhoidal Salmonella group E H, which was susceptible only to azithromycin and cotrimoxazole.

Nalidixic Acid	Resistant
Co-Trimoxazole	Susceptible
Ampicillin	Resistant

Chloramphenicol	Resistant
Ceftriaxone	Resistant
Ciprofloxacin	Resistant
Gentamycin	Resistant
Amikacin	Resistant
(Piptaz)Piperacillin/tazobactam	Resistant
Tazobactam	Resistant
Imipinem	Resistant
Meropenem	Resistant
Amoxy/clauv	Resistant
Cefpodoxime	Resistant
Azithromycin	Susceptible

Post operatively he was started on Azithromycin for 6 weeks and Septran DS for six weeks. Drain was removed on 7th post op day, regular dressing was done, wound healed gradually with no residual problems.

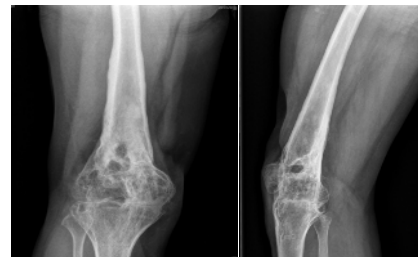


Figure 1a & b.

Radiographs of the knee and lower femur showing a cavity in the metaphyseal region of distal femur



Figure 2a & b. Sinusogram



Figure 3a & b.

Post-operative x ray of right knee with distal femur AP & LAT View



Figure 4a & b. Clinical picture

DISCUSSION:

The genus *Salmonella* is a member of the family Enterobacteriaceae, non-spore forming rod-shaped (bacillus) gram-negative bacteria. *Salmonella* was first visualized in 1880 by Karl Eberth in the Payer's patches and spleens of typhoid patients¹. The 3 most common strains of salmonella causing osteomyelitis are *Salmonella typhimurium*, *Salmonella typhi*, and *Salmonella enteritidis*, with *Salmonella typhi* being the only strain to be transmitted from human to human². *Salmonella* infections may present in 5 different clinical forms namely, gastroenteritis, enteric fever, bacteremia (without localized infection), focal disease (including soft tissue infection), and the chronic carrier state³.

The spectrum of extra-intestinal manifestations of salmonellosis remains ever changing. These infections often provide both a diagnostic and a therapeutic challenge. The emergence of multi-drug resistant salmonellae has led to therapeutic problems and an increased incidence of unusual manifestations.

Past history of salmonella infection was present in few cases reported recently⁷. Most patients with salmonella osteomyelitis may or may not grow the organisms from the feces, in those patients with negative stool culture have dormant organism in the asymptomatic reservoir, acting as an opportunistic bacteria waiting for the host defense to be suppressed⁷. *Salmonella* osteomyelitis is typically an infection of the diaphysis of the long bones. The most common bones involved are the femur and the humerus⁸.

There are very few cases reported in the literature in which salmonella osteomyelitis is seen in an otherwise healthy individual⁹. Jose A. Cobos reported salmonella typhi osteomyelitis in a 33-year-old non-sickle immunocompetent female patient⁷. Though the several outbreaks of gastroenteritis and neonatal septicemia by multidrug-resistant salmonella have occurred in India in recent times. But osteomyelitis by multi-drug resistant non-typhoidal salmonella in a non-sickle immunocompetent patient is rare.

The case presented in this report occurred in a young immunocompetent patient without underlying preexisting disease. Chronic *Salmonella* osteomyelitis has been treated conventionally by surgical debridement combined with antibiotics¹⁰. Carlson and Dobozi consider radical debridement of the lesion¹¹. In the current case the patient was managed with radical debridement, sinus tract excision, sequestrectomy, saucerization, application of antibiotics mixed bone Stimulan (absorbable calcium sulfate) and appropriate antibiotics for 6 weeks. The patient responded well to this treatment, wound healed completely with no discharge. However, the recurrence of osteomyelitis years after symptom-free period have been described. Therefore these patients are advised follow up periodically.

Multidrug-resistant non-typhoidal salmonella osteomyelitis in a non-sickle, immunocompetent, young adult patient in this case is noteworthy. Awareness of this unusual organism which is multi drug resistant is beneficial in the management of chronic infections.

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