Clinical Case Reports International

Case Report
Published: 12 Jun, 2023

Unusual Pathogen Causes Pediatric Osteomyelitis: A Case Report

Al-Hajjaj M[1], Matalqah H[2], Yaseen R[3], Matalkeh M[4], Matalkeh L[5] and Alswalha H[6]*

[1]*Department of Surgery, Aleppo University Hospital, University of Aleppo, Syria*

[2]*Orthopedic Surgery, King Abdullah University Hospital, Jordan*

[3]*Family Medicine, King Abdullah University Hospital, Jordan*

[4]*Jordan University of Science and Technology, Irbid, Jordan*

[5]*Ministry of Health, Irbid, Jordan*

[6]*Ministry of Health, Zarqa, Jordan*

Abstract

Osteomyelitis at a pediatric age is considered a serious disease that requires early diagnosis and treatment to avoid serious complications. In some children, it could be a challenge to detect underling pathogens. We present a rare case of a previously healthy female child who had acute osteomyelitis due to *Salmonella enterica*. A detailed past medical history demonstrated a previous gastroenteritis which was recovered with symptomatic treatment. Early starting with third generation of cephalosporin was the basic of treatment. Follow-up for three months clinically and radiological showed full recovery. Clinicians should suspect *Salmonella* osteomyelitis in patients who were healthy previously except transient gastroenteritis. Blood and stool culture is required to define the appropriate antibiotic.

Introduction

Osteomyelitis, defined as an inflammation of bone or bone marrow primarily caused by pyogenic bacterial organisms, is a serious infection in children that requires prompt diagnosis and management. Most cases of pediatric osteomyelitis are of hematogenous origin; however, the organisms might also reach the bone *via* direct inoculation or contiguous spread from adjacent tissues [1,2].

Salmonella in humans causes five distinct types of clinical infections. They can be categorized as enteric fever, septicemia without localization, focal disease, gastroenteritis, and the carrier state. *Salmonella* Typhi and Paratyphi are commonly associated with enteric fever and the carrier state. Non-typhoidal *Salmonella* serovars are associated with gastroenteritis [3].

As per literature, only 0.45% of all types of osteomyelitis are attributed to this organism. *Salmonella* osteomyelitis usually affects immunocompromised hosts and those with thalassemia or sickle cell disease [4,5].

Here, we report a rare case of healthy 10-year-old female who had acute osteomyelitis due to *Salmonella enterica*.

Case Presentation

A 10-year-old female patient presented to the emergency department because of right knee pain that started three weeks ago. This pain was mild, insidious, and bearable. Then, it gradually progressed to acute and unbearable with systematic symptoms such as mild fever and general malaise. The girl was healthy with no significant past medical history. Her mother mentioned that the girl had mild diarrhea 5 to 6 weeks prior, which was controlled with symptomatic medication. There was no history of trauma, night sweets, cough, or hemoptysis. She completed all her vaccinations for her age. On examination, there was tenderness and swelling of the right knee, with restriction of movement and erythematous. There was no drainage sinus or pus discharge. Examination of other systems was all normal. On admission, the patient's vitals were as follows: Temperature, 94°F; pulse, 94 bpm; respiratory rate, 26 breaths/min. Blood tests revealed a rise in leukocyte count to 18,000 cells/μL and an erythrocyte sedimentation rate of 90 mm/h. Other laboratories are shown in Table 1. Ultrasound

OPEN ACCESS

Correspondence:
Maher Al-Hajjaj, Department of Surgery, Aleppo University Hospital, University of Aleppo, Aleppo, Syria, Tel: +963954451103; E-mail: alhajjaj963@gmail.com

Received Date: *30 May 2023*
Accepted Date: *08 Jun 2023*
Published Date: *12 Jun 2023*

Citation:
Al-Hajjaj M, Matalqah H, Yaseen R, Matalkeh M, Matalkeh L, Alswalha H. Unusual Pathogen Causes Pediatric Osteomyelitis: A Case Report. Clin Case Rep Int. 2023; 7: 1560.

Table 1: Laboratory results.

Wight blood cell count	Hemoglobin	Platelets	Creatinine	CRP	Urea	Glucose	Na+	K+
18 × 10^5/ml	10.8 × 10^5 gr/dl	300 × 10^5/mcl	0.7 mg/dl	76	21 mg/dl	85 mg/dl	142 mEq/L	4.9 mEq/L

showed synovial thickening with soft-tissue edema in the right lower femoral epiphysis. We reached the diagnosis of acute osteomyelitis. We admitted the girl for fluid aspiration to decompress the effusion. We sent the fluid for analysis and culture. Blood culture, Widal test, and stool culture were simultaneously performed to search for foci of infection. Both the Widal test and stool culture were nonsignificant. At this point, we started with the third generation of cephalosporin with intravenous acetaminophen as per her weight. Fluid analysis and culture demonstrated *Salmonella* species, of the non-enteric variety.

Culture was sensitive to cephalosporin. We continued the treatment with ceftriaxone for three to five days. The patient regained her limb motion with minimal pain. On day 7 of admission, our patient was recovered clinically and in a laboratory. We discharged the patient on oral trimethoprim-sulfamethoxazole at 10 mg/kg/day for 4 weeks. Follow-up for three months showed a full recovery.

Discussion

Salmonella enterica is comprises of typhoidal strains (Serovar Typhi and Paratyphoid) and nontyphoidal strains. Bacteremia, which commonly occurs in enteric fever, can also happen in nontyphoidal gastroenteritis and that can lead to osteomyelitis. (BBB).

In children, hematogenous osteomyelitis primarily affects the most vascularized regions of the growing skeleton; i.e., metaphysis of the long bones, but the metaphyseal equivalents of flat bones are also prone to osteomyelitis. Lower extremities are involved in 75% of pediatric cases, of which the most common sites are femur, tibia, pelvis, and feet [6].

Salmonella osteomyelitis is a rare presentation documented in hospitals, constituting 0.8% of all *Salmonella* infections and only 0.45% of all types of osteomyelitis occurring especially in sickle cell disease patients and caused usually by nontyphoidal Salmonellae. In sickle cell patients, capillary occlusion secondary to intravascular sickling may devitalize and infarct the gut, permitting *Salmonella* bloodstream invasion thereby increasing the chances of osteomyelitis. Complement system and impaired opsonization have also been suggested to play a role [7].

Salmonella osteomyelitis in previously healthy children is uncommon. We had a rare case of no important past medical history in a girl presented with *Salmonella* osteomyelitis. A full work-up with fluid aspiration and blood culture confirmed the diagnosis. Fortunately, the culture revealed sensitivity to most classes of antibiotics. With the intravenous third generation of cephalosporin, we found an excellent response. At home, we continued treatment with oral trimethoprim-sulfamethoxazole to eradicate the disease completely.

Conclusion

Salmonella osteomyelitis is clinically and radiographically indistinguishable from osteomyelitis caused by other organisms. Awareness of uncommon causes of osteomyelitis is helpful. Treatment should be started as soon as possible.

References

1. Riise OR, Kirkhus E, Handeland KS, Handeland KS, Flatø B, Reiseter T, et al. Childhood osteomyelitis-incidence and differentiation from other acute onset musculoskeletal features in a population-based study. BMC Pediatr. 2008;8:45.
2. Castellazzi L, Mantero M, Esposito S. Update on the management of pediatric acute osteomyelitis and septic arthritis. Int J Mol Sci. 2016;17(6):855.
3. Bhavana MV, Inna P, Mahalingam A, Adhikary R, Aravinda A. Case report of pediatric osteomyelitis: a double whammy of unusual etiology and antibiotic susceptibility. J Orthop Case Rep. 2023;13(2):1-4.
4. Sanchez AA, Mazurek MT, Clapper MF. Salmonella osteomyelitis presenting as fibrous dysplasia. A case report. Clin Orthop Relat Res. 1996;330:185-9.
5. Miller SI, Da P. Salmonella species. In: Mandell GL, Douglas RG, Bennett JE, editors. Principles and Practice of Infectious Diseases. Pennsylvania: Churchill Livingstone; 2000. p. 2344-60.
6. Ahmadzadeh Amiri A, Sadeghi P, Jafari M, Mousavi Torshizi M. Isolated chronic osteomyelitis of fibula in a child: A case report. Int J Pediatr 2020;8(6):11403-7.
7. Rohilla R, Bhatia M, Gupta P, Singh A, Shankar R, Omar BJ. Salmonella osteomyelitis: A rare extraintestinal manifestation of an endemic pathogen. J Lab Physicians. 2019;11(2):164-70.