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Case Report

Case of left hip acute pediatric septic arthritis - polymicrobial etiology

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ABSTRACT

Septic arthritis is a true orthopedic emergency, involving a severe bacterial, viral, or fungal joint infection that triggers inflammation and the degeneration of joint tissues. It typically affects joints such as the knee, hip, shoulder, or wrist. Early diagnosis and treatment are crucial to avoid long-term complications. Herein, we describe the case of an 8-year-old male patient who presented with complaints of spontaneous onset of hip pain and an abnormal gait. The patient was diagnosed with left hip septic arthritis and underwent a left hip arthrotomy under general anesthesia (GA). The patient was administered intravenous antibiotics for 21 days while being kept on non-weight-bearing mobilization. After 3 weeks, the patient's intravenous antibiotics were switched to oral antibiotics for the next 3 weeks. On the second follow-up visit, the patient showed significant improvement, with laboratory findings within normal limits.

Keywords: Septic arthritis, MRSA, *Staphylococcus epidermidis*, *Staphylococcus lugdunensis*

INTRODUCTION

Septic arthritis (SA), often known as infectious arthritis, is a severe bacterial, viral, or fungal joint infection that triggers inflammation and the degeneration of the joint tissues. It typically affects joints such as the knee, hip, shoulder, or wrist. SA is a true orthopedic emergency which requires immediate treatment any delay may result in irreversible deformity. The most common causative organism of septic arthritis across all age groups has been *Staphylococcus aureus*.[1,2] Studies from India also show a higher rate of *S. aureus* infections in the joints with large numbers of MRSA.[3]

CASE REPORT

An 8-year-old male patient was brought to the emergency department presented with complaints of spontaneous onset of hip pain and abnormal gait. The pain was so severe that it was impossible to evaluate the range of motion of his left hip joint. Upon examination, it was found that the left hip was flexed, abducted, and externally rotated. Laboratory tests revealed elevated erythrocyte sedimentation rate (ESR) (32 mm/hour) and C-reactive protein (CRP) (54.58 mg/l) levels, while all other systems were found to be normal. Further imaging studies showed a moderate to gross left joint effusion with radiolucent loose body, leading to a diagnosis of left hip septic arthritis. Patent underwent left hip arthrotomy under GA, where patient was in supine position with both feet firm and secure and GA was given beginning incision was taken from tip of Asis and plain created between sartorius and tensor fascia latae, rectus femoris was divided and joint capsule was incised and 10 ml fluid was aspirated which was sent for culture sensitivity testing. The joint space was thoroughly irrigated with copious amounts of saline. Postoperatively the patient was continued on skin traction to prevent internal rotation and flexion of the hip Subsequent cultures revealed methicillin-resistant Staphylococcus epidermidis and Staphylococcus lugdunensis. The patient was administered intravenous antibiotics (injection teicoplanin and injection ceftriaxone) for 21 days, while being kept on non-weight-bearing mobilization. After 3 weeks, the patient's intravenous

antibiotics were switched to oral linezolid and levofloxacin for the next 3 weeks. On the second follow-up visit, the patient showed significant improvement, with laboratory findings within normal limits. The patient was able to bear weight fully and allowed to move freely.

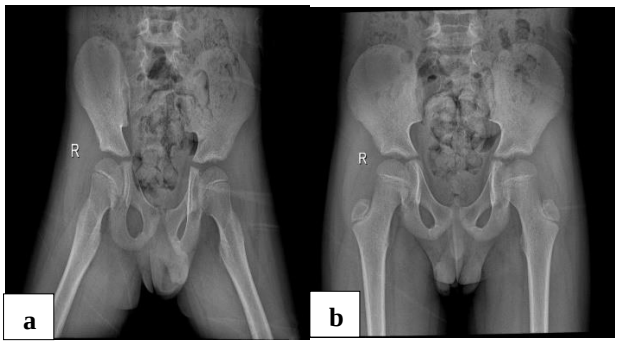

Figure 1: (a) and (b) X-ray hip (B/L)- frog leg view and X-ray pelvis – AP.

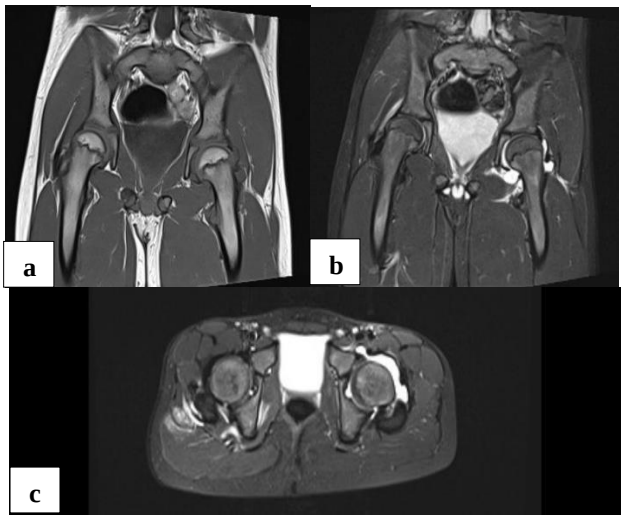

Figure 2: (a)-(c) MRI hip joint contrast.

DISCUSSION

Septic arthritis is a type of joint inflammation that occurs due to an infection, which can be bacterial, viral, or fungal. The most frequent cause of septic arthritis is bacterial infection with *Staphylococcus aureus* (staph). This condition can be very painful and can lead to permanent damage to the joint if not treated promptly and effectively. Early diagnosis and treatment are crucial to avoiding long-term complications. Septic arthritis can occur when an infection, such as a skin or urinary tract infection, spreads through the bloodstream to a joint. Thus, taking an accurate medical history is crucial for diagnosis. Septic arthritis is more prevalent among individuals with weakened immune systems, joint problems, or certain medical conditions. In children, hip joints are the most commonly affected area. Early diagnosis in pediatric patients can be challenging, and symptoms may show subtle signs of restlessness and poor appetite, such as inflammation, swelling, location-specific pain, and functional limitation.[4,5]

If septic arthritis is suspected, it is recommended to take synovial fluid for a complete blood count (CBC), glucose, Gram-stain, and culture. C-reactive protein (CRP) is a more sensitive septic arthritis marker than peripheral WBC count.[6] Approximately 90% of septic arthritis can be confirmed when at least one of the following conditions is present: WBC>12,000 cells/cmm, ESR>40 mm/hour, CRP>2.0 mg/dl, inability to bear weight, temperature >101.30 F.[7]

Treatment includes antibiotics and surgery to drain the fluid. Antibiotics are necessary in all cases of septic arthritis and can be administered through IV or orally. In most instances, surgical debridement of the inflammatory tissue and IV antibiotics are required. When clinical conditions improve and definitive sensitivities are obtained, switch to PO antibiotics. The current recommendation is to administer culture-specific IV antibiotics for two to seven days and then oral antibiotics for two to three weeks. Once the CRP or ESR has normalized, and the clinical picture has returned to normal, antibiotics should be terminated.[7]

Staphylococcus epidermidis and *Staphylococcus lugdunensis* are both coagulase-negative staphylococcus with significant pathogenic potential. In the treatment of infections caused by *Staphylococcus epidermidis*, oxacillin is usually effective, but methicillin-resistant strains necessitate intravenous vancomycin. However, in pediatric patients, there is a risk of nephrotoxicity, which requires continuous monitoring of renal function and trough levels.[8]

A study has shown that the penetration of antibiotics such as vancomycin, cefotaxime, and oxacillin into the biofilm of *S. epidermidis* is reduced.[9] Teicoplanin has a similar spectrum of activity to vancomycin; it is widely preferred over vancomycin due to its long half-life which helps to attain desired plasma level concentration with a single daily dose.[10,11]

Within a few days after surgery, range-of-motion exercises can be started for the affected joint. These exercises should be done daily and should be gentle and pain-free. Gradually increase the intensity of the exercises. The exercises should be done until the joint has regained its full range of motion.

Septic arthritis can be prevented by preventing infections, puncture wounds, and skin damage. Those with immune system disorders should pay attention to changes in joints and keep an eye out for signs of infection. Diabetes patients should keep track of wound healing on their feet and elsewhere since bacteria from these locations can transmit to their joints. Pests should be minimized and diseases should be treated as early as possible.[10]

CONCLUSION

Hip infections are a serious concern that demand prompt action to avoid further complications. Treatment options include antibiotics, joint replacement surgery, and debridement, but treatment protocols require a collaborative effort between orthopedic surgeons and infectious disease specialists. Physicians need to be vigilant for patients with risk factors for hip infections and consider appropriate diagnostic testing to achieve quick and accurate diagnoses.

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REFERENCES

1. Mathews CJ, Weston VC, Jones A, Field M, Coakley G. Bacterial septic arthritis in adults. The Lancet. 2010;375(9717):846-55.
2. Ross JJ. Septic arthritis of native joints. Infect Dis Clin. 2017;31(2):203-18.
3. Sreenivas T, Nataraj AR, Menon J. Acute hematogenous septic arthritis of the knee in adults. Eur J Orthop Surg Traumatol. 2013;23:803-7.
4. Al Saadi MM, Al Zamil FA, Bokhary NA, Al Shamsan LA, Al Alola SA, Al Eissa YS. Acute septic arthritis in children. Pediatrics Int. 2009;51(3):377-80.
5. Kariminasab MH, Shayesteh AM, Sajadi SM. Surgical intervention for treatment of septic arthritis in infancy and childhood; a retrospective study.
6. Pediatric Septic Arthritis: Background, Etiology, Epidemiology. Pediatric Septic Arthritis: Background, Etiology, Epidemiology. 2019. Available at: https://emedicine.medscape.com/article/970365-overview. Accessed on 13 June 2023.
7. Orthopedics BSMV. Hip Septic Arthritis - Pediatric - Pediatrics - Orthobullets. Hip Septic Arthritis – Pediatric. 2023. Available at: https://www.orthobullets.com/pediatrics/4032/hip-septic-arthritis--pediatric. Accessed on 13 June 2023.
8. McKamy S, Hernandez E, Jahng M, Moriwaki T, Deveikis A, Le J. Incidence and risk factors influencing the development of vancomycin nephrotoxicity in children. J Pediatrics. 2011;158(3):422-6.
9. Singh R, Ray P, Das A, Sharma M. Penetration of antibiotics through Staphylococcus aureus and Staphylococcus epidermidis biofilms. J Antimicrob Chemotherap. 2010;65(9):1955-8.
10. Ramos-Martín V, Paulus S, Siner S, Scott E, Padmore K, Newland P, et al. Population pharmacokinetics of teicoplanin in children. Antimicrob Agents Chemotherap. 2014;58(11):6920-7.
11. Sánchez A, López-Herce J, Cueto E, Carrillo A, Moral R. Teicoplanin pharmacokinetics in critically ill paediatric patients. J Antimicrob Chemotherap. 1999;44(3):407-9.

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