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Case Report

Osgood Schlatter disease with epiphyseal osteomyelitis, similar and simultaneous: a case report

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ABSTRACT

Osgood-Schlatter disease (OSD) is a condition in which inflammatory reaction happened the patellar tendon insertion on the tibial tuberosity, whereas osteomyelitis is a bone infection which can occur in any bone exposed to bacteria. Both Osgood-Schlatter and osteomyelitis share the same clinical manifestation such as pain and swelling. We present a case of OSD accompanied with epiphyseal osteomyelitis on the left knee. A 12 years old male coming with gradually increasing pain and swelling on the anterior aspect of the left knee. There was swelling and quadricep femoris muscle atrophy, tenderness and bony prominence on the left tibial tuberosity. Knee X-rays confirmed OSD on the left knee, while knee Magnetic resonance imaging (MRI) showed marrow changes on the left tibia epiphysis and patella, as well as increased intensity of patellar ligament, patellar fat pad, with surrounding edema. He was given broad spectrum antibiotic, non-steroid anti-inflammatory drugs (NSAIDs), and physiotherapy to improve the quadriceps, hamstring, and gastrocnemius muscle. Patient's Visual analogue scale (VAS) score and knee range of motion improved after several weeks. It was believed that repetitive trauma and inflammation which cause OSD, could also cause epiphyseal osteomyelitis due to its nidus site of infection. The colonization can be promoted by prior inconsequential trauma that causes metaphyseal hematoma, which could explain the appearance of both Osgood-Schlatter and epiphyseal osteomyelitis in this presented case. Thorough examination is needed in diagnosing patient with OSD accompanied with osteomyelitis.

Keywords: Osgood-Schlatter disease, Osteomyelitis, Knee, Magnetic resonance imaging

INTRODUCTION

Osteomyelitis is a bone infection which can occur in any bone exposed to bacteria. The most common type of osteomyelitis in children is hematogenous osteomyelitis.[1] It is considered to be an acute process if the symptoms have lasted less than two weeks.[2] Hematogenous osteomyelitis can be a focal complication of clinically symptomatic bacteremia or even septicemia, the infection can be caused by inconsequential trauma that causes a metaphyseal hematoma.[1] The organism responsible for the bone infection in children were carried by the blood stream until they reached what is called as the finer capillaries of the juxta-epiphyseal region of the long bone, the capillaries adjacent to the growth plate in its metaphyseal side are the last ramifications of the nutrient artery, then reach a system of large sinusoidal veins responsible with haemopoietic activity of the bone marrow.[3] In the first 18 months of life there is a communication between the epiphyseal and metaphyseal vessels, epiphyseal extension can cause destruction of the epiphyseal cartilage and secondary ossification center and also can affect the cells

of the germinal zone of the physis ,which ultimately result in permanent growth disturbance.[1,2]

Osgood-Schlatterdisease (OSD) also called Lannelongue's disease is a condition in which the patellar tendon insertion on the tibia tuberosity becomes inflamed.[4] Chronic tensile stress within the growth plate leads to irritation and inflammation. Inflammation results from small injuries to the growth plate with repetitive use before closure of the epiphysis, causing traction injury and micro avulsion of the tubercle.[5,6] OSD is a well-known condition in late childhood, which is self-limited and resolves at the end stage of skeletal growth. Boys likely to be affected more than girls, and usually affect second decade of life (10-15 years in boys and 8-12 years in girls).[4] Early stages of OSD patient may have pain on the tibia tuberosity which is exacerbated by physical activities. Knee extension against resistant and other sports related activities may worsen the symptoms.[4]

Osteomyelitis and OSD are two distinct disease entity which can mimic each other and lead to misdiagnosis, since they share the same clinical manifestation such as pain and swelling, however both of them can occur simultaneously which will make clinicians more confused to reveal the nature of the disease.[4-6] We present a case of OSD accompanied with epiphyseal osteomyelitis on the left knee.

CASE REPORT

A 12 years old male came with gradually increasing pain and swelling on the anterior aspect of the left knee, with history of unknown spiking fever for 7 days ago. The pain was aggravated when he crouches down or when he kneels, a hard lump was also noticed in the pain region. The pain was relieved by resting his knee in the extended position. History of trauma was denied, no prior knee problems observed, neither medical nor surgical history ever experienced, he is an active kid who loves to play soccer frequently for 1 year ago. The patient denies any history of feeling the knee like it is giving away or locking.

Figure 1: Patient's knee appearance.

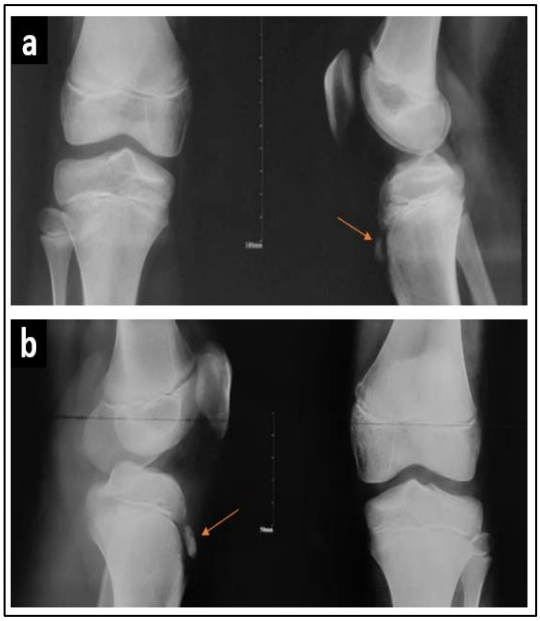

Figure 2: X-ray (antero-posterior and lateral view) of right (a) and left (b) knee of the patient. There is a bone fragmentation (arrow) anterior to the tibia tuberosity with soft tissue swelling.

Figure 3: Magnetic resonance imaging (MRI) of the knee of the patient in T1-weighted sagittal and coronal (a), and T2-weighted sagittal and axial (b).

On physical examination there was swelling and quadricep femoris muscle atrophy, tenderness and bony prominence on the left tibial tuberosity (figure 1). There was limited range of motion on the left knee, with positive Ely test. Knee X rays confirmed OSD on both knees (figure 2),

while on knee Magnetic resonance imaging (MRI) (figure 3) there was marrow changes on the left tibia epiphysis and patella, as well as increased intensity of patellar ligament, patellar fat pad, with surrounding edema. Hence, he was diagnosed with OSD and epiphyseal osteomyelitis on the left knee. His laboratory result showed no abnormality.

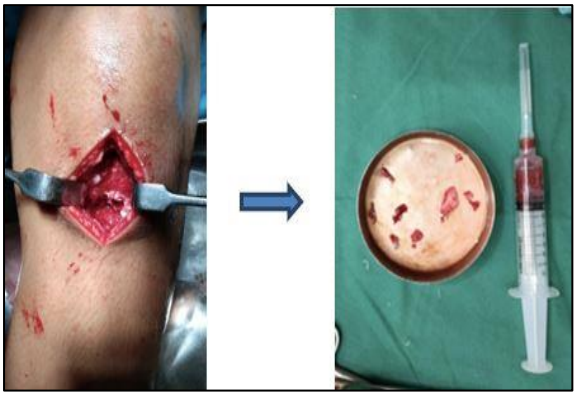

Figure 4: Surgical debridement and sample collection for histopathologic examination.

Figure 5: X-ray (antero-posterior and lateral view) of left knee after several months.

Surgical debridement was planned and done successfully, subsequently histopathology result showed chronic suppurative inflammation and support the diagnosis of osteomyelitis on the left tibia epiphysis. (Figure 4) He was given broad spectrum antibiotic, NSAID, and physiotherapy to improve the quadriceps, hamstring, and gastrocnemius muscle. The culture result was not reliable since he was already started with antibiotic, yet his condition got better after several weeks with improved range of movement of the knee, improved Visual analogue scale (VAS) score, and improved clinical condition in general. Knee x-ray follow up was ordered and showed neither apophysitis nor soft tissue swelling observed (figured 5).

DISCUSSION

The etiology of OSD was repetitive trauma and inflammation, while bacteremia is the responsible mechanism of action for epiphyseal hematogenous osteomyelitis in children.[1,6] These two disease has two different mechanism and mimics each other yet also appear together and correlates one and another due to its nidus site of infection, that is the valve less sinusoidal loops of the venules at their reflection at the epiphysis and is attributed to slow and nonlaminar blood flow through this vascular bed.[2] The colonization can be promoted by prior inconsequential trauma that causes metaphyseal hematoma, which could explain the appearance of both OSD and epiphyseal osteomyelitis in this presented case.[7] His laboratory result showed no significant abnormality, which might be caused by the medication for his fever that has last for 7 days.

The appropriate management for osteomyelitis is a combined both medical and surgical therapy.[8] It is the duty of orthopedic surgeon to collect specimens that establish the cause of osteomyelitis and to provide drainage and debridement of the acute infection when abscess is present and dead tissue removal, while the pediatrician should supervise antibiotic therapy and monitor the clinical response.[9] Once the culture results are available, antibiotics can be targeted more specifically to the causative pathogen. Duration of therapy in children is typically 3-6 weeks.[1,10] Both surgical and medical approach using broad spectrum antibiotic were done for this patient with good satisfaction of improvement. Physiotherapy was also planned for him to improve the quadriceps, hamstring, and gastrocnemius muscle which atrophied due to long term immobilization.

CONCLUSION

Thorough examination is needed in diagnosing patient with both mimicking conditions such as in this presented case, to decide the appropriate treatment and the need of surgery which could improve patient's morbidity. Conventional x-ray is really good in diagnosis OSD, however not so much when it comes to osteomyelitis. Pain and swelling are the common manifestation for both diseases, while on knee x-ray only OSD was confirmed, indeed the clinician's analysis matters most to order more advanced study for further diagnosed or exclude a diagnosis. MRI plays significant role in diagnosing osteomyelitis and determine the next step for the orthopedic surgeon to do the surgery and solve a patient's knee.

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REFERENCES

1. Street M, Puna R, Huang M. Pediatric acute hematogenous osteomyelitis. J Pediatr Orthop. 2015;35(6):634-9.
2. Hatzenbuehler J, Pulling TJ. Diagnosis and Management of Osteomyelitis - American Family Physician. Am Fam Physician. 2011;84(9):1027-33.

3. Trueta J. The Three Types of Acute Haematogenous Osteomyelitis. J Bone Joint Surg Br. Epub ahead of print 1959;41(4):671-80.
4. Gholve PA, Scher DM, Khakharia S. Osgood Schlatter syndrome. Current Opinion in Pediatrics. 2007;19(1):44-50.
5. Longjohn DB, Zionts LE, Stott NS. Acute hematogenous osteomyelitis of the epiphysis. Clin Orthop Relat Res. 1995;316:227-34.
6. Nührenbörger C, Gaulrapp H. Osgood-Schlatter disease. Sport Orthop Traumatol. 2018.
7. Yamagishi Y, Togawa M, Shiomi M. Septic arthritis and acute hematogenous osteomyelitis in childhood at a tertiary hospital in Japan. Pediatr Int. 2009;51(3):371-6.
8. Maffulli N, Papalia R, Zampogna B. The management of osteomyelitis in the adult. Surgeon. 2016;14(6):345-60.
9. Birt MC, Anderson DW, Bruce Toby E. Osteomyelitis: Recent advances in pathophysiology and therapeutic strategies. Journal of Orthopaedics. 2017;14:45-60.
10. Fritz JM, McDonald JR. Osteomyelitis: Approach to diagnosis and treatment. Phys Sportsmed. 2008;36:50-4.

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