

**EARLY OSTEOMYELITIS WITH INFRAPATELLAR BURSTITIS OF LEFT KNEE – A
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ABSTRACT

Introduction: Osteomyelitis is the inflammation of bone caused by infection, generally in the legs, arm or spine. Infrapatellar bursitis is inflammation of the infrapatellar bursa. Signs and symptoms include fever, chills, pain, tenderness, redness and warmth in the infected area. The diagnosis of osteomyelitis and infrapatellar bursitis still depends on physical examination, blood tests including (ESR, CRP, CBC), imaging studies including (X-rays, CT scans, MRIs) and bone biopsy. Treatment for osteomyelitis includes antibiotics, pain suppressing medications, or surgery and the treatment for infrapatellar bursitis include rest, hot or ice compression, anti-inflammatory and pain medications. **Case report:** This is a case report of an early osteomyelitis with infrapatellar bursitis of left knee in a child where, a five year old boy, presented with prolonged fever, cough, pain in left leg and swelling. He was fully investigated and was treated with antibiotics and pain suppressing medication. **Conclusion:** Any child with suspected osteomyelitis should have to receive prompt diagnosis and early initiation of antibiotics and pain suppressing medications are of utmost importance in preventing further complications.

KEYWORDS: Osteomyelitis, Infrapatellar bursitis, Infection, Antibiotics.**BACKGROUND**

Osteomyelitis is an infection that can cause throughout any age group.^[1] It is a bacterial infection commonly caused by Staphylococci and Streptococci with the progressive inflammatory destruction of bone and bone marrow. Infection in the bone leads to exudate formation and resulting in soft tissue abscess formation. This causes impairment of blood flow, producing a dead piece of bone, which then later separates from the healthy bone. The symptoms of osteomyelitis may vary. In children, osteomyelitis symptoms may include pain or tenderness over the affected bone, fever, chills and redness at the site of the infected area. In adults, the symptoms include fever, chills, swelling or redness over the infected bone, drainage of pus and stiffness.^[2] Infrapatellar bursitis is inflammation of the infrapatellar bursa. Infrapatellar bursa can be found in between patellar tendon and upper front surface of the tibia or shin bone. It mainly helps in the movement by lubricating the tendon as it moves over the bone. Symptoms may include knee pain, swelling and redness. Around 80% of osteomyelitis cases develop because of an open wound.^[3]

Osteomyelitis can be more common in the long bones of the arms and legs in the case of children. Though, any of the bone in the body can also be affected. Children with any age group can be affected by osteomyelitis. However,

children under 5 years are affected half of the times. Osteomyelitis occurs when a bacterial infection spread from another part of the body to the bone. Infection affected in the blood is a common cause of osteomyelitis in children. The main reason is the high amount of blood supply in the child's growing bones. This could help bacteria to get involved in bones easily. Osteomyelitis can also happen from the infection that can cause from nearby soft tissue or from a wound. Staphylococcus is the most common caused bacteria in children that result in osteomyelitis. If left untreated, the infection can become chronic and finally results in the loss of blood supply to the affected bone.^[2]

The annual incidence of osteomyelitis is 1:5000 in children younger than 13 years of age, and most of them are younger than 5 years of age.^[1] In western countries, acute osteomyelitis represents a rare disease in children.^[4]

The diagnosis of osteomyelitis begins with a complete medical history (which includes past medical history, medication usage and family medical history) and physical examination (will look for areas of tenderness, redness and swelling). Several blood tests help determine if there is an infection present or not. These include a complete blood count (CBC), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) and blood

cultures.^[2] Certain imaging studies can help identify changes in the bones that occur with osteomyelitis. These can include X-rays, CT scans, MRIs and ultrasounds.^{[4][5]} A bone biopsy help determine precisely which bacteria are involved and the culture of this can indicate the best choice for antibiotic treatment.^[1]

The main goal of therapy was to eliminate the infection. Antibiotics and pain suppressing medications effectively treat osteomyelitis. The duration of treatment of osteomyelitis with antibiotics is usually 4 to 8 weeks but it may vary with the type of infection and the response to the treatments.^[5] More serious or chronic osteomyelitis requires surgery to remove the infected tissue and bone and further prevents the infection from spreading.^[4] Treatment in acute cases of infrapatellar bursitis includes rest, hot or ice compression, and elevation (RICE therapy) with medications like non-steroidal anti-inflammatory drugs. At the time when hot or ice packs and anti-inflammatory drugs are unproductive, knee bursitis needs aspiration of the bursa fluid or a local cortisone injection.^[3]

In this report, we present a case of an early osteomyelitis with infrapatellar bursitis of left knee in a child. The

patient medical history and the management of the case are presented.

CASE REPORT

A 5 year old male patient with 24 kg weight and 120cm height was admitted in pediatric orthopedic centre with the chief complaints of h/o fever and cough of 2 weeks duration followed by pain in left leg and swelling. On general examination the patient was febrile (39°C), conscious, oriented, and his other vitals were found to be normal. High rates of creps and wheeze have been heard during systemic examination respiratory system. He had a medical history of lower respiratory tract infection one month ago.

Laboratory examinations had revealed the presence of leukocytosis(17390cells/cmm), lymphocytopenia(10%) and severe neutrophilia(86%). Increased ESR(30mm/hr) and CRP(4.0mg/L) levels revealed the presence of inflammation. Elevated LDH(326U/L) level revealed the presence of tissue damage. During the time when MRI conducted on left leg knee, it showed an early osteomyelitis and left infrapatellar bursitis.

Table 1: Laboratory findings details.

Clinical parameters	Day 1	Day 3
HB (gm/dl)	13.9	13.8
WBC (cells/cmm)	17390	15350
N (%)	86	68
L (%)	10	26
PLATELET COUNT (L/mm ³)	257000	257014
ESR (mm/hr)	30	24
CRP (mg/L)	4.0	1.9
URIC ACID (mg/dl)	4.7	4.8
LDH (U/L)	326	300
SGOT (U/L)	15	15

Treatment Given

Since the patient had early osteomyelitis, the main goal of therapy was to eliminate the infection. Antibiotic therapy with a combination of broad spectrum antibiotics was given to attain the same. Treatment was initiated with Inj. Piperacillin-Tazobactam 2.4gm Q8H followed by Inj. Linezolid 250mg Q8H, Syp. Dolopar 5ml Q6H and Syp. Asthalin 5ml Q8H. Supportive therapy for symptomatic relief was also given. Hot fomentation and Genim liniment for local application twice daily were given for curing pain and inflammation in the bursa. On day 3, fever and leg pain was reduced and acute phase reactants including erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) decreased at the end of the first week. The patient was discharged from the hospital with T. Linezolid 600mg ½ tablet Q8H and the treatment should be continued for 6 weeks.

DISCUSSION

Osteomyelitis is a well known disease, usually associated with open fractures or soft tissue infection (after a long

period of infection through blood transmission).^[6] It is generally classified as acute or chronic based on its histopathological findings, rather than the duration of the infection. Acute osteomyelitis is associated with inflammatory bone changes caused by pathogenic bacteria and the symptoms usually presents within two weeks after infection. Whereas, chronic osteomyelitis is characterised by the presence of bone destruction and formation of sequestra which typically presents at six or more weeks after bone infection. Acute osteomyelitis becomes chronic in 10% to 30% of patients.^[7]

Mostly, osteomyelitis are diagnosed in the long bones, involvement of the patella is rarely diagnosed. In children with osteomyelitis of the patella, knee pain can range from mild to severe associated with swelling and restriction of joint movement. Even though, patellar osteomyelitis which could result in growth disturbances are uncommon, there is a feared complication of spreading into other parts of the skeleton or local intrusion into the knee joint with subsequent purulent

arthritis. Considerably, knee pain can be caused from infrapatellar bursitis. Pain can also result from the infection or inflammatory disease of deep infrapatellar bursa. Localised tenderness and thickening of the soft tissues can be caused from the inflammation of deep infrapatellar bursa. Also, continued mechanical annoyance of an inflamed bursa can open into fibrosis and calcification.^[3]

Osteomyelitis commonly happens as secondary to a contagious infection through a trauma or surgery. Here although the patient does not have history of surgery, the age can be considered as an important factor as the symptoms of osteomyelitis is commonly higher among young children of age 5-15. Among that the affected rate is twice in boys compared to girls. This age group, osteomyelitis commonly occurred by haematogenous spread of infection with an occult source.^{[2][5]}

Early diagnosis and treatment of osteomyelitis is of the utmost importance because of the dreadful complications that can occur during the acute phase of illness. Complications include bone abscess, bone necrosis, spread of infection, inflammation of soft tissue and blood poisoning. Among the poor children in the rural population osteomyelitis is a common disease, especially in India. Re-occurrence of bone infection is the very common problem which can be found in children who has infected with osteomyelitis.^[2]

In osteomyelitis, it is very important to start treatment as early as possible, it will help to reduce the risk of complications. The drug of choice will be antibiotics and pain suppressing medications effectively treat osteomyelitis. The duration of treatment of osteomyelitis with antibiotics is usually 4 to 8 weeks. The antibiotics commonly used are beta-lactams, penicillin derivative, fluoroquinolones, rifampicin, and glycopeptides. In severe condition of osteomyelitis requires surgery to remove the infected tissue and bone and further prevents the infection from spreading.^{[2][5]} Here, the patient was given with parenteral antibiotics Piperacillin-Tazobactam 2.4gm Q8H and Linezolid 250mg Q8H to prevent bacterial infections. For curing pain and inflammation in the bursa Hot fomentation and Genim liniment for local application twice daily were given. Treatment should be continued for 7 days, until the patient become afebrile and the symptoms subside. And at the time of discharge Inj. linezolid 250mg Q8H converted to T. Linezolid 600mg ½ tablet Q8H to be continued for 6 weeks.

CONCLUSION

Osteomyelitis is an infection of bone with momentous morbidity and higher rate of recurrences. The symptoms of osteomyelitis may vary. Commonly seen symptoms are fever, pain, swelling, warmth and redness over the area of the infection.^[5] It is necessary to identify and resolve the predisposing factors which can lead to osteomyelitis. Prompt diagnosis and early initiation of antibiotics and pain suppressing medications are of

utmost importance in preventing further complications. In severe condition requires surgery to remove the infected tissue.^[2] Selection of antibiotic therapy should be based on culture and susceptibility results. In absence of such information broad spectrum, empiric antibiotics should be given. Commonly used drugs are beta-lactams, penicillin derivative, fluoroquinolones, rifampicin, and glycopeptides. The duration of antibiotic therapy is usually 4 to 8 weeks. It is necessary that patient should keep a regular follow-up to check over the prognosis and aid in the prevention of further complications.^[5]

ABBREVIATIONS

HB- Hemoglobin, WBC- White Blood Cells, L- Lymphocytes, N- Neutrophils, CBC- Complete Blood Count, CRP- C- Reactive Protein, ESR- Erythrocyte Sedimentation Rate, LDH- Lactate Dehydrogenase, SGOT- Serum Glutamic Oxaloacetic Transaminase, CT scan - Computed Tomography Scan, MRIs – Magnetic Resonance Imaging, RICE therapy - Rest, Ice, Compression and Elevation.

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REFERENCES

1. Serkan Sipahioglu, Huseyin Askar and Sinan Zehir. Bilateral acute tibial osteomyelitis in a patient without an underlying disease: a case report. *Journal of Medical Case Reports*, 2014; 8: 388. doi:10.1186/1752-1947-8-388.
2. Keerthana C, Indu TH, Ganeshamoorthy J, Sivasankaran P. A case report on chronic osteomyelitis of the right tibia in a pediatric male patient and its management. *Int J Health Allied Sci*, 2017; 6: 184-6.
3. Mantu Jain, Manmatha Nayak, Sajid Ansari, Bishnu Prasad Patro. Infrapatellar bursitis presenting as a lump. *BMJ Case Rep*, 2021; 14: e243581. doi:10.1136/bcr-2021-243581.
4. MatthiasSperl, MichaelNovak, DanielaSperl, MartinSvehlik, GeorgSinger, and TanjaKraus. Osteomyelitis of the Patella in a 10-Year-Old Girl: A Case Report and Review of the Literature. *Case reports in orthopaedics*, 2017.
5. Kamakshi SS, Naik V, Vittal K, Shriyanka R. Chronic suppurative osteomyelitis: A case report. *J Adv Clin Res Insights*, 2016; 3: 220-223.
6. Li Chen, Huibao Hou, Liren Zhang and Qi Pan. Refractory chronic osteomyelitis of femur: A case report. *Medical Case Reports and Reviews*, 2020. doi: 10.15761/MCRR.1000153.
7. Chuah S K, Bajuri M, Mohd Nor F (June 28, 2019) Chronic Osteomyelitis Revisited: A Case Report. *Cureus*, 11(6): e5023. DOI 10.7759/cureus.5023.