



A Case Report: Chronic Hematogenous Femoral Shaft Osteomyelitis in a Seven Years Old Child due to Pneumonia

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Abstract: Osteomyelitis in children is a serious disease requiring early diagnosis and treatment to minimize the risk of sequelae. Therefore, it is of primary importance to recognize the signs and symptoms at the onset properly. Otherwise, it could lead to a chronic osteomyelitis which treatment is always a challenge to orthopaedic surgeons and requires great dedication and perseverance. We present a case of Chronic Osteomyelitis and MRSA of a 7-year old girl that have no prior injury in her limb with penicillin resistance *S. aureus* of a 7-year-old girl due to prior infection in her lungs and with a contracture of lower limbs.

Keywords: Chronic Hematogenous Osteomyelitis, Children, Bone Infection, Debridement, Sequestrectomy

I. INTRODUCTION

Osteomyelitis is an infection of the bone that starts from trabecular areas. This infection could also invade the bone marrow, cortex, periosteum, and could lead to bone defect. Approximately 75% of osteomyelitis is caused by gram-positive *Staphylococcus* that arise from blood vessels or from adjacent soft tissues. The most common bacteria which causes osteomyelitis are *S. aureus* and *S. epidermidis*. Bone biopsy remains the Gold Standard for starting treatment. Biopsy may determine the most sensitive antibiotics, besides to detect MRSA (*Methicillin Resistant Staphylococcus aureus*) or MRSE (*Methicillin Resistant Staphylococcus epidermidis*) as early as possible to eliminate further complication (Kadam, 2013).

Some areas have shown higher incidence of antibiotic resistance for osteomyelitis than the other. Lack of antibiotics regulations have resulted in an increased number of antibiotics abuse, leading to greater transmission and antibiotics resistance. As a result, some developing countries have a high prevalence of MRSA incidence, it is common for hospitals in Asia to be MRSA endemic. In early 2010s, the estimation of hospitals with MRSA endemic were 28% in Indonesia and Hong Kong and 70% in South Korea (Chen & Huang, 2014).

In 2016 a research from Dr. Soetomo Academic General Hospital Surabaya -- teaching hospital in Indonesia, showed 8% of all surgery patients suffered from MRSA (including the inpatients). From the results, there is a continuous increase of numbers of MRSA patients within Hospitals in Indonesia (Adityawardhana & Bayusentono, 2020).

Children with acute osteomyelitis in developing countries often came too late to be treated, due to lack of parental awareness or reachable medical facilities. Not only chronic osteomyelitis that had worsened with multiple antibiotics resistance reported, but also it is also hard to differentiate between osteomyelitis and malignancies. This issue causes chronic osteomyelitis in developing countries bound to happen (Spiegel & Penny, 2005).

2. CASE REPORT

A 7-year-old girl complained that she cannot bend her right knee for 4 days. It is reported that the patient did not want her right knee region to be touched because it would escalate the pain resulting limited range of movement. The pain decreased when she didn't move her right knee. She has a history of swelling in her right leg following a pneumonia 4 years prior to the examination. The patient was finally brought to the hospital, physical examination and radiological examination were performed.

There is a wound on the medial side of distal femur which sometimes oozing yellowish or a thick white but odorless fluid. The wound emerge approximately 1 year ago. There are pus in the wound and shortening deformity, limited range of motion which has 0-30° in active genu flexion, 0-35° in passive genu flexion, 0° in both active and passive genu extension. The apparent leg length are 72 cm in right side and 74 in left side, whereas the true leg length are 57 cm in right side and 59 cm in left side. The anatomical femur length are 24 cm in the right side and 26 cm in the left side (Figure 1 A-D). There are leukositis and *Staphylococcus aureus* in pus culture which resistance to Penicillin G. In radiological examination there are bone destruction, kloaka, and bowing bone.

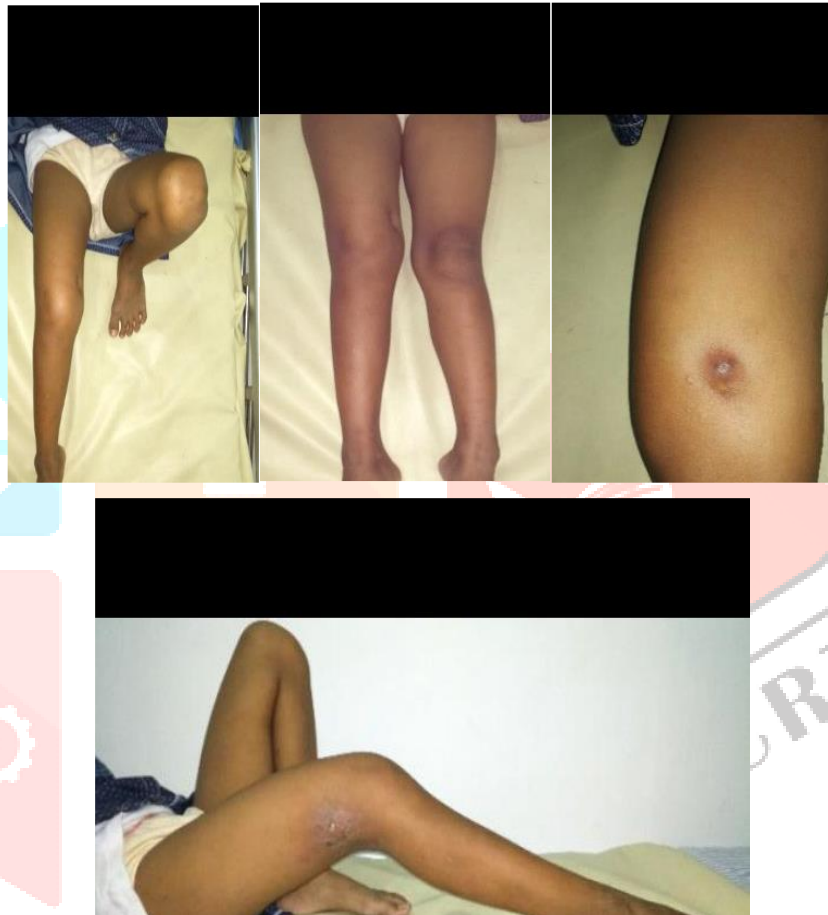


Figure 1 A. AP view of maximum bended knee; B. Leg length discrepancy; C. Wound that emerge in medial side of the knee; D. Lateral view of bended knee



Figure 2 A. AP/Lateral view plain X-ray of the knee before admission; B; Ap/lateral view of plain xray of femur

The patient was given an i.v. Cloxacilin 4 x 250mg for 28 days. Debridement and sequestrectomy was performed, followed by backslab usage for 1 month. The patient had evaluated for 1 month, 3 months, and 1 year post-op. She no longer had any issues in its daily living activities. A lower limb leg-length discrepancy is present due to the contracture and angulation of the femur.



Figure 3 Post Operative Surgery Clinical Appearance

3. DISCUSSION

Acute hematogenous Osteomyelitis (AHO) which can cause extensive bone necrosis, sequestra formation, and, ultimately, bone deformity lead to chronic osteomyelitis. There are a study that report 19% of children with AHO who received antibiotics for 3 weeks or less, suffer from chronic infection, and 2% for those who receive more than 3 weeks treatment (Spiegel & Penny, 2005). The patient were not treated for the swelling in her right knee following a pneumonia 4 years ago. In this case, the patient's complaint was indicating the presence of chronic osteomyelitis infection, where the incidence of infection has lasted for 4 years. Without history of trauma and open wounds, this case indicating that the pathogenes enter into the femur through the bloodstream. This matter indicates inadequate treatment of the previous infection because of unawareness of the patients and family and limited resource on local health facility.

From pus culture examination, we found the bacteria was: penicillin G antibiotics resistant Staphylococcus Aureus, so we can treat the patient with another group of penicillins, for example cloxacillin, therefore in this patient given pasien cloxacillin at a dose of 4 x 250 mg (Zhu et al., 2020). The debridement and sequestrectomy was performed to prevent sequellae and refractory infection, the antibiotic then administered for 4 weeks and then continued with oral cefixime at a dose of 2 x 25mg and evaluated

at 1 month, 3 months and 1 year. There had been no complaint of pain, swelling or seropurulent discharges throughout the last 3 months although a lower limb leg-length discrepancy is present due to the contracture and angulation of the femur.

4. CONCLUSION

Thorough and intensive education plays an important role for the patient and patient's family to achieve comprehensive understanding of the disease. For some cases in which the diagnosis is not yet confirmed, complete and accurate treatments are supposed to prevent bone necrosis, later contributing to the formation of irreversible leg-length discrepancy and limited range of movement with the result that permanent limited daily functions.

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