

CASE REPORT**Neglected paediatric open fracture resulting in osteomyelitis.**

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Introduction

Chronic osteomyelitis, despite many definitions, depicts a progressive inflammatory process caused by pathogens, resulting in bone destruction and sequestrum formation. In osteomyelitis associated with open fractures, the tibia is the most common site of infection, due to lack of muscle coverage and limited vascular anastomosis [1]. In 80% to 90% of the cases of culture-positive pyogenic osteomyelitis, *Staphylococcus aureus* is the responsible pathogen [2]. The bacteria express cell wall proteins that bind to components of the bone matrix such as collagen, which then facilitates the adherence of the bacteria to bone. Once bacteria bind to bone, acute inflammation occurs. Subsequent oedema and oxidative enzymes released by immune cells may then cause necrosis of the bone tissue [3].

Clinical manifestation includes local bone pain, poor wound healing, fracture non-union, erythema, pus discharge and swelling. Treatment of osteomyelitis usually requires long-term antibiotic therapy. In chronic or complicated cases, surgical debridement and other surgical procedures is necessary [1].

Patient description

A 14-year old boy was brought to the Emergency Room of Haydom Lutheran

hospital in Tanzania, presenting with a pathological fracture of the proximal part of the right tibia. The boy had obtained the fracture 8 weeks prior to admission, after an accident while playing. The family had chosen to treat the fracture at home unsuccessfully, and now the boy presented with an open and infected fracture. The first clinical evaluation revealed generalized pain of the right leg as well as functional impotence with exposure of middle part of the tibial shaft (Figure 1).





Figure 1. Photograph of the open fracture of the right tibia on admission together with the accompanying X-ray, 8 weeks after the incident.

The fracture wound showed signs of infection with the discharge of pus, pointing to the diagnosis of osteomyelitis. X-ray showed destruction of bone cortex on lateral tibia from proximal part to distal part with sequestrum. Culture of the material from wound drainage was done, and the results showed growth of *Staphylococcus aureus*, sensitive to ciprofloxacin.

In Africa, patients often cannot afford medical care or seek help of traditional healers.

Treatment

The patient was started on standard empirical antibiotic dosage with dicloxacillin. The management was changed to ciprofloxacin after isolation and microbiological confirmation of sensitive *S. aureus*. Initially, bone decortication and debridement were done, removing all of the dead and infected tissue. Later the tibia was drilled in multiple places, revealing pus from the perforated bone. After the procedure, the patient stayed in the paediatric ward, waiting for granulation tissue and the involucrum to form (Figures 2 and 3). This minimizes the risk of fracture and deformity during a sequestrectomy, which was performed 1 month later.





Figure 2. Photograph of the same right lower limb taken during a dressing change while treated.

Conclusion

The antibiotics and the surgical procedures, as above improved the patient's condition. The patient could walk with crutches, and was later treated as an outpatient for follow-ups.

In cases of osteomyelitis it is highly recommended to collect material for microbiological examination. It allows not only to show the aetiological factor but also to find the antimicrobial sensitivity of the pathogen. Without microbiological testing, one may encounter treatment failures and osteomyelitis may turn out to be even more long-term and very difficult to treat.

It still remains to see if the patient will fully recover, and as with any case of especially chronic osteomyelitis, there is always a risk of relapse.



Figure 3. Formation of granulation tissue, 4 weeks after admission.



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