

Osteomyelitis of Fibula Rare Case with Various Differential Diagnosis

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What to Learn From this Article?

Osteomyelitis with different clinical features with differential diagnosis with rarest intraoperative finding can be treated with good result with proper surgical and medical treatment.

Abstract

Introduction: The osteomyelitis of fibula is a rare case to present. Osteomyelitis is clinical diagnosis with support of various investigation with proper surgical technique and various Differential Diagnosis it is treated with good satisfactory result.

Case Report: A 65-year-old male operated 10 years back for tibial plateau fracture was asymptomatic but for last 3 months started discharging sinus from middle third of leg. We investigated and done implant removal with abnormal tissue abnormal bone was excised out, but very unusual presentation intraoperative necrotic massive debris was there like wood pieces mimic as neoplastic lesion, metastasis, fungal osteomyelitis, or granulomatous infection. However, after biopsy, it was diagnosed pyogenic osteomyelitis 2 weeks of injectable and 6 weeks of oral antibiotics were given. After that 4-6 weeks weight bearing was started, the patient returned to his obvious activities with normal range of motion.

Conclusion: The osteomyelitis of fibula with various differential diagnosis clinically and intraoperatively with very rare necrotic tissues like wood pieces mimicked neoplasia fungal infection but after proper debridement curettage and biopsy report probable diagnosis is made with proper duration of antibiotic treatment chronic osteomyelitis is treated with satisfactory result with good outcome.

Keywords: Osteomyelitis, debridement, curettage, differential diagnosis.

Introduction

The Osteomyelitis of fibula is unusual presentation with few incidences reported. The term osteomyelitis was first used by the French surgeon Chassaignac in 1852 [1]. It is defined as an inflammation of bone and bone marrow caused by fungi pyogenic bacteria [2]. Osteomyelitis results in the formation of sequestra (termed by Hunter [2] in 1764,

describing pockets of dead cortical bone with abscess) and involucrum, or new bone formed in response to the sequestra around it by Totenlade (coffin) in German. Multiple openings in the involucrum develop which is called as "cloaca" through which pus and sequestrum come out of the bone largely because of the avascular nature of sequestra, osteomyelitis is difficult to treat and can be associated with a high morbidity and possible mortality for the patient.

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Osteomyelitis is an infection localized to bone. That does result from acute hematogenous seeding or penetrating injury and usually occurs by contiguous spread and has been present for several weeks, months, and years.

Other causes include open fractures that require surgical reduction, implanted orthopedic implant, and puncture wounds. Hematogenous osteomyelitis is more common in children than in adults. [3, 4, 5].

The Cierny and Mader anatomic types of adult osteomyelitis. (a) Type 1 is intramedullary osteomyelitis, where the nidus is endosteal. (b) Type 2 indicates superficial osteomyelitis, which is limited to the surface of the bone. (c) Type 3 is termed localized osteomyelitis, in which the full thickness of the cortex of the bone is involved. This type of osteomyelitis often requires complex dead space management and osseous stabilization after debridement. (d) Type 4 is diffuse osteomyelitis involving the entire circumference of the bone. These lesions are mechanically unstable and require complex reconstruction [4].

Diagnostic Criteria for Chronic Osteomyelitis

Clinical signs exposed bone persistent sinus tract tissue necrosis overlying bone chronic wound overlying surgical hardware chronic wound overlying fracture, laboratory evaluation positive blood cultures elevated C-reactive protein level elevated erythrocyte sedimentation rate. Treatment of osteomyelitis depends on appropriate antibiotic therapy and often requires surgical removal of infected and necrotic tissue. Choice of antibiotic therapy should be determined by culture and susceptibility results. [6, 7].

Imaging studies (e.g., plain radiography, magnetic resonance imaging [MRI], and bone scintigraphy) demonstrating contiguous soft tissue infection or bony destruction.

The treatment of chronic osteomyelitis depends on stages antibiotic therapy with surgical intervention.

Case Report

A 65-year-old male presented with swelling discharging sinus from anterolateral aspect middle third of the left leg since last 3 months (Fig. 1). Patient was operated 10 years back for Tibial plateau fracture with plate and Philips screw implant (Fig. 2) [8]. Post-operative patient recovered well.

He was asymptomatic with a medical history of diabetic mellitus for 10 years coronary artery disease for 3 years with hypertension.

On examination swelling, redness, sinuses, scar, dilated veins inflammatory signs was present over left anterolateral middle third aspect of leg with muscle wasting. Local rise in temperature, tenderness, Bony irregularity, Thickening of bone, sinuses fixity to bone over middle of leg. In Investigation blood Complete Blood Picture WBC count increased C-reactive protein level Erythrocyte sedimentation rate Fasting Blood Sugar was raised with Pus Culture report was *Stap Haemolyticus* growth.

X ray of leg show Middle shaft of Fibula osteolysis sclerosis irregular, unsharp borders Sequestra (shadowing encircled by a brighter surrounding) (Fig. 2). Sinogram- Sinus tract communicating to mid shaft fibula Tibia.

Surgical technique-Implant removal was done (Fig. 3) with abnormal tissue abnormal bone 2-10 cm fibula via anterolateral Incision was excised out (Fig. 4-6) and sends for Biopsy removal of all dead bones [5]. Sequestra that are retained in a cavity there was no dead space as such



Figure 1: Sinus tract pre-operative.



Figure 2: Pre-operative.



Figure 3: Post-operative X ray.

Excising areas of active infection along the track of sinus leave a relatively healthy bleeding bone surface [9, 10]

Intraoperative very unusual presentation around whole fibula was seen. Necrotic tissue, massive debris was there which was visible like wood pieces which was later on excised out (Fig. 4-6) mimic as Neoplastic Lesion [11, 12], Metastasis, Fungal Osteomyelitis or Granulomatous infection.

The soft tissue and Bone pieces was send for Biopsy (Fig. 6) and histopathology culture. Patient was given 2 weeks of Intra venous Antibiotics and 6 weeks oral antibiotics (along with Rifampicin) with DM control [6, 13, 14]. This case is follow of 2 year with satisfactory result (Fig. 7). Non weight bearing for 4 Weeks with Knee and Ankle Exercises later allowed for full weight bearing.

Discussion

Osteomyelitis staging system was first described by Waldvogel in 1970 distinguished three etiologic routes secondary to hematological infection [9]. Bacteraemia is caused by distant foci of infection may lead to without clinical signs of sepsis. Changes in plain radiographs can include scalloping of the cortex and periosteal reaction soft-tissue swelling, osteopenia, [15]. CT scanning be helpful in the identification of sequestra while MRI is more useful for soft-tissue assessment and revealing early bony oedema [15].

Treatment of Chronic Osteomyelitis include Antibiotic Mader *et al.* [4,16]. recommend regimens based on their staging system. Type 1 osteomyelitis is treated with 4 weeks of parenteral antibiotics. Type 2 often resolves after 2 weeks of antibiotics after debridement. Types 3 and 4 each require 4 weeks of parenteral antibiotics from the last debridement. Some centers use 2 weeks of parenteral antibiotics followed by 4 weeks of oral antibiotics. Surgical management of osteomyelitis consists of two basic steps; debridement and obliteration of the subsequent dead space by soft tissue [6]. Adequate surgical debridement removes dead necrotic tissues, decreases the bacterial load, and gives a chance for the host immune system and antibiotics to arrest infection. Adequate debridement may leave a large bony defect, or dead space All sequestra must be removed and resection of scarred and infected bone and soft tissue is indicated [5,6]. Periosteal stripping should be avoided because it may result in avascularity and the involucrum surrounding the infection can be left in place [9]. Debridement of the bone is performed until the 'paprika sign' is seen; a pin-point bleeding noted on the viable bone [17]. The dead space created. Numerous surgical options can be used to treat bone defects such as primary shortening, cancellous bone graft in one stage, cancellous bone graft in two stages (after induced membrane technique), pedicle bone transfer, periosteal free flap transfer, or bone morphogenetic protein. Although non-vascularized bone grafting is effective in small bone defect with well-perfused soft tissues, they are less reliable when the gap defect is greater than 6 cm and when soft tissue vascularization is poor [18].

Osteomyelitis of the fibula is uncommon. If the patient's tibia is not involved remove a sequestrum from his fibula, without waiting for an



Figure 4: Intraoperative operative photographs with necrotic tissue.



Figure 5: Intraoperative operative photographs with abnormal necrotic tissue.



Figure 6: Intraoperative operative photographs with necrotic tissue for biopsy.



Figure 7: (a and b) Post-operative after 6 months.

involucrum to form, because his tibia will support body weight. Expose any part of his fibula by approaching it between his peroneal muscles anteriorly and his soleus posteriorly posterior tibial nerve and vessels are protected; but be careful not to injure his peroneal artery and veins which are close to the postero-medial angle of the shaft of his fibula. Intraoperative the dead necrotic abnormal tissue bone wood like pieces mimicked neoplastic lesion Fungal Osteomyelitis Granulomatous infection but after Biopsy it was diagnosed Chronic Osteomyelitis of Fibula with adequate debridement curettage and with proper antibiotic coverage result was satisfactory.

Conclusion

The Osteomyelitis of fibula is clinical diagnosis with support of investigation can be presented with various differential diagnosis clinically and intraoperatively but after proper debridement curettage and biopsy report probable diagnosis is made with proper duration of

antibiotic 2 weeks of Intra venous Antibiotics 6 weeks oral antibiotics (along with Rifampicin), chronic osteomyelitis is treated with satisfactory result with good outcome instead initially mimicked various differential diagnosis.

Clinical Message

Diagnosing the chronic Osteomyelitis with various differential diagnoses can be challenging if presented intra-operative with abnormal tissue wood like pieces. A detailed evaluation is essential. After through debridement proper coverage of antibiotic with proper duration and confirm biopsy the diagnosis is confirmed and proper line of treatment is outlined with good result. The abnormal tissues wood like pieces is very rare to see during surgery post operative outcome was very satisfactory.

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