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Date Thorne Osteomyelitis of Lower Extremity in Bare Foot Walkers: 5 Cases

Dr. Santosh Kumar Sahu and Dr. Khusbu Parichha

Abstract
Foreign body injuries with date thorns, is common in developing countries like India, where walking barefoot is common, thus making the feet vulnerable to various trivial injuries. Some of the injuries lead to cellulitis or abscess formation, if neglected or improperly managed results in osteomyelitis of foot structures, usually involving the tarsal or metatarsals, in countries with limited resources, the emphasis should be on clinical assessment for diagnosis, and good surgical technique for treatment. We report 5 patients with thorn prick osteomyelitis of the foot following barefoot walking. After thorough investigation, all were treated with thorn removal, surgical debridement, and oral ofloxacin and the materials were sent for HPE & CSE. Only one of the 5 cases showed growth of microorganisms. Surgical removal of the thorn is the key to successful treatment and to avoid recurrent infection.

Keywords: *curettage; foot; osteomyelitis; date thorne*

Introduction
Majority of population of India reside in rural areas and most walk barefoot, thus exposed to injuries, such as small cuts, bruises, skin breaches, and puncture wounds by thorns. Most injuries are minor and cause only temporary discomfort. Medical consultation is rarely sought; most patients are self-treated or treated by traditional healers. When a foreign body comes into contact with bone tissue it usually induces a local reaction which results in structural changes detectable on radiography. The radiological findings may however suggest various pathologies. We report 5 cases of thorn prick osteomyelitis, referred to us to exclude a neoplastic process. The object of this study is to draw attention to the possibility of this unusual etiology when evaluating similar lesions.

Case Series
Case 1: In 2012 A 6-year-old boy presented with a history of pain and swelling around the right ankle for 3 months. while running barefoot in the forest, he was pricked by date thorn over the dorsum of his right foot. On presentation, the patient had a history of episodes of fever, walked with a limp with no discharging sinuses over the foot. He had h/o taking medications irregularly from local practitioners. Radiography revealed a lytic lesion of the talus (Fig.1). CT scan showed changes suggestive of chronic osteomyelitis (Fig.2).Surgical exploration showed a date thorn embedded inside the talus and surrounded by granulation tissue (Fig.3). The thorn was removed and the cavity wall was curetted with a high-speed bur. The wound was closed after thorough drainage. The patient was prescribed 6 weeks of oral ofloxacin, although a culture of the tissue did not grow any microorganisms. A biopsy showed evidence of chronic infection of the granulation tissue. The patient recovered well, without any stiffness of the ankle joint at 1-year follow-up.

Case 2: A 20yrs female presented to us with C/O Swelling over the dorsum of left foot for 2 ½yrs with discharging sinus for 1½yrs. She had a h/o thorn prick while walking barefoot in the jungle. On examination, there was a tender bony swelling with discharging sinus adhere to 3rd metatarsal of left foot. Skiagram study showed deformed irregular surface of left 3rd metatarsal with widening of medullary cavity & presence of sequestrum (Fig-4). On opening the sinus track a date thorn was found in the osteomyelitic cavity (Fig.5). The thorn was removed and the cavity wall was curetted with a high-speed bur. The wound was closed after thorough

drainage. The patient was prescribed 6 weeks of oral ofloxacin, although a culture of the tissue did not grow any microorganisms. A biopsy showed evidence of chronic infection of the granulation tissue. The patient recovered well, without any stiffness of the ankle joint at 1-year follow-up.

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Case 3: A 27-year-old woman complained of pain in the foot and swelling of the right fifth metatarsal shaft for 5 months after being pricked by a thorn. This had caused her to limp and she had taken a course of oral antibiotics from the local physician. Radiography (Fig-6) revealed an osteolytic lesion in the shaftof the fifth metatarsal, which was confirmed on CT scan. Surgical exploration revealed a 5-mm long thorn inside the lytic lesion (Fig-7). Removal of the thorn and thorough curettage of the abscess wall was performed. The patient was prescribed 6 weeks of oral ofloxacin, although a culture of the tissue did not grow any microorganisms. A biopsy showed evidence of chronic inflammation. The patient recovered well, with no residual deficit at 2-years follow-up.

Case 4: A 22-year-old man who had suffered direct trauma to the right leg was diagnosed as having posttraumatic osteitis and was treated with NSAID's, but the pain persisted, and plain xrays revealed an osteolytic lesion on the posterolateral aspect of the tibia. The patient was referred to us to exclude any neoplastic process. CTscan showed an osteolytic lesion without any periosteal reaction or newly formed bone, with a denser portion, suggestive of an osteomyelitic sequestrum. The laboratory tests like sedimentation rate, hemogram, and CRP were found to be within normal limits. Surgical intervention revealed a 1-cm long thorn which was removed (fig.9) and thorough curettage of the abscess wall was performed. A culture of the tissue & purulent material did not grow any microorganisms. The pathological diagnosis was nonspecific osteomyelitis, revealing the presence of epithelioid cells, giant cells and granulomas containing lymphocytes. The patient subsequently remembered having pricked himself on the top of his foot about an year ago. The patient was prescribed 6 weeks of oral ofloxacin. The patient recovered well, with no residual deficit at 1-year follow-up.

Case 5: In October 2015, an 20-year-old man presented with a discharging sinus over the dorsum of the fore-foot after being pricked by date thorn 14months previously while walking barefoot in the forest. He had undergone incision and drainage by a quack practitioner and had taken a course of oral antibiotics 8 months previously, but the sinus had failed to heal with periods of wanning & waxings. X-rays showed expansile lytic lesions involving entire 2nd metatarsal (Fig.11). Surgical exploration revealed bone loss in the 2nd metatarsal with hardly any bone, with pale granulation tissue, pus. Thorn was not found and drainage of the pus and granulation tissue were performed, and ray amputation of 2nd metatarsal was done (Fig-12, 13). Culture of the pus grew *Staphylococcus aureus* sensitive to linezolid. Histopathology showed findings consistent with chronic osteomyelitis at 6months follow-up, the patient was satisfied with the surgery.

Discussion Bone changes caused by foreign bodies, especially palm tree thorns, usually manifest in the form of occasional inflammation [1], which appears some time after the trauma. During this period, the foreign body migrates, possibly because of repeated muscle contractions, from the area of trauma, usually distal, to more proximal areas. Given the nonspecific symptoms, the diagnosis is very difficult, more so if the patient has forgotten about the incident. Routine investigations should include two standard xray films. However ultrasound, computed tomography or magnetic resonance imaging should be considered for initial evaluation of these patients with penetrating injuries [2]. The CT scans correctly predicted the presence or absence of osteomyelitis [3]. In our cases, we did not do either MRI or bone scan for better evaluation of pathology. In countries with limited resources, the emphasis should be on clinical assessment for diagnosis, and good surgical technique for treatment [4]. All the Patients responded well for period of3weeks of oral of loxacin although none of the cultures grew microorganisms, Osteomyelitis of the foot following puncture wounds is mostly caused by gram-negative bacteria [5] with *P. aeruginosa* being the most common causative organism [6-9]. Gram-negative bacteria are very sensitive to quinolones. The definitive diagnosis is made on exploration of the lesion when the date tree thorn is located. After removal, a radical curettage of the lesion was performed, with or without bone graft, according to the size and location of the lesion. Once the cause has been eliminated, recovery was satisfactory and radiological changes disappear. No further complications, especially secondary infection or ischemic changes, were noted. Removal of the thorn is the key to successful treatment and avoidance of recurrent infection.

Fig 1: (Osteolytic lesion in talus)

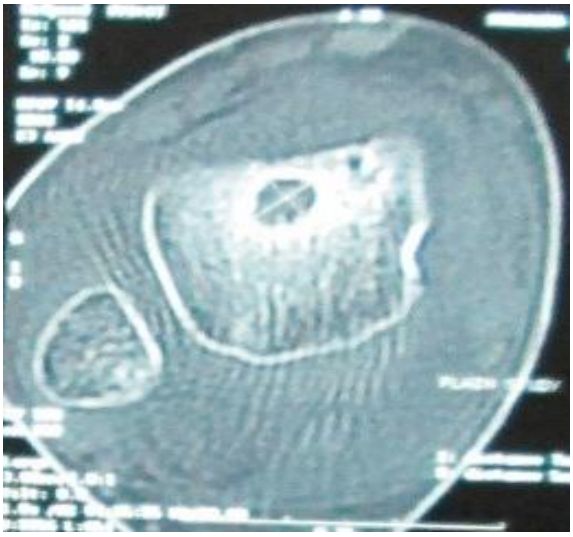

Fig 2: (CT scan showing osteomyelitis)

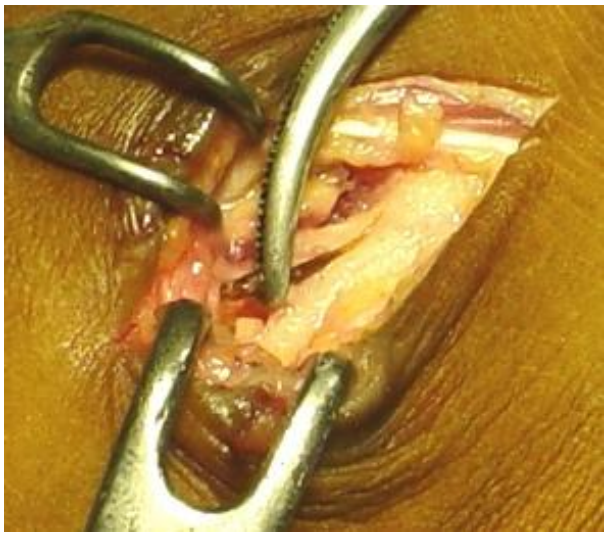

Fig 3: (Surgical removal of Date thorn)

Fig 4: (Osteomyelitis of 3rd MT)

Fig 5: (Surgical removal of Date thorn)

Fig 6: (Osteomyelitis of 5th MT)

Fig 7: (Surgical removal of Date thorn)

Fig 8: (Surgical exploration)

Fig 9: (Date thorn removed)

Fig 10: (6months after injury)

Fig 11: (At presentation)

Fig 12: (Ray amputation of 2nd MT)

Fig 13: (post-op X-ray)

Conclusion In developing countries like Indi, a high degree of suspicion should be present for the diagnosis of date thorn osteomyelitis in case of young individuals with inflammatory lesion of the distal extremity, when the patient has been to hot climates, or forests with a bare foot where there are many palm trees. Removal of the thorn is the key to successful treatment and early recovery.

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