

Undetected piece of wood causing osteomyelitis of the metacarpal bone: A case report

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Abstract. The patients with soft tissue injuries by foreign bodies are encountered frequently by the emergency physicians. In the emergency services, the advanced radiological imaging techniques should be requested in the patients who have a history of foreign body injury, if it was not detected by plain radiographs. Though the plain radiography is very useful for detection of metal foreign bodies, ultrasonography, magnetic resonance imaging and the computed tomography are superior for the detection of wood, glass and plastic foreign bodies. The foreign bodies that were not removed with the surgery can cause allergic, inflammatory or infectious process. Old foreign body injuries should be investigated in the patients with non-healing infection, or osteomyelitis history. The surgical exploration should not be avoided for diagnostic aim. In this case, we are presenting a pediatric patient developed metacarpal bone osteomyelitis due to foreign body which was diagnosed lately.

Key words: Foreign body imaging, plain radiographs, magnetic resonance imaging, osteomyelitis

1. Introduction

The patients with limbs injuries by foreign bodies are frequently encountered in the emergency department. Foreign bodies are usually wood, metal, plastic or a piece of glass (1). While the metallic foreign bodies can be easily detected by plain radiography, wood, glass and plastic cannot often be determined (2). Ultrasonography (USG), computed tomography (CT) and magnetic resonance imaging (MRI) may be used in the detection of these foreign bodies (3). In this article, we are presenting a one-year-old boy with osteomyelitis in the 3th metacarpal bone due to a foreign body which was not detected by radiography at the emergency department.

2. Case report

A one-year-old boy was referred to the orthopedic clinic with a painful swelling on the left hand for one month. The family gave history of injury to the left hand in the garden one month ago. He was evaluated at emergency department with a clear X ray examination (Figure 1).



Fig. 1. Plain radiograph of the patient in his first application, 3th metacarpal is in a normal appearance.

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Fig. 2. Plain radiograph of the patient after 1 month, sclerosis, periosteal reaction and thickness in the 3th metacarpal.

But, no improvement was observed in spite of the oral antibiotics therapy for 10 days. Leukocyte count was 16000/mm³, sedimentation rate was 15 mm/h and C-reactive protein was 3 mg/l. A new X-ray revealed periosteal reaction in the third metacarpal bone (Figure 2). USG showed the presence of thick fluid (pus) sized-1x1cm at the dorsum of the hand with a soft tissue edema. Consistent findings of osteomyelitis in the third metacarpal bone were detected in the MRI (Figure 3).

Under general anesthesia, incision and drainage were performed and 2 cm piece of wood between the 3th and 4th metacarpal bones was removed (Figure 4). The patient was treated with intravenous empiric antibiotics. Although the bacteriology culture was negative, he continued antibiotics for six weeks. Control evaluation after two months was normal. The hand regained normal functions.

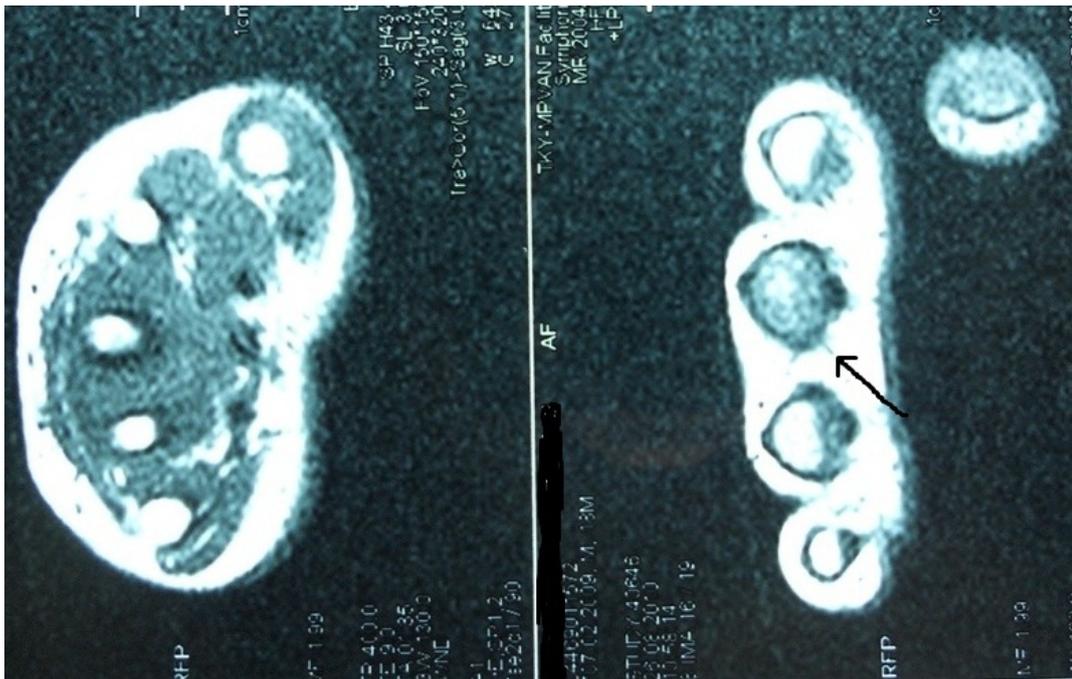


Fig. 3. Appearance of the 3th metacarpal osteomyelitis in the MRI of the patient after 1 month.

3. Discussion

In spite of the developing imaging methods, the detection of the foreign bodies in soft tissue is still an important problem at the emergency departments. It has been frequently reported that the foreign bodies can be removed within months or even years after the initial trauma (4). In addition to the difficulties for the detection of foreign bodies, there are also difficulties for removing them because of the invasive procedure

(1). The inaccurate determinations for the localization of the foreign bodies cause extending the period of operation time and soft tissue damage (5).

Foreign bodies can cause a lot of problems. If it is close to a tendon, it can be resulted in acute or chronic tendinitis and tenosynovitis. If it is close to a nerve, neuropathy or post-traumatic neuroma can appear. If it is close to a bone, it can cause osteomyelitis (1).



Fig. 4. Appearance of the removed part of wood.

Plain radiographs that are the most commonly used are often insufficient in the diagnosis of wood, glass and plastic-based foreign bodies (2). CT can detect the radiolucent foreign bodies, but it is not cost-effective and cause radiation exposure. A radiolucent foreign body can be detected by MRI. MRI and CT are not routinely requested for acute foreign body injury. (6) USG is cheap, available and non invasive technique. It has high sensitivity and specificity in the detection of the radiolucent foreign bodies (4, 7, 8).

Soft tissue USG examination should be requested in the emergency departments for any suspected foreign body injury that are not obvious in plain radiography. CT and MRI can guide both the diagnosis and the surgical approach in complicated cases (6). The advanced imaging techniques should not impede the surgical exploration if the history and clinical observation are positive in spite of the negative radiology findings.

Infection or malignancy should be thought firstly in the diagnosis with a painful swollen limb. However, unnoticed foreign bodies should be also kept in mind. The presence of foreign body should be considered in any painful swelling in the limbs (9). The detailed history and proper imaging examinations are the keystone of the diagnosis.

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