

Osteoid osteoma of distal phalanx: A rare disorder and review of literature

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Osteoid osteomata are rarely found in the distal phalanges of the hand. The usual presenting features are chronic pain, nail enlargement and increase in size of the terminal part of the digit. Diagnosis is difficult but surgical excision is effective for treating the patients' pain. We reported this tumor in distal phalanx of the middle finger.

Key words: Finger, hand, osteoid osteoma, thumb

INTRODUCTION

The term 'osteoid osteoma' was first coined by Jaffe in 1935 to describe a lesion previously known by a variety of names.^[1] Osteoid osteoma is a small spherical tumor with a diameter of 1.5 cm or less, composed of a central zone named nidus which is an atypical bone completely enclosed within a well-vascularized stroma. Prostaglandins are found in the nidus at levels 100 to 1000 times that of normal tissue. They induce vasodilation and a resultant increased capillary permeability in the tissues surrounding the lesion and are believed to mediate tumor related pain, classically described as night pains relieved by salicylates.^[2] Osteoid osteoma is a relatively frequent benign tumor of the skeleton, mostly occurring in the second and third decade of life, accounting for about 11% of all benign bone tumors. The most common location of such lesions is in the long bones of lower limbs (especially femur and tibia), where it occurs in 50% of the cases.^[3] Five to 15% of osteoid osteoma occur in the hand and wrist, most commonly in the proximal phalanx and carpus. Lesions arising in the distal phalanx may be atypical in their finding with frequent pulp swelling and nail deformity. Radiographs most commonly demonstrate a lytic lesion rather than the classic appearance of reactive sclerosis surrounding a central lucent nidus.^[4] Involvement of the index finger is the most common, whereas, the thumb is the least affected digit.^[3]

These lesions are rare in the distal phalanx, but when they do appear, they present unusual diagnostic difficulties due to:

- Atypical radiological appearance
- Presence of soft tissue enlargement and nail deformity

- The small size of the distal phalanx and consequent close approximation of lesions to the nail, growth plate and distal interphalangeal joint.^[5]

Edeiken, DePalma, and Hodeshad were given credit in 1966 for subgrouping osteoid osteoma into cortical, cancellous, and subperiosteal forms.^[6] Cortical osteoid osteoma is the classic type of the disease consisting of a small central nidus, usually radiolucent, associated with perifocal dense bone. The medullary type involves the neck of the femur, vertebra and small bones. The third type of osteoid osteoma is the subperiosteal type that most frequently occurs in the intra-articular portion of the bones. CT scan is of considerable value when there is no evidence on plain films to localize the nidus of osteoid osteoma.^[7] We report an uncommon case of osteoid osteoma located at the distal phalanx of middle finger.

CASE REPORT

A 27-year-old right handed man refer to orthopedic uniclinic of Isfahan Al-zahra hospital on March 2011 with a 4 years history of gradual increase in size and deformity of the distal part of his left middle finger. Pain was a marked feature that disabled his life and was only relieved temporarily by analgesic and aggregated in nights. Twelve months earlier he had been treated for local infection, initially with a course of antibiotics. This treatment had been unsuccessful.

On examination, the finger was enlarged beyond the distal interphalangeal joint and clinically looked like an isolated clubbed digit. The pulp was big and there was increase in both longitudinal and transverse curvature of the nail-plate. The skin at the base of the nail-plate

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was swollen and shiny and there was a small amount of fluctuation. The nail-fold angle was obliterated. The patient did not report any previous trauma or infection; laboratory data, including laboratory tests for inflammation and rheumatic conditions, were normal, and CRP was negative. The middle finger was warm on palpation, and there were no evident superficial reticular veins. There was a slightly reduced range of motion in the distal interphalangeal joint compared to the contralateral hand. No satellite lymphadenopathy was observed.

Radiographs revealed soft tissue edema on volar and dorsal side of finger. An oval shaped sclerotic mass in base of volar aspect of distal phalanx with tinny radiolucent border was seen [Figure 1]. In MRI, there was a 1.2 cm mass-like lesion in volar aspect of proximal half of the distal phalanx, being isosignal to muscles in T1W, and hyper in T2W images, causing saucerization of anterior surface of the bones. Nidus was not seen in plain radiography, but edema was obvious in MRI [Figure 2]. Unfortunately, we have no CT scan of finger in this patient.

Based on clinical and radiographic findings, the presumptive diagnosis of osteoid osteoma was made (however other conditions, including infection and giant cell tumor were considered) and the patient underwent surgery. Through an approach on the volar side of the distal phalanx a hole was made in the area of osteosclerosis, thus revealing a small, less dense and relatively hyperemic area that flexor profundus tendon was attached to it. Then mass was removed en-block and Curettage was performed with a small curette and then tendon was attached to bone with tension suture, and specimen referred to pathology lab. Histological examination confirmed the diagnosis of osteoid osteoma, since the typical nidus was found in the histological specimen [Figure 3].

The limb was immobilized with dorsal short splint for repair of tendon. In the first days following surgery, the pain with which the patient used to live with had already disappeared.

The patient, recently was seen 7 days after the operation, had no pain. Aspect and size of the finger and of the nail were similar to the contralateral one, having normalized a few months after surgery.

DISCUSSION

Clinical presentation of osteoid osteoma developing in the hand may be similar to osteoid osteoma elsewhere in the skeleton. However, location of osteoid osteoma in the hand is very rare and variations from the classic presentation are common. As a result, diagnostic delay is frequent and the patients are often treated based on

presumptive diagnosis of disorders more frequently found in this segment.^[3] The presenting symptom was usually chronic localized pain. It tended to be worse at night, was frequently relieved by salicylates and was accompanied by no history of trauma. In each case, the digit was expanded and bulbous distal to the distal interphalangeal joint, and the patient said that this had been present for a long time-usually years. Pulp was enlarged. Nail-plates were bigger than normal and



Figure 1: Lateral view of middle finger (soft tissue swelling is prominent and lesion has been marked)

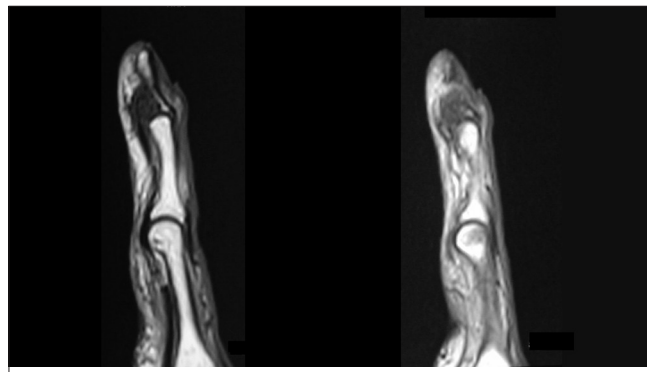


Figure 2: MRI of middle finger

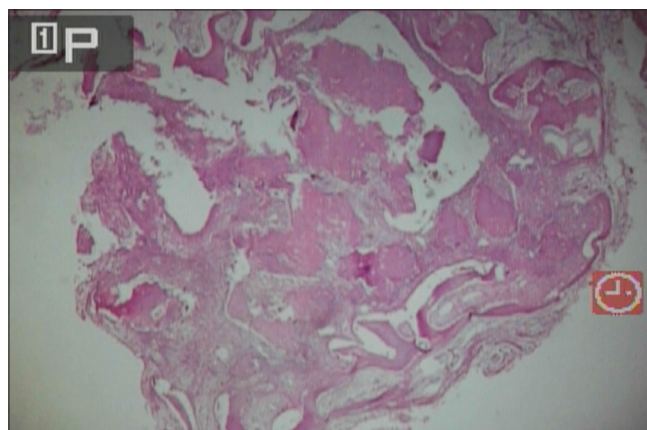


Figure 3: Pathologic slide

their curvature was increased both longitudinally and transversely, giving the appearance of clubbing.^[5]

The cause of the pain had been hypothesized as being due to the production of prostaglandins by the osteoid osteoma. Up to a one thousand-fold rise of PGE2 synthesis has been demonstrated (Makley, 1982). This would be consistent with the efficacy of aspirin or indomethacin in the treatment of this condition.^[8]

The classic presentation includes a typical pain that worsens at night and recedes with aspirin, and a noninflammatory enlargement of the involved segment. However, pain may not be well localized, but vague and intense, swelling may involve the whole finger, inflammatory signs may be evident and sometimes patients may relate their symptoms to trauma; “even synovitis-like” forms with joint effusion and reduced range of motion (due to juxta-articular locations of the osteoma) have been described. Consequently rheumatic pathologies, tenosynovitis, post-traumatic conditions (acute or chronic traumatism) and infections are often evocated.

Furthermore, as observed in our patient, the distal phalanx location may produce an alteration of nail morphology (watch-glass deformity, hypertrophy of the nail bed or other gross deformities) frequently combined with thickening of the whole digit or of only the distal phalanx (drumstick finger). This contributes to further diagnostic delay, especially if patients are referred to physicians that are accustomed to the (bilateral) digital clubbing typical of many cardiopulmonary diseases, for example, or to nail involvement due to many infections, and have no suspicion of bone tumors.

Radiographically the classic appearance of a lucent nidus in a thickened cortex was not seen. Instead, the lytic lesions occurred either in the cancellous metaphyseal bone or eroding through the cortex. The distal phalanges were expanded but there was minimal hyperactive cortical response. When lesions occurred in immature individuals, there was both overgrowth and premature epiphyseal fusion. Lesions near the distal interphalangeal joint caused

changes in that joint.^[5] Therefore, a high level of suspicion is required and radiographs are essential in order to show bony involvement, even though the typical radiographic presentation of the osteoid osteoma (with evidence of the lytic nidus with surrounding sclerotic bone) is reported only in 65% of lesions located in the hand. In many cases unusual aspects are described, for example the absence of the nidus (especially in cortical locations, where the sclerosis is very dense) or the presence of two nidi.^[9]

Thin-section computed tomography is the most specific imaging study, allowing a better definition of the diagnostic suspicion and pre-operative planning. MRI may be confusing, as the lesion seems more aggressive than it actually is, but it may be useful in differentiating infections or soft-tissue mass.

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