

Triquetral Osteoid Osteoma: A Diagnostic Dilemma

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Received 2017 September 06; Revised 2017 December 10; Accepted 2018 January 21

Abstract

Background: Osteoid osteoma (OO) is a benign osteoblastic neoplasm, mostly occurring in long bones of lower extremity. Its manifestation in unusual locations can be a diagnostic challenge and distressing for patients. OO in carpal bones is uncommon; its occurrence in triquetrum is even more so.

Case Presentation: This study reports on a nineteen-year-old female with history of wrist pain for 4 years. She had sustained trauma to the same wrist before commencing of pain. Patient's pain was unresponsive to conservative treatments. Her routine x-rays were mostly interpreted as normal and obtaining further imaging helped us in diagnosis of OO of triquetrum. Surgical resection of the nidus was performed.

Conclusions: Manifestation of OO in small carpal bones may not be typical; identifying the lesion or nidus could be challenging. Whatever unusual the location or presentation of such lesions may be, obtaining advanced imaging can be of significant help; therefore, we suggest clinicians to have low threshold in ordering advanced imaging specifically in patients suffering from chronic pain. Also, persistent history of nocturnal pain is a sign which is worth attention.

Keywords: Osteoid Osteoma; Tumors; Diagnosis; Carpal Bones; Triquetrum Bone

Citation: Farzan M, Farhoud A, Zarei M, Mohammed Yaseen Khan F, Dehghani-Firoozabadi MJ. **Triquetral Osteoid Osteoma: A Diagnostic Dilemma.** *J Orthop Spine Trauma* 2018; 4(2): 35-7.



Background

Osteoid osteoma (OO) is a benign osteoblastic neoplasm, usually found in long bones of lower extremities (1). It is uncommon in hand and wrist and its diagnosis in unusual locations is difficult because of its atypical presentation both clinically and radiologically (2). Diagnosing OO in small carpal bones has been historically challenging. Literature review revealed no more than two reports of OO in triquetrum, both with delayed diagnosis (3, 4). Further investigation revealed that despite radiologic advancement and ample case reports in the last decade, duration of delay in diagnosis in cases of OO in unusual locations has not changed (5).

In small bones, it does not present with its typical features (6). Identifying nidus in small bones such as triquetrum or other carpal bones can be puzzling. Diagnosing such lesions needs approach, focused history, combined with radiographic evaluation and an experienced consult. This might alter a patient's long agonizing wait for diagnosis and treatment. In this case, true diagnosis was made after 4 years of pain and countless referrals to rheumatologic and orthopaedic specialists.

Patients presenting with unusual history are more confusing than one can imagine. Our patient had trauma to wrist prior to commencing of pain, this camouflage can be misleading. However, the most helpful feature in history was the nocturnal nature of pain.

Case Presentation

A nineteen-year-old female presented to our clinic with

history of right wrist pain for 4 years. Pain was on ulnar side and mostly nocturnal in nature. She gave a history of trauma to the same wrist 5 years ago. She consulted various physicians, rheumatologists, and orthopedic surgeons, attended numerous physical therapy sessions, and even used wrist splint in course of 4 years. Her x-rays were mostly interpreted as normal. On examination, we noted restricted painful range of motion of right wrist specifically in flexion beyond 50 degrees and in radial deviation. We also noted something peculiar, a sharp tenderness over ulnar-sided carpals. This made us suspicious and led us to order further investigations such as computed tomography (CT) and bone scan.

CT scan of wrist showed a benign confined lesion in triquetrum (Figure 1) and bone scan displayed increased uptake at triquetrum; this brought us to conclusion that there is a benign tumor in triquetrum, most probably OO. Prior to surgery, magnetic resonance imaging (MRI) of wrist was performed to evaluate the extent of tumor and rule out involvement of soft tissue. Surgical extraction of nidus was performed and sent for pathological evaluation.

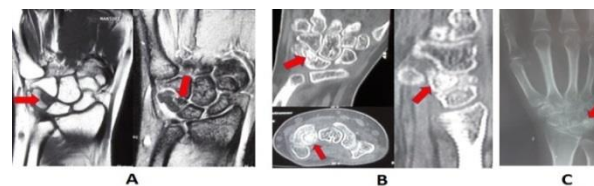


Figure 1. Preoperative images. A: Preoperative magnetic resonance imaging (MRI), showing triquetral lesion; B: Computed tomography (CT) Scan showing the lesion at anterior-distal surface of triquetrum with central nidus; C: Immediate preoperative x-ray anteroposterior (AP) view, showing sclerotic lesion at triquetral pisiform junction.

The report from biopsy stated OO. Postoperatively, the patient became nearly pain-free and was discharged the next day (Figure 2). A volar wrist splint was applied for 3 weeks. One year follow-up showed excellent wrist range of motion (ROM) and grip. No pain was reported and post-operative physical therapy was not needed.

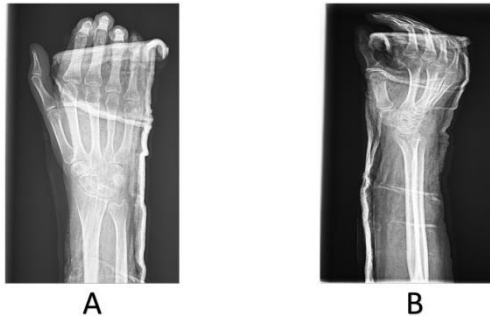


Figure 2. Postoperative x-ray. A: Anteroposterior (AP) view; B: Lateral view

Discussion

OO is a benign osteoblastic tumor; it is the third most common benign bone tumor (7). It comprises 11% of benign bone tumors and 3% of all primary bone tumors (8). It is most commonly seen in second and third decades although patients as young as 3 years old have been reported. There is a male to female preponderance of 3 to 1 (9).

It occurs more frequently in long bones of the lower extremity. Around 5% to 15% are reported in upper extremities (10). There are very few cases of OO in carpal bones (11-15). Among carpals, involvement of scaphoid and lunate have been more commonly reported (16).

In simple radiographs, OO characteristically causes marked cortical thickening with a radiolucent nidus in the center. It is believed that the nidus is responsible for the pain, as evidenced by the disappearance of pain when the nidus is completely excised (6). The landmark radiological finding in OO is appearance of a nidus surrounded by dense reactive bone (10). Nidus is the lesional tissue of an OO. The periosteal reaction induced by nidus may obscure it and in small bones, it may become difficult to identify. CT scan or MRI can better reveal this nidus in the center of the sclerotic area (15, 17).

OO is highly irritative and can affect adjacent tissue. These local effects may be due to prostaglandin synthesis in the nidus. The most common chief complaint of patients is pain, followed by swelling and local tenderness (16). Because of non-progressive nature of OO, symptomatic therapy with nonsteroidal anti-inflammatory drugs (NSAIDs) is recommended (18). Due to role of prostaglandins in production of symptoms, pain tends to be relieved with NSAIDs dramatically (19). If the symptoms are unresponsive to conservative therapy, extraction of the central nidus is recommended. Recurrence rate of tumor after surgery is around 6% (2, 10, 20-22).

Tricoire et al. reported a case of OO of trapezoid. The patient had long-standing pain and developed synovitis, which is very unusual. They opted for surgical excision of mass, following which patient became pain-free (23). In 2012, Jafari and Najd Mazhar reported a similar case of OO in trapezoid with extension to base of 2nd metacarpal bone. Patient suffered from chronic pain and underwent surgical excision of nidus. Histological examination revealed OO (24).

A growing number of cases with unusual locations of OO have been reported in recent decade, and this is attributed to more frequent use of advanced imaging during preliminary diagnosis. Therefore, we recommend clinicians to keep differential of OO in mind, specifically when evaluating patients with chronic hand or wrist pain. We would like to emphasize that patient history is very important in achieving accurate diagnosis; in this case, patient had persistent nocturnal wrist pain for 4 years and consuming NSAIDs gave her significant pain relief. This is typical of OO, whatever unusual the location might be.

Conflict of Interest

The authors declare no conflict of interest in this study.

Acknowledgments

None.

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