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Case Report

Triquetral Osteoid Osteoma: A Diagnostic Dilemma

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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.
Conclusion: 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

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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 misguiding. 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 us 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.

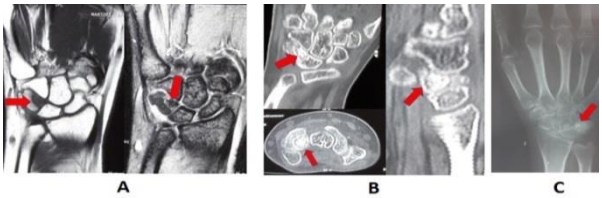

Figure 1. Preoperative images. A: Preoperative magnetic resonance imaging (MRI), showing triquetral lesion; B: Computed tomography (CT) scan showing the lesion at anterio-distal surface of triquetrum with central nidus; C: Immediate preoperative x-ray anteroposterior (AP) view, showing sclerotic lesion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

After preoperative planning by computerized tomographic scanning, surgical extraction of nidus through a dorsal approach and by intra-lesional curettage technique was performed and sent for pathological evaluation.

The report from biopsy stated OO. Postoperatively, the patient became nearly pain-free and was discharged the next day. 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.

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.

References

1. Carroll RE. Osteoid osteoma in the hand. *J Bone Joint Surg Am.* 1953;35-A(4):888-93. [PubMed: 13108890].
2. Marcuzzi A, Acciaro AL, Landi A. Osteoid osteoma of the hand and wrist. *J Hand Surg Br.* 2002;27(5):440-3. doi: 10.1054/jhsb.2002.0811. [PubMed: 12367542].
3. Taylor SA, Trehan SK, Crivello KM, Schneider R, Wolfe SW. Osteoid osteoma of the triquetrum: A case of four-year delay in diagnosis. *HSS J.* 2014;10(2):191-6. doi: 10.1007/s11420-014-9382-z. [PubMed: 25050104]. [PubMed Central: PMC4071466].
4. Herzberg G, Baaklini M, Al SM, Izem Y. Intra-articular subperiosteal osteoid osteoma of the triquetrum. Case report. *Chir Main.* 2010;29(5):332-4. doi:10.1016/j.main.2010.06.013. [PubMed: 20724201].
5. O'Hara JP 3rd, Tegtmeyer C, Sweet DE, McCue FC. Angiography in the diagnosis of osteoid-osteoma of the hand. *J Bone Joint Surg Am.* 1975;57(2):163-6. [PubMed: 1089668].
6. Mortazavi MJ, Farzan M, Farhoud A, Dehghani-Firoozabadi MJ, Khan FMY. Osteoid osteoma in hand: Case series with long-term follow up. *Academic Journal of Surgery.* 2018;5(3).
7. Laffosse JM, Tricoire JL, Cantagrel A, Wagner A, Puget J. Osteoid osteoma of the carpal bones. Two case reports. *Joint Bone Spine.* 2006;73(5):560-3. doi: 10.1016/j.jbspin.2005.11.021. [PubMed: 16904929].
8. Lee EH, Shafi M, Hui JH. Osteoid osteoma: A current review. *J Pediatr Orthop.* 2006;26(5):695-700. doi: 10.1097/01.bpo.0000233807.80046.7c. [PubMed: 16932114].
9. Burger IM, McCarthy EF. Phalangeal osteoid osteomas in the hand: A diagnostic problem. *Clin Orthop Relat Res.* 2004;(427):198-203. doi: 10.1097/01.blo.0000142623.97901.39. [PubMed: 15552158].
10. Henderson M, Neumeister MW, Bueno RA Jr. Hand tumors: II. Benign and malignant bone tumors of the hand. *Plast Reconstr Surg.* 2014;133(6):814e-21e. doi: 10.1097/PRS.0000000000000178. [PubMed: 24867740].
11. Rosenfeld K, Bora FW Jr, Lane JM. Osteoid osteoma of the hamate. A case report and review of the literature. *J Bone Joint Surg Am.* 1973;55(5):1085-7. [PubMed: 4760094].
12. Murray PM, Berger RA, Inwards CY. Primary neoplasms of the carpal bones. *J Hand Surg Am.* 1999;24(5):1008-13. doi: 10.1053/jhsu.1999.1008. [PubMed: 10509280].
13. Alcalay M, Clarac JP, Bontoux D. Double osteoid-osteoma in adjacent carpal bones. A case report. *J Bone Joint Surg Am.* 1982;64(5):779-80. [PubMed: 7085705].
14. Arora J, McLauchlan J, Munro N. Recurrent osteoid osteoma of the lunate: A case report and review of the literature. *Hand Surg.* 2003;8(2):239-42. doi: 10.1142/s0218810403001704. [PubMed: 15002104].
15. Schindler A, Hodler J, Michel BA, Bruehlmann P. Osteoid osteoma of the capitate. *Arthritis Rheum.* 2002;46(10):2808-10. doi: 10.1002/art.10579. [PubMed: 12384942].
16. Jafari D, Shariatzade H, Mazhar FN, Abbasgholizadeh B, Dashtebozorgh A. Osteoid osteoma of the hand and wrist: A report of 25 cases. *Med J Islam Repub Iran.* 2013;27(2):62-6. [PubMed: 23741167]. [PubMed Central: PMC3610309].
17. Assoun J, Richardi G, Railhac JJ, Baunin C, Fajadet P, Giron J, et al. Osteoid osteoma: MR imaging versus CT. *Radiology.*1994;191(1):217-23. doi: 10.1148/radiology.191.1.8134575.

[PubMed: 8134575].
18. Ghanem I. The management of osteoid osteoma: Updates and controversies. *Curr Opin Pediatr*. 2006;18(1):36-41. doi: 10.1097/01.mop.0000193277.47119.15. [PubMed: 16470160].
19. Atesok KI, Alman BA, Schemitsch EH, Peyser A, Mankin H. Osteoid osteoma and osteoblastoma. *J Am Acad Orthop Surg*. 2011;19(11):678-89. doi: 10.5435/00124635-201111000-00004. [PubMed: 22052644].
20. Payne WT, Merrell G. Benign bony and soft tissue tumors of the hand. *J Hand Surg Am*. 2010;35(11):1901-10. doi: 10.1016/j.jhsa.2010.08.015. [PubMed: 20961700].
21. Ambrosia JM, Wold LE, Amadio PC. Osteoid osteoma of the hand and wrist. *J Hand Surg Am*. 1987;12(5 Pt 1):794-800. doi: 10.1016/s0363-5023(87)80072-2. [PubMed: 3655246].
22. Bednar MS, McCormack RR Jr, Glasser D, Weiland AJ. Osteoid osteoma of the upper extremity. *J Hand Surg Am*. 1993;18(6): 1019-25. doi: 10.1016/0363-5023(93)90395-J. [PubMed: 8294734].
23. Tricoire JL, Duport M, Puget J, Mazieres B, Chiron P, Utheza G. Osteoid osteoma of the trapezoid bone. *Ann Chir Main Memb Super*. 1991;10(2):175-7. doi: 10.1016/s0753-9053(05)80208-x. [PubMed: 1716134].
24. Jafari D, Najd Mazhar F. Osteoid osteoma of the trapezoid bone. *Arch Iran Med*. 2012;15(12):777-9. doi: 0121512/AIM.0012. [PubMed: 23199252].