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Case Report

Solitary Metacarpal Osteochondroma: A Rare Manifestation

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Abstract

Osteochondroma is the most common benign tumor of long tubular bone. The occurrence is higher in the long bones of the lower extremity (femur, tibia) and less in the long bones of the upper extremity (humerus). Manifestation in the metacarpals is extremely rare. We report a case of a 43 years old female with a solitary osteochondroma on the base of 2nd metacarpal and we are planning to analyze the diagnosis and treatment.

Keywords: *Osteochondroma; Neoplasms; Metacarpal Bone*

Introduction

Osteochondroma is a benign tumor which arises from the metaphyses of growing ends of long tubular bones. In most cases it is present as a solitary tumor. Solitary osteochondroma mostly appears in the long bones of the lower extremity rather than those of the upper extremity in a ratio of 2 to 1 [1]. The most common age of tumor appearance is the second decade of life, while incidence of 2% appears in sixth decade [2]. Solitary osteochondroma of hand and wrist is very rare, except in patients with multiple hereditary exostoses, and the most common localization is the distal aspect of proximal phalanges during the 2nd to 3rd decade of life [4]. Manifestation of tumor in metacarpals is extremely rare [3].

Aim of the Study

The aim of this study is to describe a case with a solitary osteochondroma on the base of the 2nd metacarpal and to analyze the diagnosis and treatment.

Case Report

A 43 years old female presented in the outpatient clinic referred by other medical center with a progressively growing mass on the dorsal surface of the second metacarpal of the left wrist (predominant hand). The mass was present for about four months, but during the last month its growing rate increased. Initial diagnosis was carpal boss syndrome. The patient reported no history of trauma. During examination, a solid fixed and painless mass was palpable on the dorsal aspect of the base of the second metacarpal. The skin over the mass was irritated, causing skin distention. The range of motion (flexion) of the intex finger was reduced because of pain on second metacarpophalangeal joint. The function of neurovascular elements of the hand was normal. X-ray examination revealed a prominent osseous mass over the base of the second metacarpal bone (Figure 1), while MRI revealed bone osteophytes on the dorsal aspect of the 2nd metacarpal (Figure 2a and 2b). The patient was subjected to excision of the mass. Under tourniquet and regional anesthesia, a dorsal incision of 3 cm was performed over the mass on the second metacarpal. The extensor tendon of the index and the neurovascular elements were retracted. A white mass of 16 mm x 8 mm was excised (Figure 3). Postoperatively the wrist was immobilized with a half plaster of Paris for two weeks. The biopsy results of the mass confirmed the diagnosis of osteochondroma (Figure 4).

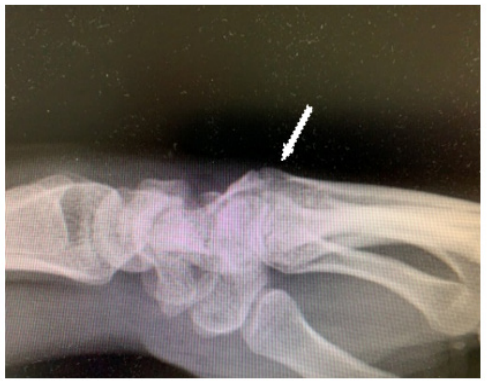

Figure 1: *x- Ray on left wrist appears bone prominence on dorsal surface of the 2nd metacarpal (white arrow).*

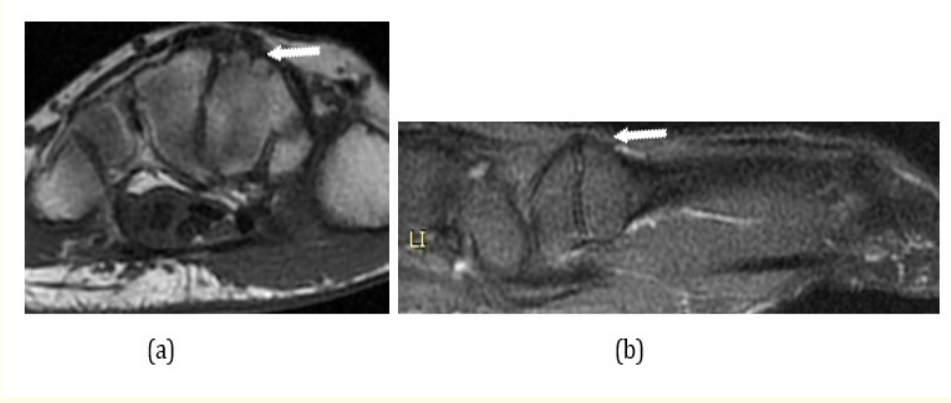

Figure 2a and 2b: *MRI appears bone osteophytes on dorsal surface of the 2nd metacarpal (white arrow).*

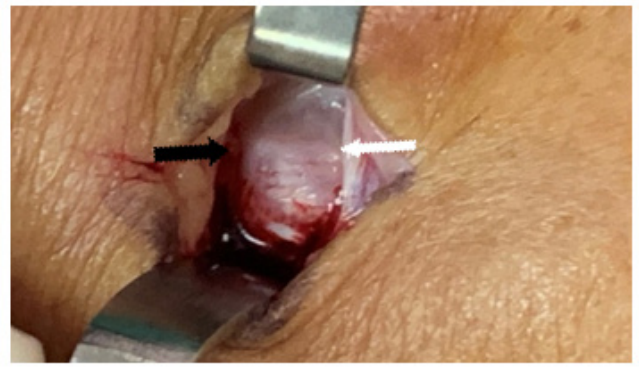

Figure 3: *Bone mass in dorsal aspect of 2nd metacarpal (white arrow) and Base of the 2nd metacarpal (black arrow).*

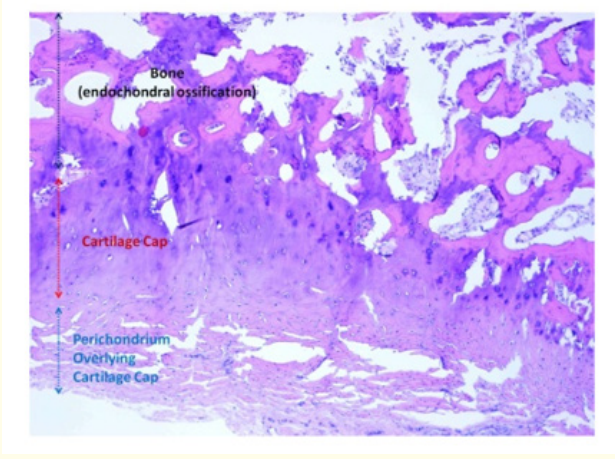

Figure 4: *Hematoxylin and Eosin stain (100x) Microscopically, osteochondroma shows a cartilage cap (red line) undergoing endochondral ossification (black line) to create trabecular bone. The cartilaginous cap is covered by a thin fibrous perichondrium (blue line).*

Discussion

Osteochondroma is a benign bone tumor with an incidence of 10 - 15% of bone tumors and is characterized by cartilage-capped exostoses usually found in the metaphysis of longs tubular bones [1]. The majority of osteochondroma appears as sessile (broad based lesion with diameter greatest at base) or pedunculated (increased diameter following a stalk) lesions, while the tumor growth stops by skeletal maturity [5]. In most cases there is a solitary tumor which is an autosomal dominant disorder and there are cases with multiple osteochondroma caused by defect in the EXT1 or EXT2 genes found on chromosome 8 or 11 respectively [6]. Some studies show that the tumor has a higher prevalence in males, however genetic studies show no such differentiation [1,5]. Malignant transformation of the tumor has an incidence of 0,5 -25% [7].

Usually, localization of the osteochondroma occurs around the knee joint, with the distal femur affected in 30% of the cases and the proximal tibial in 15 - 20% of the cases. Humerus is the third most frequent location with an incidence of 10 - 20%. Unusual localization of osteochondroma is described in hand, foot, scapula, pelvis and spine [1,4,8]. Mirra (1989). reports that the incidence of the tumor in metacarpals is extremely rare with an occurrence rate of 1%. Cates., *et al*. (1990) examining 42 hands in 22 patients, report increased involvement of proximal phalanges and metacarpals with the metacarpal of the small finger having the highest incidence of 86% [9]. Wood., *et al.* (1991), found that the area around the MCP joints of the index, ring, and small fingers were the most commonly affected, while Woodside., *et al.* (2015) report that the metacarpal of index-small digits were the most affected while the thumb was the least affected [1,5].

In spite of the fact that osteochondroma has typical radiological findings, in metacarpal localization there are other diseases with similar radiographic appearance which must be differentiated. Therefore additional diagnostic radiology exams (bone scintigraphy, ultrasonography, computed tomography, magnetic resonance imaging) should confirm the final diagnosis, particularly when the tumor is symptomatic or unusually localized [1]. The differential diagnosis of solitary osteochondroma of a metacarpal includes: Turret's lesion, Nora's lesion (bizzare parosteal osteochondromatous proliferation), Floride reactive periostitis and peripheral chondrosarcoma [10,11].

Metacarpal solitary osteochondroma usually is asymptomatic and there is no need of medical intervention. Symptomatic lesion comes from a painless osteophytes mass. Pain is a result of repetitive trauma from the prominent mass, tendon snapping over tumor, fracture of tumor, osseous deformity, vascular compromise, neurologic sequelae, overlying bursa formation, and malignant transformation. In this medical condition we postulate surgical excision of the tumor [1]. In our case patients pain came from frictioning of the extensor tendon

of the index over the tumor while the mass started growing. After total excision of the mass, patient had pain relief and returned to previous daily activity.

Conclusion

Solitary metacarpal osteochondroma is a very rare condition. In the diagnosis of the tumor, x-ray findings alone, are not enough and all imaging tests (u/s, ct/scan, MRI) should be involved to differentially diagnose it from other conditions with the same radiologic characteristics. Surgical total excision of the tumor is the unique treatment whenever lesion starts to be symptomatic.

Conflict of Interest

The authors declare that there is no conflict of interest. We certify that no funding has been received for the conduct of this study and/or preparation of this text.

Ethical Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Consent Form

Verbal informed consent was obtained from the patient for their anonymized information to be published in this article.

Bibliography

1. Murphey MD., *et al*. "Imaging of osteochondroma: variants and complications with radiologic-pathologic correlation". *Radiographics* 20.5 (2000): 1407-1434.
2. Kamath BJ., *et al*. "Solitary osteochondroma of the metacarpal". *Journal of Hand Surgery (American Volume)* 32.2 (2007): 274-276.
3. Mirra JM. "Parosteal tumors". In: JM Mirra (Ed.) Bone tumors: clinical, radiological and pathologic correlations. 2nd edition. Lea and Febiger, Philadelphia (1989): 1587-1753.
4. Unni KK and Dahlin DC. "Dahlin's bone tumors. General aspects and data on 11,087 cases". 5th edition. Philadelphia: Lippincott-Raven (1996).
5. Woodside JC., *et al*. "Multiple osteochondroma of the hand: initial and long-term follow-up study". *Hand* 10 (2015): 616-620.
6. Stieber JR, Dormans JP. "Manifestations of hereditary multiple exostoses". *Journal of the American Academy of Orthopaedic Surgeon* 13.2 (2005): 110-120.
7. Black B., *et al*. "Multiple hereditary exostoses. An epidemiologic study of an isolated community in Manitoba". *Clinical Orthopaedics and Related Research* 287 (1993): 212-217.
8. O'Conner MI and Bancroft LW. "Benign and malignant cartilage tumors of the hand". *Hand Clinics* 20 (2004): 317-323.
9. Cates HE, Burgess RC. "Incidence of brachydactyly and hand exostosis in hereditary multiple exostosis". *Journal of Hand Surgery (American Volume)* 16.1 (1991): 127-132.
10. Atik A., *et al*. "Solitary metacarpal osteochondroma an Unusual location". *Medicine Science Case Report* 3.1 (2014): 1115-1120.
11. Rajappa S., *et al*. "Recurrent solitary osteochondroma of the metacarpal: a case report". *Journal of Orthopaedic Surgery* 21.1 (2013): 129-131.

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