Periosteal Chondroma of Radius Diaphysis - Rare Presentation

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Abstract

Periosteal chondroma is a rare bone tumor. This is a slow growing benign cartilaginous tumor of bone. It is rarely reported in literature among Asian population. A 35 years old female presented to orthopaedics OPD with dull aching pain and mild swelling over volar aspect right forearm. Patient advised to undergo radiographs and MRI which showed the evidence of periosteal chondroma over anteromedial aspect right radius diaphysis. Hereby we are reporting our case of periosteal chondroma of radius- a rare pathology at rare location. Patient was operated with marginal excision and showed no recurrence during 2 year follow up.

Keywords: periosteal chondroma; rare; radius; asian; marginal excision.

Introduction:

Periosteal chondroma was first published in literature by Keiller (1) in 1925 in a 20 years male with a tumor of toe called by him as subperiosteal epiphyseal chondroma. This is a very slow growing benign cartilaginous tumor arising within or underneath the periosteum, causing cortical erosion and sometimes periosteal reaction due to constant pressure of the tumor. This may have extension into surrounding soft tissues. Periosteal chondroma usually occurs in second and third decades and affects more commonly males than females (2,3). Most commonly affected bones include humerus and femur usually located in metaphysis (3,4). The average size of the tumor is 2.8 cm, with a range of 0.9- 6.0 cm (5). In review of literature, we found multiple cases of periosteal chondroma reported around the world but very few cases reported among Asian population (6-10). Herein we present our case of periosteal chondroma of the radius located in diaphysis extending to distal metaphysis.

Case Report

A 35-years old female presented to orthopaedics OPD with pain and mild swelling over volar aspect of right forearm since two years. Patient was prescribed variety of analgesics for the same by multiple clinicians over the period of past two years. The pain and swelling over forearm had gradually increased as per patient's history. Physical examination/deep palpation revealed an irregular mass and deep tenderness over right radius. There was slight limitation of elbow flexion-extension and wrist extension with no overlying skin changes. There was no lymph-adenopathy seen and no significant past medical history reported. Patient was advised to undergo plain radiographs which showed cortical erosion involving the antero-medial aspect of radial diaphyseal region extending to distal metaphysis (Fig. 1). With suspicion of some cancerous pathology patient advised to undergo Magnetic resonance imaging (MRI) which showed a well defined heterogenous signal intensity lesion adjacent to right radius bone at its mid shaft, antero-medially which appears iso-intense on T1WI, and heterogenous iso-hypointense on T2WI and STIR images. There is a rim of hypo-intensity surrounding the lesion extending from the bone all the wall circling the lesion. With the provisional diagnosis of periosteal chondroma of radius, patient underwent surgery for marginal excision of the lesion, the mass was found to be localized over antero-medial aspect of radius surrounded by a well defined pseudo-capsule. Macroscopically, the periosteal tumor consisted of an oval, well-circumscribed cartilaginous tumor, measuring 5.5 x 2.5 x 2 cm in greatest dimension. Its surface was bluish-gray and covered by periosteum. The tumor was sent for histo-pathological examination which revealed a lobulated mass composed of dense matrix and groups of chondrocytes consistent with diagnosis of periosteal chondroma [(Fig 2). There has been no recurrence in the 2 years follow-up after surgery.

Discussion

Periosteal chondroma usually presented with mild pain or sometimes with painless mass (2) as in our case presented with mild painful swelling over the forearm. The characteristic radiologic appearance is of a single cartilaginous mass in the metaphyseal periosteum causing erosion of the adjacent cortex in association with some focal calcification within the surrounding soft tissues (4,11,12). But in our case, lesion was predominantly in diaphyseal region extending to distal metaphysis of right radius bone with cortical erosion of the adjacent cortex. Histologically, periosteal chondromas are composed of lobules of hyaline cartilage and predominantly normocellular, but hypercellularity and mild

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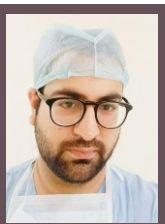

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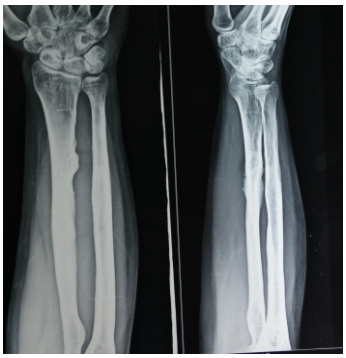

Figure 1: Plain radiographs showed cortical erosion involving the antero-medial aspect of radial diaphyseal region extending to distal metaphysis

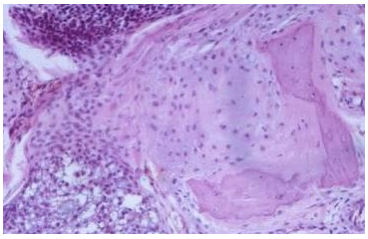

Figure 2: Microscopic examination shwed dense matrix and groups of chondrocytes

atypia may be present which can lead to the erroneous diagnosis of chondrosarcoma as seen in our case (3-5,13,14). The radiographic abnormalities observed in the presented patient correspond well to data from the literature (4,11) , thus the diagnosis for periosteal chondroma was not difficult for this patient preoperatively. Periosteal chondroma reported in literature commonly involved humerus and femur in contrast to our case involving radius (3, 5,12,13,15). Differentials such as periosteal chondrosarcoma, periosteal osteosarcoma, benign tumors including fibrous cortical defect, cortical desmoid, aneurysmal bone cyst should aways be kept in mind while dealing with a case of periosteal chondroma. Of these, differentiation of periosteal chondroma from periosteal chondrosarcoma is of utmost importance. Periosteal chondrosarcoma generally are larger (5), and may present a large mass in the soft tissues (16). In our case, lesion was 5.5x2.5x2 cms in dimension with extension into surrounding soft tissues confusing the picture with periosteal chondrosarcoma later on confirmed with histopathology report as a case of periosteal chondroma. MRI in addition to radiography is very important in making diagnosis and excluding the differentials of periosteal chondroma (11,17). Nojima et al (5) described the presence of 46 periosteal chondromas from more than 7000 primary bone tumors at the Mayo clinic in which 33 had hypercellularity, nuclear enlargement, hyperchromasia, double-nucleated cells, or myxoid change of the matrix, as seen in the presented patient. The treatment of choice for periosteal chondroma is marginal excision which was done in our patient too. Although intralesional curettage is a successful treatment for many patients with periosteal chondromas, recurrence has been reported after intralesional surgery which was found to be more likely due to inadequate intralesional excision (12,13,18,19). In our case, patient recovered uneventfully without any recurrence through marginal excision over the period of 2 year follow up.

Conclusions

This is the first case of periosteal chondroma of the radial diaphysis extending to distal metaphysis reported from the Asian population. All the patients with chronic deep dull aching pain of long tubular bones should be advised to undergo radiographs so that lesion can be detected early and managed properly for good end results.

References

1. Keiller VH. Cartilaginous tumors of bone. Surg Gynecol Obstet 1925; 40: 510.
2. Lichtenstein L, Hall J. Periosteal chondroma: a distinctive benign cartilage tumor. J Bone Joint Surg Am 1952; 34-A: 691-7.
3. Boriani S, Bacchini P, Bertoni F, Campanacci M. Periosteal chondroma. A review of twenty cases. J Bone Joint Surg Am 1983; 65: 205-12.
4. deSantos LA, Spjut HJ. Periosteal chondroma: a radiographic spectrum. Skeletal Radiol 1981; 6: 15-20.
5. Nojima T, Unni KK, McLeod RA, Pritchard DJ. Periosteal chondroma and periosteal chondrosarcoma Am J Surg Pathol 1985; 9: 666-77.
6. Sinha S, Singhania GK, Campbell AC. Periosteal chondroma of the distal radius. J Hand Surg [Br] 1999; 24: 747-9.
7. Lisanti M, Buongiorno L, Bonicoli E, Cantini G. Periosteal chondroma of the proximal radius: a case report. Chir Organi Mov. 2005 Oct-Dec;90(4):403-7.
8. Parodi KK, Farrett W, Paden MH, Stone PA. A report of a rare phalangeal periosteal chondroma of the foot. J Foot Ankle Surg. 2011 Jan-Feb;50(1):122-5.
9. Al-Qudah AS, Abu-Ali HM, Al-Hussaini MA, Massad IM. Periosteal chondroma of the clavicle: case report and review of the literature. Int J Surg. 2009 Apr;7(2):140-1.
10. Sirichai Luevitoonvechkij , Olarn Arphornchayanon, Taninnit Leerapun , Songsak Khunsree. Periosteal Chondroma of the Proximal Humerus: A Case Report and Review of the Literature J Med Assoc Thai 2006;89(11): 1970-75.
11. Woertler K, Blasius S, Brinkschmidt C, Hillmann A, Link TM, Heindel W. Periosteal chondroma: MR characteristics. J Comput Assist Tomogr 2001; 25: 425-30.
12. Lewis MM, Kenan S, Yabut SM, Norman A, Steiner G. Periosteal chondroma. A report of ten cases and review of the literature. Clin Orthop Relat Res 1990; 185-92.
13. Bauer TW, Dorfman HD, Latham JT Jr. Periosteal chondroma. A clinicopathologic study of 23 cases. Am J Surg Pathol 1982; 6: 631-7.
14. Nosanchuk JS, Kaufer H. Recurrent periosteal chondroma. Report of two cases and a review of the literature. J Bone Joint Surg Am 1969; 51: 375-80.
15. Rockwell MA, Saiter ET, Enneking WF. Periosteal chondroma. J Bone Joint Surg Am 1972; 54: 102-8.
16. Bertoni F, Boriani S, Laus M, Campanacci M. Periosteal chondrosarcoma and periosteal osteosarcoma. Two distinct entities. J Bone Joint Surg Br 1982; 64: 370-6.
17. Lorente MF, Bonete Lluch DJ, Marti PV. Childhood periosteal chondroma. Arch Orthop Trauma Surg 2000; 120: 605-8.
18. Mora R, Guerreschi F, Fedeli A, Alfarano M, Angi V. Two cases of periosteal chondroma. Acta Orthop Scand 1988; 59: 723-7.
19. Ricca RL Jr, Kuklo TR, Shawen SB, Vick DJ, Schaefer RA. Periosteal chondroma of the cuboid presenting in a 7-year-old-boy. Foot Ankle Int 2000; 21: 145-9.

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