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Case Report

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Subungual osteochondroma of great toe: a unique presentation

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ABSTRACT

Osteochondroma is routinely encountered in daily practice. It is often considered as developmental aberration rather than a true neoplasm. It arises due to enchondral growth from cortex adjacent to metaphysis. Osteochondroma is usually encountered in femur, fibula and humerus in more than fifty percent of cases. It is rarely encountered in phalanges of toes and fingers. In very few cases this tumor affects small bones, localizing to the distal phalanx and producing deformity of the overlying nail. These cases are termed subungual osteochondromas and are altogether with subungual exostosis the most common bony lesions affecting the nail unit. Osteochondromas of the nail unit are often asymptomatic and present as firm nodules, nail deformity, tender on palpation. Many of these cases are associated with history of trauma. A 11-year-old male presented to us with an abnormal outgrowth of right great toe. The out growth was preceded by a history of trauma 10 days before the presentation. The swelling surface consisted of granulation tissue and bleeding spots were found on the surface. The swelling is fixed to the underlying bone and seems to have caused the destruction of nail plate. Biopsy revealed osteochondroma of the great toe with no malignant transformation and atypical cells.

Keywords: Osteochondroma, Bone tumors, Chondral cells

INTRODUCTION

Osteochondroma is a common neoplasm encountered in daily orthopaedic practice. Osteochondroma is most often considered to be a developmental aberration rather than a true neoplasm. It consists of 20 to 40 percent of all bone tumors and 10 to 15 percent of all bone tumors.[1] Histologic studies reveal it consists of cortical trabecular bone with an overlying cartilaginous cap.[2] There must be evidence of continuity with the parent bone cortex and the medullary canal.

Osteochondroma commonly arises from larger bones with enchondral growth. it is commonly benign and often arises from the cortex adjacent to metaphysis.[4] They have been experimentally reproduced by placing cells of epiphyseal cartilage underneath the periosteum as described in Virchow's theory.[5] Hence these are bony outgrowths from the parent bone due to enchondral proliferation. Osteochondroma mostly presents as a solitary tumor but in association with syndromes like multiple hereditary exostosis and Langer–Giedron or tricorrinophalangic syndrome multiple lesions are found.[6]

Majority of osteochondromas are solitary and found to be in femur, fibula, humerus accounting for more than fifty percent of cases.[7] Some rare cases include the one in the anterior capsule of knee, scaphoid, scapula and vertebral column.[8] It rarely effects phalanges of fingers and toes. It usually affects young adults and adolescents. Age group usually varies from 10 to 25 years.

In very few cases this tumor affects small bones, localizing to the distal phalanx and producing deformity of the overlying nail. These cases are termed subungual osteochondromas and are altogether with subungual exostosis the most common bony lesions affecting the nail unit.

4 benign tumors have been frequently found in the subungual region which are osteochondroma, exostosis epidermoid cyst, enchondroma. Exostosis usually consists of fibrocartilaginous cap where as osteochondroma consists of hyaline cartilage cap. Osteochondromas of the nail unit are often asymptomatic and present as firm nodules, nail deformity, tender on palpation. Many of these cases are associated with history of trauma.

CASE REPORT

An 11-year-old male presented to us with an abnormal outgrowth of right great toe. The out growth was preceded by a history of trauma 10 days before the presentation. Swelling was gradually increasing in size since the trauma. Swelling was associated with mild to moderate aching pain the great toe which was gradually increasing. There was no history of constitutional symptoms. There was no family history of any bony tumors or cancers. There was no history of any other bony swellings.

On examination the swelling was globular in shape of size about 2×1 cm and over lying skin was not intact. The swelling surface consisted of granulation tissue and bleeding spots were found on the surface. The swelling is fixed to the underlying bone and seems to have caused the destruction of nail plate. Discolouration of the nail plate was found on the anterior aspect. Boundaries of the swelling were found well circumscribed. Edges were smooth and regular. Consistency of the swelling was soft to firm.

However, capillary refill time was less than 3 seconds in the great toe. Pinprick sensation was present in the toe. There was no sensory loss over the great toe. There was no restriction of movement at the proximal and distal interphalangeal joints.

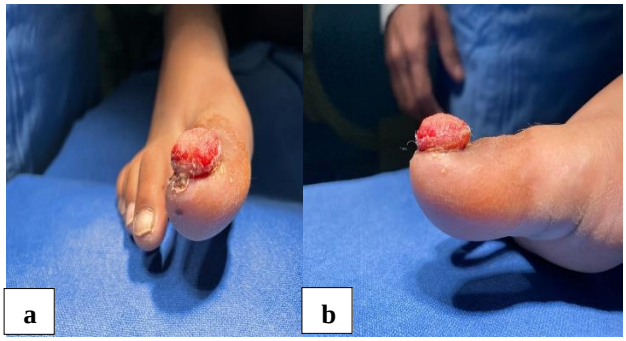

Figure 1 (a and b): Clinical presentation of the swelling.

Management

Radiographic evaluation of the toe was done to look for any bony pathology. It revealed a mass arising from the distal phalanx of great toe. The following figure illustrates the AP/OBLIQUE views of right foot.

After cleaning and draping of the foot, 2 percent lignocaine was used to apply ring block of the great toe. Excision and curettage of lesion was done. The mass sent to biopsy.

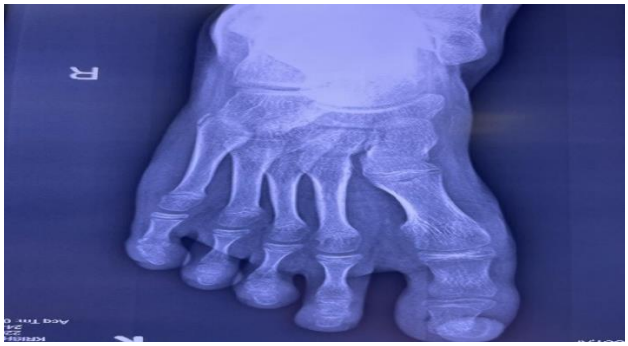

Figure 2: Radiographic evaluation of the toe.

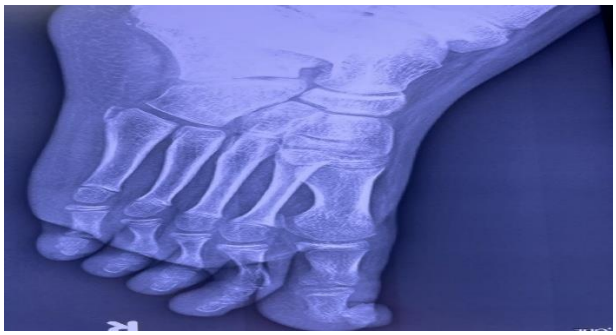

Figure 3: Radiographic evaluation of the toe.

Figure 4: Excision and curettage of lesion.

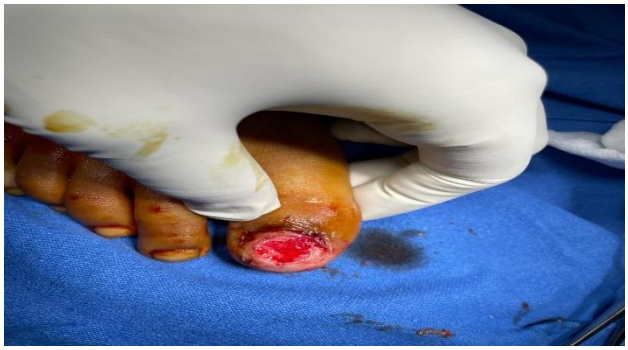

Figure 5: Excision and curettage of lesion.

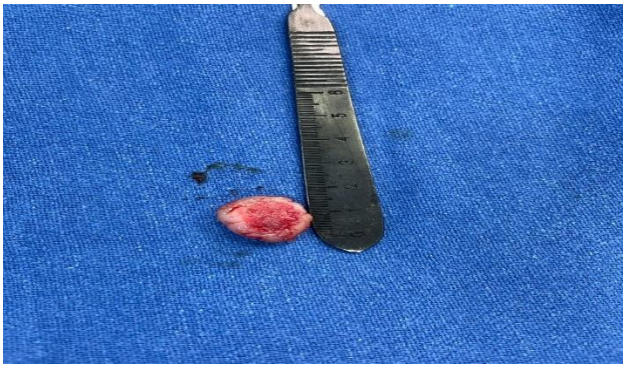

Figure 6: Mass.

Biopsy revealed osteochondroma of the great toe with no malignant transformation and atypical cells.

DISCUSSION

Osteochondroma are usually benign and occur due to abnormal proliferation of chondral cells usually found in adolescent and young adult population. Subungual osteochondromas are usually asymptomatic. Pain is usually the presenting complaint in patients with subungual osteochondroma which is the case in our patient. Cartilage caps growth leads to pulling up of cortex along with it leading to pain and oppression.[9]

Osteochondroma also usually presents with firm nodules and deformity in the nail bed. Tenderness on palpation is also a noted examination finding. The differentials were considered as follows before the radiological and histological examination verrucae, squamous cell carcinoma, glomic tumor and even bacterial infection.[10]

The presence of sessile or pediculated juxtaepiphyseal protuberances of long or short bones in continuity with the underlying bone cortex and medullary channel is so distinctive in the radiography, that some authors consider it does not require histologic confirmation. Thus, radiology is considered an important study for the diagnosis of this entity, regardless of its location. All the patients included in this report had the characteristic radiographic features described for subungual osteochondromas.[9]

On histology, a hyaline cartilage cap with a high number of chondrocytes is observed. In the center of the tumor enchondral ossification is found as well as trabecular bone with osteocytes, osteoblasts, and hematopoetic cells—medullary contents.

The most widely accepted treatment protocol for treatment of great toe osteochondroma is excision of the lesion with curettage of the base. Recurrence as high as 11 percent was found in cases with incomplete excision and curettage of the base. Radiographs were used for follow-up to look for any recurrence or malignant transformation.[11]

To the best of our knowledge there has not been any case of osteochondroma of great toe with originated from the bone growing out destroying the nail bed and covered by a granulation tissue. It is a very unique presentation of the subungual osteochondroma and it resembles a soft tissue tumor.

CONCLUSION

Osteochondroma are bony outgrowths from the parent bone due to enchondral proliferation. Osteochondroma mostly presents as a solitary tumor but in association with syndromes like multiple hereditary exostosis and Langer–Giedron or tricorrinophalangic syndrome multiple lesions are found.

Osteochondroma of distal phalanx is a very rare entity particularly this kind of presentation after trauma. Destruction of entire nail bed and rapidly growing tumor within ten days of presentation. It is a very unique presentation of the subungual osteochondroma and it resembles a soft tissue tumor. The most widely accepted treatment protocol for treatment of great toe osteochondroma is excision of the lesion with curettage of the base. Recurrence as high as 11 percent was found in cases with incomplete excision and curettage.

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