

Giant Cell Tumor of Great Toe Mimicking Giant Cell Reparative Granuloma

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ABSTRACT

Giant cell tumor of bone is a benign tumor composed of diffuse osteoclastic giant cells and mononuclear stromal cells. Giant cell tumor of small bones of hands and feet are different in behavior than Giant cell tumor of long bones. Giant cell tumor of toe is very rare (less than 2%), when it involve the toes, it more commonly affects younger age group and is more aggressive in nature. We report a case of Giant cell tumor of distal phalanx of great toe, which was difficult to differentiate radiologically with giant cell reparative granuloma. En bloc resection of the tumor was done and Giant cell tumor was confirmed on histopathology.

Key words: Benign; bone tumor; giant cell reparative granuloma; giant cell tumor; toe

Introduction

Giant cell tumor and Giant cell reparative granuloma often have similar radiographic features. Giant cell reparative granuloma commonly affects mandible, maxilla, hand or feet, and Giant cell tumor commonly affects meta-epiphysis of long bones, most commonly adjacent to knee.^[1] Eccentric, expansile lytic lesion with non-sclerotic margins is the typical radiographic feature of Giant cell tumor.^[2] Giant cell reparative granuloma is not a true neoplasm; it is a reactive process with non-specific radiological findings.^[3] Cortical destruction with soft tissue extension can be seen in aggressive forms of both the Giant cell tumor and Giant cell reparative granuloma.^[1]

Case Report

A 21-year-old male presented with pain and swelling over the great toe of left foot since 2 months which was progressively increased in size. There was no history of trauma, infection or systemic disease. Clinical examination revealed reddish discoloration of toe. There was a mass seen involving the great toe which was hard in consistency [Figure 1].

Radiograph of the toe revealed the expansile lytic lesion seen involving the distal phalanx of the great toe. Extensive bone destruction was seen with soft tissue component. Destruction of the cortex was seen on lateral aspect and thinned out cortex seen on medial aspect of toe [Figure 2]. MRI was further advised which revealed a large expansile lesion involving the distal phalanx of great toe of left foot. It is isointense on T1WI [Figure 3], hyperintense on T2WI [Figure 4] and STIR. It showed mild patchy enhancement on post-contrast images. Extensive bone destruction and cortical break was seen with soft tissue component [Figure 5]. Radiograph of the chest did not reveal any sign of metastasis, which may be seen in aggressive Giant cell tumor. Differential diagnosis of Giant cell tumor depends on location and radiological feature. Depending on the location and radiological findings, differential diagnosis of Giant cell tumor and Giant cell reparative granuloma was given.

True cut biopsy was done and histopathology report revealed multinucleated giant cell and stromal component. These multinucleated giant cell tumors were diffusely distributed, no reactive granulation tissue or areas of hemorrhage were seen. These features are suggestive of Giant cell tumor. Patient underwent surgery [Figure 6] and amputation of great toe distal to metatarsophalangeal joint was done, proximal 1/3rd of proximal phalanx is preserved [Figure 7]. Giant cell tumor was confirmed on histopathology [Figure 8].

Discussion

Giant cell tumor comprises less than 5% of primary bone tumors.^[4] It is a benign however locally aggressive

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tumor.^[5] Typical radiographic appearance of Giant cell tumor is expansile, lytic lesions with non-sclerotic margin and narrow zone of transition.^[4] It most commonly affects the epiphysis and metaphysis of the long bones.^[4] Most commonly seen adjacent to knee joint (approximately 70%), distal radius is the second common location.^[5] Giant cell tumor is rarely seen in the foot (less than 2%).^[6,7] When occurring in foot, it more commonly affects younger age group, more common in females than male and tend to have more aggressive in nature than in other locations.^[8-10] Giant cell tumor is usually solitary, however multiple lesions may occur rarely, 5-10% cases may be malignant.^[1] Aggressive giant cell tumor may cause cortical destruction with soft tissue extension. Radiological appearance of Giant cell reparative granuloma may mimic the Giant cell tumor or aneurysmal bone cyst, however histologically they are readily distinguishable.^[4] Giant cell reparative granuloma is a non-specific osteolytic lesion, which is not a true neoplasm, but a reactive process of

unknown etiology.^[3] There may be history of injury in giant cell reparative granuloma. On radiography there is expansile lytic lesion in Giant cell reparative granuloma, bony cortex is thinned out but usually intact; however, in more aggressive cases, destruction of the bony cortex with soft tissue extension can be seen.^[3] Adequate literature on advance imaging features of Giant cell reparative granuloma is not available; however, these lesions are more commonly low to intermediate signal intensity on T1WI and T2WI, cystic areas are less common in Giant cell reparative granuloma.^[1] A typical histopathological findings in Giant cell tumor of bone show Giant cells in diffuse distribution in background of mononuclear cells.^[1] Histopathology of Giant cell reparative granuloma show reactive granulation tissue, spindle-shaped fibroblast, focal hemorrhage and scattered giant cells. Multinucleated giant cells spread throughout the lesion but often focal in distribution around areas of possible hemorrhage in contrast to Giant cell tumor where the giant cells are more evenly distributed.^[11]



Figure 1: Picture of a 21-year male presented with pain and swelling in the distal phalanx of great toe of left foot



Figure 2: Radiograph anteroposterior view revealed expansile osteolytic lesion of distal phalanx of great toe with destruction of the bony cortex and soft tissue extension

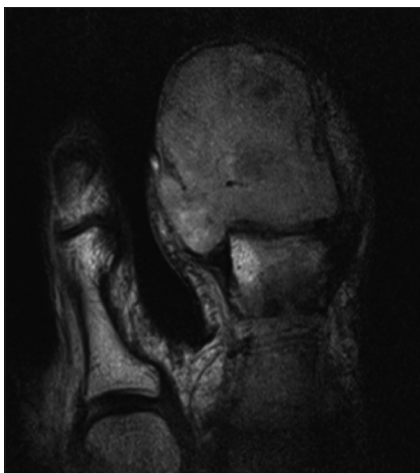


Figure 3: T1-Weighted MRI of great toe revealed expansile isointense lesion involving the distal phalanx of great toe with soft tissue extension

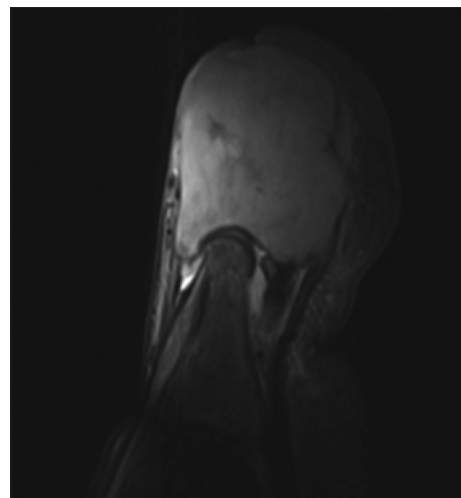


Figure 4: T2-Weighted MRI showed expansile hyperintense lesion involving distal phalanx of great toe with soft tissue extension

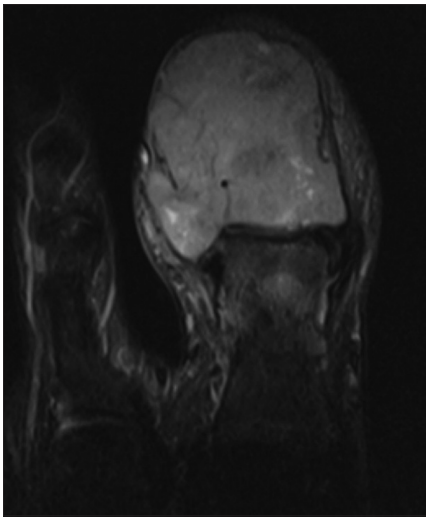


Figure 5: Post contrast T1-Weighted MRI revealed mild patchy enhancement of the lesion



Figure 7: Post-surgery radiograph

Diagnosis requires very careful clinical, radiological and histopathological evaluation.

Treatment

Local wide resection of the involved phalanx is the treatment of choice for locally aggressive Giant cell tumor.^[12] Reconstruction with allograft or metal prosthesis can be done when it involve a joint. Curettage and bone graft resulted in recurrence rate of 90%, thus curettage is an unacceptable form of treatment in locally aggressive giant tumors of foot.^[12] Radiation therapy is generally reserved for the inoperable cases. Conventional management of giant cell reparative granuloma is enucleation and curettage, however recurrence is seen in 10-20% cases. En bloc resection should be done in aggressive cases.^[11]

References

1. Murphy MD, Nomikos GC, Flemming DJ, Gannon FH, Temple HT, Kransdorf MJ. Imaging of giant cell tumour and giant cell

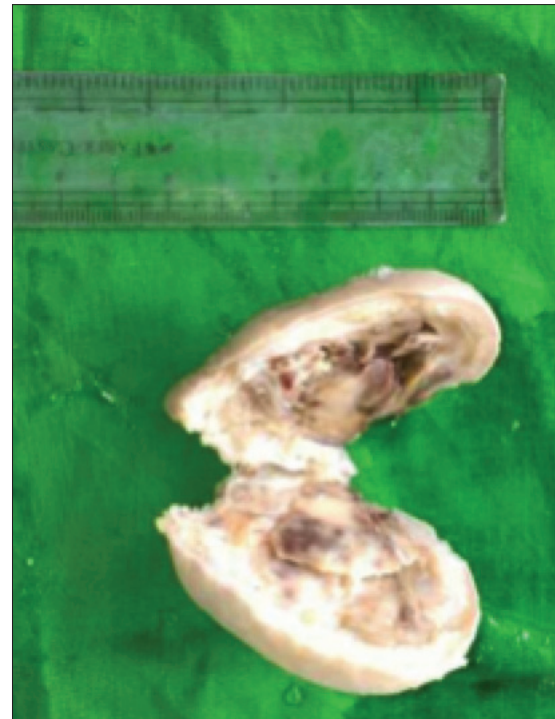


Figure 6: Picture of excised tumor

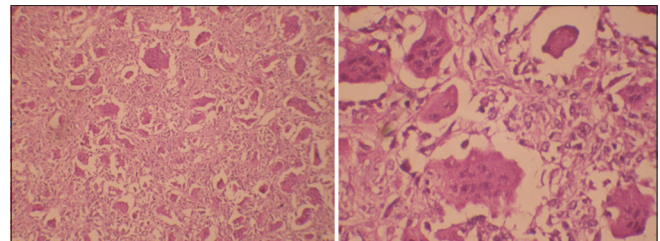


Figure 8: Histopathology revealed diffusely scattered multinucleated giant cell and stromal component. No evidence of reactive granulation tissue or focal hemorrhage

- reparative granuloma of bone: Radiologic-Pathologic Correlation. Radiographics 2001;21:1283-309.
2. Stacy GS, Peabody TD, Dixon LB. Mimics on radiography of giant cell tumor of bone. Am J Roentgenol 2003;181:1583-9.
3. Chilla BK, Hilfiker P, Zaugg H, Holder J, Von Hochstetter AR. Distal phalanx CGRC. J Am soc Surg Hand 2005;5:109-14.
4. Biscaglia R, Bacchini P, Bertoni F. Giant cell tumor of the bones of the hand and foot. Cancer 2000;88:2022-32.
5. Arslan G, Karaali K, Cubuk M, Gelen T, Lülecı E. Giant cell tumor of the fourth metacarpal bone. Clin Imaging 2000;24:139-42.
6. Muscolo DL, Ayerza MA, Aponte-Tinao LA. Giant cell tumours of bone. Curr Orthop 2001;15:41-50.
7. Wu KK. Giant cell tumor of the foot. J Foot Surg 1992;31:414-9.
8. O'Keefe RJ, O'Donnell RJ, Temple HT, Scully SP, Mankin HJ. Giant cell tumor of bone in the foot and ankle. Foot Ankle Int 1995;16:617-23.
9. Scully SP, Mott MP, Temple HT, O'Keefe RJ, O'Donnell RJ, Mankin HJ. Late recurrence of giant cell tumor of bone. A report of four cases. J Bone Joint Surg 1994;76-A:1231-3.
10. Bapat MR, Narlawar RS, Pimple MK, Bhosale PB. Giant cell tumor of talar body. J Postgrad Med 2000;46:110-1.

11. Pogrel AM. The diagnosis and management of giant cell lesions of the jaws. *Ann Maxillofac Surg* 2012;2:102-6.
12. Mahajan S, Shikari AB, Habib M, Kuchey GA, Sharma S. Giant cell tumor of the second metatarsal. *Int J Orthop Surg* 2009;11:11.

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