



Giant Cell Tumor of Phalanx – An Unusual Site

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Authors' contributions

This work was carried out in collaboration among all authors. Authors DP and SD contributed to the article concept, data acquisition, manuscript preparation, editing and review. Authors ST, SS and VV contributed to manuscript preparation editing and review. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Giant Cell Tumor (GCT) is a locally aggressive bone tumor typically affecting the ends of long bones with fewer than 5% of cases involving the tubular bones of the hands and feet. At these rare sites, other differential diagnosis have to be considered and ruled out based upon the clinical, radiological and histopathological findings. We came across a case of giant cell tumor of the base of proximal phalanx of index finger in a 34-year-old male in whom the clinical presentation, radiological finding and most importantly the key features on histopathological examination helped us clinch this rare diagnosis. Through this case we understood the importance of differentiating features of GCT from other giant cell lesions of bone that form the basis of the final diagnosis, that is crucial in order to decide the line of management.

Keywords: Giant cell tumors; bone neoplasms; hand; giant cells.

1. INTRODUCTION

Giant cell tumor (GCT) is a bone neoplasm having locally aggressive nature. This tumor is known to commonly affect the ends of long bones. GCT of the tubular bones of hands and feet is exceedingly rare, accounting for less than 5% of all cases. Diagnosis of giant cell tumor at such unusual sites requires correlation of the clinical, radiological, and histopathological findings, and ruling out of the other differential diagnosis.

2. CASE REPORT

A 34 -year-old male presented with history of a fast-growing swelling at the base of left index finger with a duration of 2 months. X ray and Computed Tomography scan revealed a lytic lesion with soap bubble appearance at the base of proximal phalangeal bone of the left index finger with breach of the bony cortex (Fig. 1). On surgical exploration, tumor was identified involving the bone and extending into the surrounding soft tissue. Complete tumor excision was performed. Macroscopically, the tumor specimen was composed of multiple tissue bits with yellowish-white appearance, firm consistency, admixed with blood (Fig. 2A). The microscopic findings revealed a tumor composed

of sheets of neoplastic ovoid mononuclear cells interspersed with uniformly distributed large, osteoclast like giant cells, confirming the diagnosis of giant cell tumor (GCT) of bone. (Fig. 2B, 2C).

3. DISCUSSION

GCT represents 4 to 5% of all primary bone tumours with the peak incidence between the ages of 20 and 45 years. This tumor rarely involves small bones of hand comprising of less than 5% of cases. When found at these sites, it is usually found to be associated with younger age [1,2], aggressive course [1,2], radiologically advanced disease at presentation and high recurrence rate [3] following wide curettage and bone grafting. The lowest recurrence has been observed with complete resection/ amputation.

Although known as Giant cell tumor, it is not the giant cells but the mononuclear cells which are the neoplastic component of GCT. These mononuclear cells are thought to arise from primitive mesenchymal stromal cells that express RANKL (Receptor activator of nuclear factor kappa B ligand), which stimulates formation and maturation of osteoclasts from osteoclast precursors, representing the minor component of the tumor.



Fig. 1. CT image showing lytic lesion at the base of proximal phalangeal bone of the index finger, eroding the bony cortex



Fig. 2A. Multiple tissue bits of excised tumor tissue from base of proximal phalangeal bone

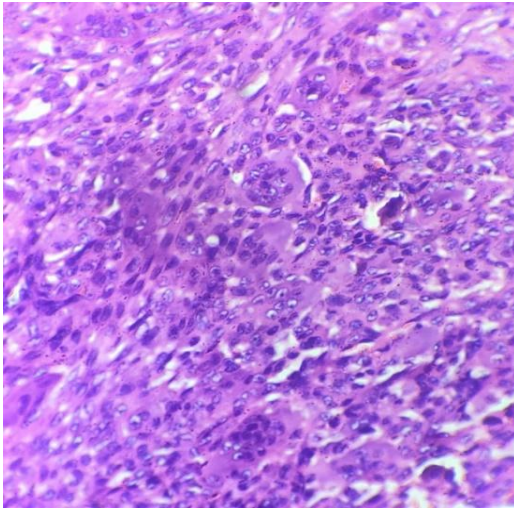


Fig. 2B. Histopathological examination showing numerous uniformly distributed giant cells and neoplastic mononuclear cells in the background (H&E Stain, 10X)

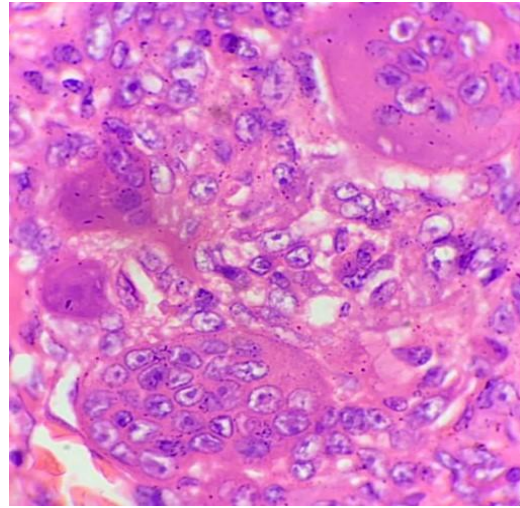


Fig. 2C. Histopathological examination showing multinucleated giant cells and neoplastic mononuclear cells in the background (H&E Stain, 40X)

The key histological features in the form of uniform distribution of giant cells and absence of giant cell clustering helped us to diagnose GCT at this rare site of involvement. The locally aggressive nature of GCT is evidenced by peripheral host bone permeation and soft tissue extension [4]. Small bone GCT has greater propensity for local recurrence as compared with the long bone GCT [5].

GCT is managed with extensive surgery in the form of bone curettage or amputation due to its locally aggressive nature.

Neoadjuvant therapy with denosumab (RANK Ligand inhibitor) is advisable for unresectable disease to facilitate intralesional surgery at a later stage thus avoiding a more invasive surgery [6].

4. CONCLUSION

GCT of small bones is rare. Prompt recognition is important with clinical, radiological and pathological correlation to manage these cases effectively. Key histological features differentiating it from other giant cell lesions in place of giant cell lesion.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and

ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Athanasian E, Wold L, Amadio P. Giant cell tumors of the bones of the hand. *The Journal of Hand Surgery*. 1997;22(1):91-98.
2. Yanagisawa M, Okada K, Tajino T, Torigoe T, Kawai A, Nishida J. A clinicopathological study of giant cell tumor of small bones. *Upsala Journal of Medical Sciences*. 2011;116(4):265-268.
3. Oliveira V, van der Heijden L, van der Geest I, Campanacci D, Gibbons C, van de Sande M, et al. Giant cell tumours of the small bones of the hands and feet. *The Bone & Joint Journal*. 2013;95-B(6):838-845.
4. Biscaglia R, Bacchini P, Bertoni F. Giant cell tumor of the bones of the hand and foot. *Cancer*. 2000;88(9):2022-2032.
5. Wold LE, Swee RG. Giant cell tumor of the small bones of the hands and feet. In *Seminars in Diagnostic Pathology*. 1984;1(3):173-184.

6. Van der Heijden L, Dijkstra PS, van de Sande MA, Kroep JR, Nout RA, van Rijswijk CS, et al. The clinical approach toward giant cell tumor of bone. *The oncologist*. 2014;19(5): 550.

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