

Giant Cell Tumor of Maxillary Sinus: a case report

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Abstract

Giant cell tumor is a benign primary bone neoplasm that usually occurs in the long bones. The skull is affected in only 1% of cases, predominantly in the sphenoid and temporal bones. Maxillary sinus involvement is exceedingly rare. The presented case is a 26 year-old man referred with history of gradual increase of swelling in the right side of face without any history of trauma or systemic disorders. Based on history, clinical examination and paraclinical finding, biopsy was done and pathology report was giant cell lesion.

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Introduction

Giant cell tumor (GCT) is a benign bone neoplasm, but it can be locally aggressive and has the tendency of local recurrence. Late malignant change with metastases especially to the lung has been reported (1, 2). GCT most often occurs in the epiphyses of long bones, particularly the distal of femur and radius and proximal of tibia. Sacrum is the most common site for lesions involving flat bones (3, 4-6).

The skull is affected in only 1% of cases, predominantly in the sphenoid and temporal bones. Maxillary sinus involvement is exceedingly rare (3-9). The GCT should be clinically, radiologically and histologically differentiated from

central giant cell granuloma, brown tumor of hyperparathyroidism, aneurysmal bone cysts, chondroblastoma and fibrous dysplasia. Radical surgical removal is the preferred modality of treatment.

Case presentation

The presented case is a 26 years-old man referred with a painless hard swelling on the right side of the face at maxillary region for six months. There was no history of any trauma to the face or teeth. Neither the patient nor his family had previous history of this problem. Examination revealed a swelling with obvious margin on the right side of the face that

was approximately 4cm in diameter obliterating the nasolabial fold and pushing up the ala of nose. The swelling was nontender, smooth surfaced, firmly related to the underlying maxillary bone and overlying skin and was normal in appearance. In nasal examination the right nasal cavity had severe obstruction. Intraoral examination revealed bulging of

hard palate and obliteration of buccogingival sulcus. No dental problem was seen in clinical examination. Computed tomography (CT) showed a radiolucent lesion arising from the inferior aspect of the right maxillary antrum with thinning and destruction of parts of the antral walls and posteriorly it reached the lateral and medial pterygoid plates (fig 1 & 2).

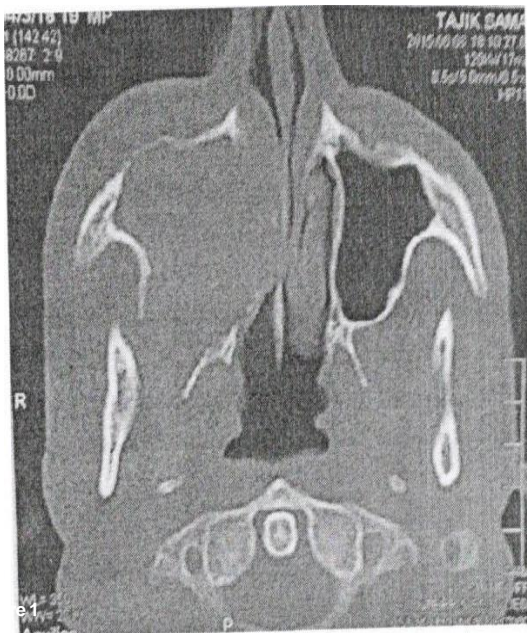


Figure 1. CT-scan image of paranasal sinuses (axial)

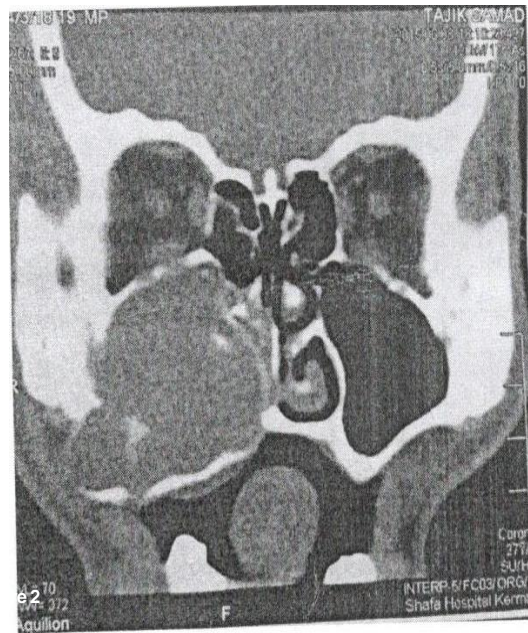


Figure 2. CT-scan image of paranasal sinuses (coronal)

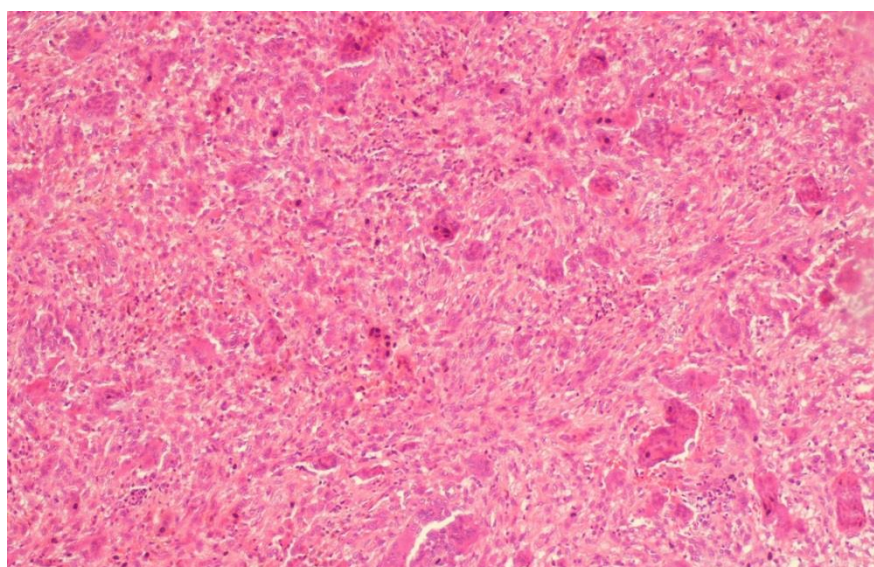


Figure 3. In microscopic examination, there was a benign neoplastic growth composed of round and mononuclear stromal cells along with many multinucleated giant cells. They had several nuclei similar to those of stromal cells and regulary distributed, most of them arranged toward the center of lesion. These findings suggested the diagnosis of giant cell tumor.

In biochemical tests, WBC and Ca, P, alkaline phosphatase and PTH levels were in normal range. Based on history, clinical examination and paraclinic findings, biopsy was done and pathological report was giant cell lesion. In the second admission, complete excision of mass was performed through the partial anteromedial maxillectomy and the defect was covered by soft tissue from the cheek. There was not any dental problem during the surgery and the alveolar ridge was normal. The final histopathological report was giant cell tumor (fig. 3). Two years after the operation no recurrence was seen.

Discussion

GCTs are considered benign neoplasm, but may display expansive and locally destructive behavior (1). GCTs accounts for about 5% of all primary bone tumors and 20% of benign bone neoplasms (2). They characteristically arise in the epiphyses of long bones. Sacrum is the most common site for lesions involving flat bones (2, 3, 6). The skull is affected in only 1% of cases, predominantly in the sphenoid and temporal bones. Maxillary sinus involvement is exceedingly rare (3, 9). GCTs present as single tumors and may occur at any age. From all, 20% to 33% of patients are over the age of 50 years (3-9). CT and MRI alone are unable to distinguish between giant cell bone lesions and clinical and histopathological studies are indispensable. In GCTs, cells are multinuclear, round or ovoid, and more uniformly distributed, and there is no bone neoformation. There are fewer foci of osteoid tissue, hemorrhage, and fibrosis, and little hemosiderin deposition (1, 6). Mitotic cells and focal necrosis are found in GCTs but not in giant cell reparative granuloma (GCRGs) (4).

In GCRGs giant spindle-shaped mononuclear cells that tend to cluster around areas of abundant bone formation, proliferation of fibroblasts, and hemorrhagic foci with hemosiderin deposition were seen (1, 6, 8, 10). The presence of bone metaplasia is highly suggestive of GCRGs (10).

Brown tumor of hyperparathyroidism when found in the facial region, may produce disfiguring deformity and difficulty in breathing and eating. These tumors are soft and elastic in palpation (12). The diagnosis of brown tumors is based on clinical and laboratory findings indicative of hyperparathyroidism (5). Other bone lesions that feature a giant cell component and aggressive behavior and may thus be included in the differential diagnosis are aneurysmal bone cyst, ossifying fibroma, fibrous dysplasia, cherubism, chondroblastoma and osteosarcoma (1, 3, 6, 10).

Adequate surgical excision with long-term follow-up should be the treatment of choice for managing a giant cell tumor. The type of surgery depends on the location of tumor (14). When complete resection of a GCT is not possible, adjuvant radiation therapy is indicated, despite the possibility of sarcomatous transformation (1, 2). Radiotherapy should not be attempted until all possibilities of surgical treatments have been exhausted (1). Chemotherapy is reserved for cases in which surgery and radiation therapy have failed to provide adequate tumor control (3). The present case treated through a partial anteromedial maxillectomy. In GCT of temporal bone reported by Brig and colleagues, the tumor had been excised through the incision in the front and behind the auricle and drilling the bone around the tumor (15). In another case presented by Somnath and colleagues, the tumor of maxillary region had been excised through a Weber-Ferguson incision and partial antrolateral maxillectomy (14).

Conclusion

GCT is a rare disease of head and neck region, particularly in maxillary sinus. Detailed clinical, radiological and histopathological examinations can determine the optimal course of treatment and always complete resection of the tumor and complete cure are the target objectives.

References

1. Bitoh S, Takimoto N, Nakagawa H, Namba J, Sakaki S, Gohma T. Giant cell tumor of the skull. *Surg Neurol* 1978; 9(3):185-8.
2. Saw S, Thomas N, Gleeson MJ, Bódi I, Connor S, Hortobágyi T. Giant cell tumour and central giant cell reparative granuloma of the skull: do these represent ends of a spectrum? A case report and literature review. *Pathol Oncol Res* 2009; 15(2):291-5.
3. Qureshi SS, Puri A, Agarwal M, Desai S, Jambhekar N. Recurrent giant cell tumor of bone with simultaneous regional lymph node and pulmonary metastases. *Skeletal Radiol* 2005; 34(4):225-8.
4. Marioni G, Marchese-Ragona R, Guarda-Nardini L, Stramare R, Tognazza E, Marino F, et al. Giant cell tumour (central giant cell lesion) of the maxilla. *Acta Otolaryngol* 2006; 126(7):779-81.
5. Orhan E, Erol S, Deren O, Sevin A, Ekici O, Erdoğan B. Idiopathic bilateral central giant cell reparative granuloma of jaws: a case report and literature review. *Int J Pediatr Otorhinolaryngol* 2010; 74(5):547-52.
6. Proimos E, Chimona TS, Tamiolakis D, Tzanakakis MG, Papadakis CE. Brown tumor of the maxillary sinus in a patient with primary hyperparathyroidism: a case report. *J Med Case Rep* 2009; 3:7495.
7. Goldenberg RR, Campbell CJ, Bonfiglio M. Giant-cell tumor of bone. An analysis of two hundred and eighteen cases. *J Bone Joint Surg Am* 1970; 52(4):619-64.
8. Mohammed TL, Brummett DP, Hahn FJ, Sharma P. Intracranial giant cell reparative granuloma arising from the temporal lobe area: MR findings. *AJNR Am J Neuroradiol* 2001; 22(5):873-5.
9. Wolfe JT 3rd, Scheithauer BW, Dahlin DC. Giant-cell tumor of the sphenoid bone. Review of 10 cases. Review of 10 cases. *J Neurosurg* 1983; 59(2):322-7.
10. Matsui T, Iwamuro K, Ishikawa T, Asano T, Itoyama S, Tabe H. Large giant cell reparative granuloma of the petrous bone--case report. *Neurol Med Chir (Tokyo)* 2002; 42(5):232-6.
11. Gandara-Rey JM, Pacheco Martins Carneiro JL, Gandara-Vila P, Blanco-Carrion A, García-García A, Madriñán-Graña P, et al. Peripheral giant-cell granuloma. Review of 13 cases. *Med Oral* 2002; 7(4):254-9.
12. Leal CT, Lacativa PG, Gomes EM, Nunes RC, Costa FL, Gandelmann IH, et al. Surgical approach and clinical outcome of a deforming brown tumor at the maxilla in a patient with secondary hyperparathyroidism due to chronic renal failure. *Arq Bras Endocrinol Metabol* 2006; 50(5):963-7.
13. Company MM, Ramos R. Giant cell tumor of the sphenoid. *Arch Neurol* 2009; 66(1):134-5.
14. Somnath S, Sharmila S, Padmini SV, Sudipta P. Giant cell tumor of the maxilla. *Philipp J Otolaryngol Head Neck Surg* 2012; 27(2):24-27.
15. Venkatesh MD, Vijaya N, Girish N, Galagali JR. Giant cell tumor of temporal bone: A case report. *Med J Armed Forces India* 2012; 68(4): 392-4.