

Central Giant Cell Granuloma Involving Mandible - A Report with CT Findings

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Abstract

Central Giant Cell Granuloma (CGCG) involving either jaw is not a common benign intra-osseous lesion containing giant cells; characterized by osteoclast-like giant cells in a cellular fibrovascular stroma. The true nature of this lesion is controversial and remains unknown: the three competing theories are that it could be reactive lesion, a developmental anomaly or a benign neoplasm. The incidence of CGCG in the general population is estimated to be 0.0001%, with 60% of cases occurring before the age of 30 years. CGCG found more commonly in females and more commonly involve mandible as compared to maxilla, with an epicentre anterior to first molars. This paper presents a rare case of CGCG in a 52 year old female patient involving region posterior to mandibular first molar. As there is paucity in the literature about the CT findings of CGCG, we are presenting a case of CGCG with special emphasis on CT findings, in addition to clinical, histopathological and surgical aspect of the lesion.

Key-words: Central Giant Cell Granuloma (CGCG), Mandible, CT Scan

Introduction

Central giant cell granuloma (CGCG) is an intraosseous lesion consisting of cellular fibrous tissue which contains multiple foci of haemorrhage, aggregations of multinucleated giant cells and occasionally trabeculae of woven bone may be found. CGCG, as described by Jaffe in 1953, is an idiopathic non-neoplastic proliferative lesion. It is thought to be a reaction of the tissue to local irritating factors and is often associated with a history of trauma (Bhaskar 1977, Gorlin & Goldman 1970).^{1,2} Clinically; lesion commonly occurs in young adults and has a female predilection. Lesions are more commonly located in the mandible, anterior to first molars, and frequently cross the midline. The clinical appearance of CGCG is variable. It ranges from slow-growing, asymptomatic swelling to an aggressive lesion with pain. The most common presenting sign of CGCG is a painless swelling with noticeable facial asymmetry.³⁻⁶ The radiographic appearance of CGCG is not pathognomonic and may not be

differentiated from several other lesions of the jaws like ameloblastoma, odontogenic myxoma, ameloblastic fibroma, fibrous dysplasia etc.^{4,7,14}. The aim of this paper is to present a case of central giant cell granuloma in a 52 years old female patient with special emphasis on CT findings.

Case Report

A 52 years old female patient reported to the department of Oral Medicine and Radiology with the chief complaint of swelling in the lower left back tooth region since 5-6 months and pain in the same region since 1 month. History revealed that patient first noticed swelling 6 months back initially which was small and gradually increased to attain the present size. Patient had consulted a general dentist 3 months back where teeth were extracted in the same region but swelling still persisted. Swelling was not associated with any discharge/ ulceration. Further history revealed that there was associated history of pain along with swelling since 1 month. Pain was dull, intermittent and non-radiating in nature. Pain



relieved on taking medication and again aggravated itself. Past medical history was non-contributory. General physical examination revealed that patient was well oriented to time, place & person. All the vital signs were within normal range.

On extraoral examination, no gross facial asymmetry was noticed (Figure 1). On palpation a unilateral well defined oval shaped swelling which was firm in consistency, non-fluctuant, non-compressible and fixed to the underlying bone was noticed in left mandibular body in 36, 37 region. It was approximately 1.5 x 1 cm in size and tender in nature. Regional lymph nodes were non-palpable. On intraoral examination unilateral, solitary, well defined, ovoid shaped swelling was noticed extending antero-posteriorly from distal of 35 to distal of 38 in the buccal vestibule. 36, 37 was missing. Swelling extended medio-laterally from middle of alveolar ridge of 36, 37 towards buccal vestibule. It was approximately 1.5X1 cm in size & overlying mucosa was smooth & appeared to be normal. It was not associated with any discharge or ulceration (Figure 2). On palpation all the inspeitory findings were confirmed and it was firm to hard in consistency, well defined and tender in nature. It was non-reducible, non-compressible & non-fluctuant in nature. Egg shell crackling was noticed on buccal aspect of swelling in 36 region. Pulp Vitality test (by electric pulp tester) revealed 33, 34, 35, 38 were vital. On the basis of patient's history and clinical examination, provisional diagnosis of benign lesion in mandibular left posterior region was put forth.



Fig. 1 Extra oral photograph



Fig. 2 Intra oral photograph

Radiographic investigations were then carried out. IOPA revealed a well defined, radiolucent lesion with the evidence of ill-defined wispy septa and measuring approximately 1.3X1.5cm in size extending from distal of 35 to mesial of 38. Mandibular cross-sectional occlusal radiograph revealed marked expansion of buccal cortical plate in edentulous area w.r.t 36, 37 region (Figure 3). As the size of the lesion was large, we could not determine its extensions on IOPA, therefore Orthopantomogram was done. OPG revealed well defined radiolucent lesion with the evidence of ill-defined wispy septa and had internal rarefaction area in 37 region. It was approximately 1.5X1.8 cm in size (Figure 4). Superoinferiorly, it was slightly above alveolar ridge and extended upto 1cm above the inferior border of the mandible. Multidetected Computed tomography (MDCT) was done to determine the exact size and extent of the lesion three dimensionally. CT revealed well defined

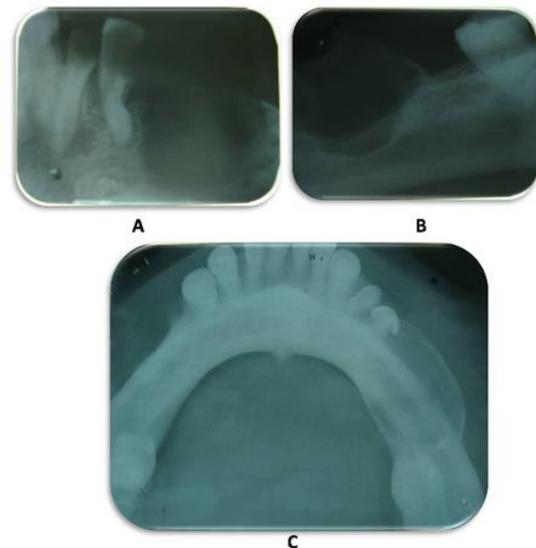


Fig. 3 IOPA of 33,34,35,38 and mandibular occlusal radiograph



Fig. 4 Panoramic radiograph

expansile, oval shaped, unilocular, isodense lesion in mandibular left posterior region wrt 35, 36, 37 region. It was 1.9X1.4 cm in size, with expansion of buccal cortical bone. The expansion was undulating in outline. Internal structure of the lesion was completely isodense with no evidence of hypodense or hyperdense areas (Fig.5). Under local anesthesia, the lesion was aspirated with an 18-gauge needle and found to be negative. Blood investigations did not reveal any abnormal levels. Later, incisional biopsy was done under local anaesthesia (Fig. 6). Histopathological reports were suggestive of features of central giant cell granuloma. On the basis of history, clinical, radiological and histopathological investigations, final diagnosis of central giant cell granuloma w.r.t left mandibular posterior region was put forth. Brown tumour of hyperparathyroid disease was excluded because of normal levels of parathyroid hormone, plasma phosphate, calcium and total protein. Lesion was then surgically excised under local anaesthesia. Postoperative healing was uneventful and patient has been under regular follow up. After 2 months prosthetic rehabilitation was done with removable prosthesis.

Discussion

Central giant cell granuloma is a relatively common lesion of the jaws that is generally thought to be reactive rather than neoplastic in nature.¹⁻³ The etiopathogenesis of the CGCG of jaw bones has not been clearly established but it has been suggested that it is the result of an exacerbated reparative process related to previous trauma and intraosseous haemorrhage that triggers the reactive granulomatous process.



Fig. 5 CT images



Fig. 6 Incisional biopsy specimen

Chuong et al in 1986 and Ficarra et al in 1987 suggested categorizing CGCG into aggressive and non-aggressive types on the basis of their clinical and radiographic characteristics. An aggressive lesion is characterized by rapid growth, pain, expansion and / or proliferation of the cortical bone, root resorption and has high recurrence rate. Non-aggressive lesion is characterized by slow growth and has low recurrence rate.^{4,5,11}

The incidence of CGCG in the general population is estimated to be 0.0001%. 60% of cases occur before the age of 30. Gender predilection reports are variable, but the majority occurs in females with a female-male ratio of approximately 2:1.1, 4,6,12,14 It has been noted that the development of CGCG occasionally coincides with the onset of pregnancy or menarche. The occurrence of CGCG in our case in a 52 years old female patient suggests it is not necessary to be in younger



group. Lesions develop twice as often in the mandible with an epicentre anterior to the first molar in young patients and there is a tendency for the epicentre to occur in the posterior aspect of the jaws after the first two decades of life.^{7,13,14} In the maxilla, the epicentre is more commonly anterior to the canine. An interesting aspect of this lesion is its point of origin which was in the posterior of the mandible, as the majority of CGCG lesions are reported anterior to the first molar. Also these lesions are usually painless while in this case the patient complained of pain.⁸⁻¹⁰

Imaging plays an essential role in the detection, characterization, pre-surgical evaluation of focal bone lesions of the mandible as well as in their post-operative follow up. Panoramic radiograph is still the imaging modality of choice, but CT allows an optimal view of the bone and provides essential data for differentiating benign and malignant lesions and for planning correct surgical procedure. The radiologic features of giant cell granuloma have not been clearly defined, the lesion may appear as an either unilocular or multilocular radiolucency with well-defined or ill-defined margins with varying degrees of expansion of the cortical plates. Radiographic appearance of the lesion is not pathognomic and may be confused with that of many other lesions of the jaws.^{4,6,7,13,14} In our case, the imaging features of the lesion were more typical of a benign tumor.

Histological CGCG characterized highly cellular, fibroblastic stroma with plump, spindle-shaped cells with a high mitotic rate; the vascular density is also high. The multinucleated giant cells are prominent throughout the fibroblastic stroma but are not necessarily abundant. Dystrophic calcification and metaplastic ossification are often seen, especially around the periphery of the lesion.^{3,6,11}

Central Giant Cell Granuloma is a non-reparative lesion that grows further if untreated. Conventional management of CGCG include surgical removal with aggressive curettage. More aggressive and recurrent lesions require resection, leading to major deformity of the jaws thus causing facial asymmetry. These might be

treated by non-surgical methods such as radiotherapy, daily systemic doses of calcitonin, and intra-lesional injections of corticosteroids. A non-surgical approach is probably a good treatment option for small, slow-growing lesions.¹¹⁻¹⁴

Conclusion

Central giant cell granuloma is a rare lesion of the head and neck region. Though a benign tumor, Central giant cell granuloma may be a locally destructive in some cases and if left untreated may cause facial asymmetry thus compromising the quality of life of the individual.

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