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Case Report

Central giant cell granuloma: A case report with review of literature

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ABSTRACT

Central Giant Cell Granuloma is a rare, benign, proliferative non-neoplastic lesion of the jaw. This lesion constitutes about 10% of all the lesions of the jawbones. The aim of this article is to review a case report of central giant cell granuloma of the mandible in 44 year-old female patient with the chief complaint of pain and swelling in the left side of the mandible since1.5 months. The diagnosis was made using histopathological examination which revealed numerous multinucleated giant cells distributed in a highly cellular stroma.

1. Introduction

Central Giant Cell Granuloma (CGCG) is a rare, benign, non-neoplastic and proliferative lesion of jaw bones.[1] It was first introduced by Jaffe in 1953 as a Reparative Granuloma.[2] However the term reparative is not in use nowadays because this lesion has been seen to cause destruction of involved bones. The World Health Organization has defined CGCG as "an intraosseous lesion consisting of cellular fibrous tissue that contains multiple foci of hemorrhage, aggregations of multinucleated giant cells and occasionally trabeculae of woven bone".[3]

It presents as a solitary lesion and radiographically can be seen as a multilocular radiolucency with scalloped margins with a honeycomb or soap bubble-like appearance. It accounts for less than 7% of all the benign tumors of the jaws. The mandible is more commonly affected than maxilla ranging with the proportion of 2:9-11:9.[4] Females have more predilection than males with ratio of 2:1.[5]

The clinical behavior of CGCG is not constant. In most cases it can be seen as asymptomatic, indolent with slow growth or may show aggressive nature with rapid hollowing out of bone along with cortical expansion, thinning and perforation. It may exhibit root resorption, displacement of adjacent structures including teeth and nerves supplemented with pain. High rate of recurrence of about 15%-20% has been seen in case of CGCG.[4]

2. Case Presentation

A 44-year-old female visited the Department of Oral and Maxillofacial Surgery at Himachal Institute of Dental Sciences with the chief complain of swelling in the left lower back teeth region since 1.5 month associated with pain. Pain was insidious in onset and non-radiating in examination there was no such change. The lymph nodes on palpation were found to be tender. An intra-oral examination revealed a yellowish- white shrunken lesion attached to lower left third molar (Figure 1). The lesion was non-tender on palpation and was approximately 8-10mm in size. The adjacent mucosa was normal in color. The patient went to a nearby doctor for medications, but there was no relief. Radiographically bone loss was evident in the region of 38 (Figure 2). Based on history and clinical features, the

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patient was provisionally diagnosed as fibroma. Extraction of 38 was done (Figure 3) and biopsy of the superficial tissue was performed. The histopathological examination revealed parakeratinized stratified squamous epithelium overlying a fibro cellular connective tissue stroma with dense inflammatory infiltrate along and endothelial cell lined blood vessels. The diagnosis of Pyogenic Granuloma was made.

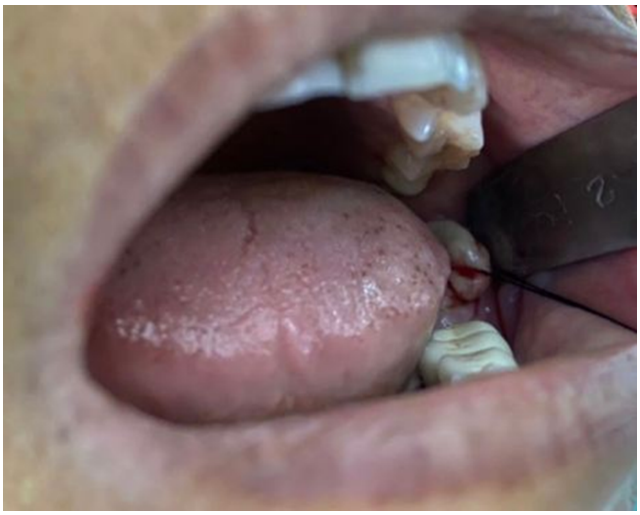

Fig. 1: Yellowish-white shrunken lesion attached to lower left third molar

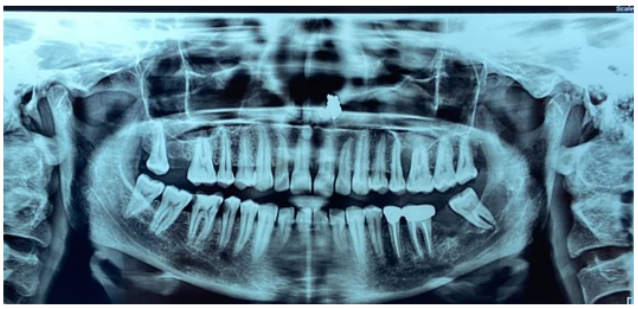

Fig. 2: Bone loss with respect to lower left third molar

However, the patient arrived after 3 months to the department of Oral and Maxillofacial Surgery again with complain of pain in the same region which began 15 days prior to her visit. Intraorally, vestibular tenderness in the region of 38 was noted. On palpation, sub-mandibular lymph nodes were found to be tender and fixed. Panoramic radiography revealed a unilocular radiolucency with ill-defined borders in relation to periapical region of 38. The radiolucency was seen in the left side extending from 37 to ramus of the mandible (Figure 4). Blood examination demonstrated low RBC and platelet count. Provisional diagnosis of Squamous Cell Carcinoma was made. A crestal incision along with the releasing incision was given

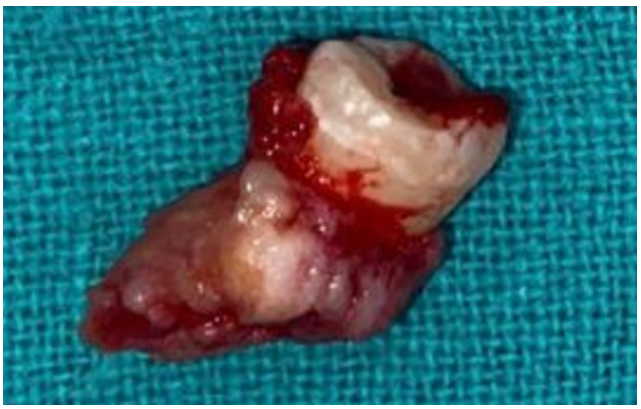

Fig. 3: Extracted third molar prior to surgical intervention

followed by mucoperiosteal reflection and thick lining was incised from the socket which was 3-4mm in size. After performing biopsy of the deeply curetted soft tissue specimen, the histopathological examination demonstrated increased number of fibroblasts and multinucleated giant cell distributed in the connective tissue (Figure 5). Few osteoid areas were seen (Figure 6). Then a diagnosis of CGCG was made.

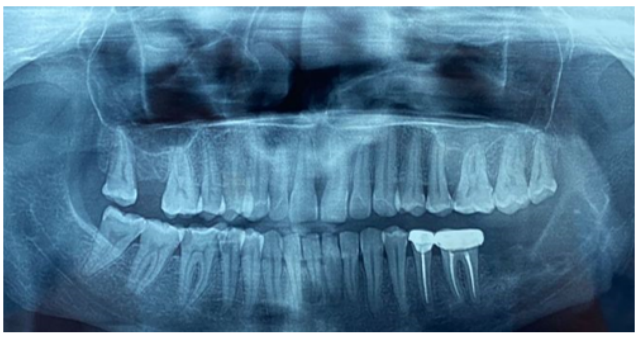

Fig. 4: Large radiolucent area extending from ramus to second molar

3. Discussion

The Central Giant Cell Granuloma of the jaw is a rare benign tumor with an unknown etiology.[6] Its incidence is estimated to be 0.0001% with 60% of cases occurring below the age of 30 with slight female predilection.[1] CGCG is mostly seen in the anterior region of the jaws and often crosses the midline. The mandible is more frequently affected as compared to maxilla and is seen confined to the tooth-bearing areas of the jaws.[7]

The etiology of CGCG is not assured and there has been many theories for its pathogenesis. Formerly, it was thought to be a hyperplastic reparative reaction to the trauma induced intraosseous hemorrhage. Though, a proper history of trauma may not be consistently found. Various theories

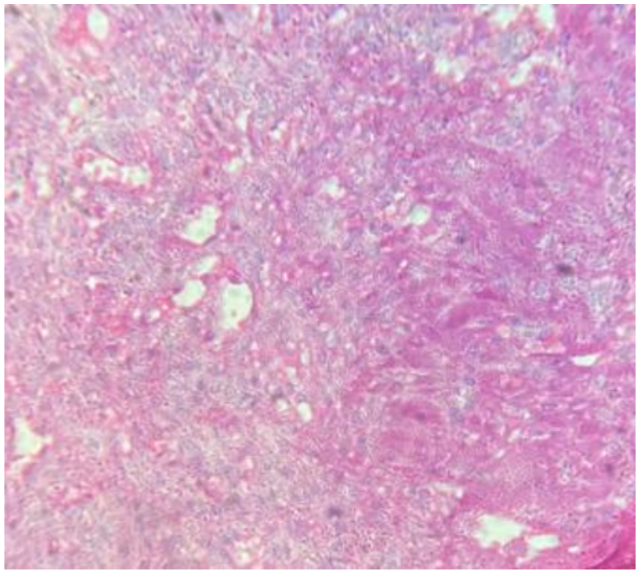

Fig. 5: Biopsy specimen; multinucleated giant cells in vascular stroma containing plump spindle shaped cells & areas of hemorrhage

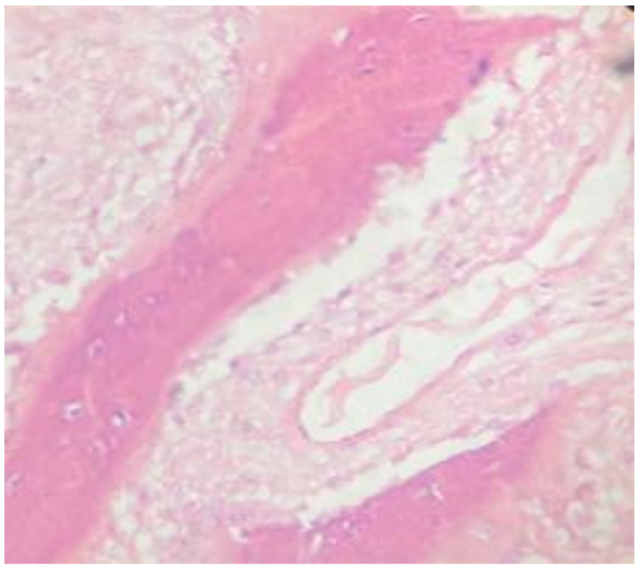

Fig. 6: Vital bone with osteocytes inside the lacunae

of pathogenesis includes infectious and repair process, developmental disturbance, or even inflammatory causes, however none of them has been accepted. The genetic cause has also been considered, however there is no evidence to support this hypothesis.[8] The role of t(X; 4) (q22; q31.3) has also been stated in the etiology of giant cell granuloma.[9]

Clinically CGCG can be classified as aggressive or non-aggressive in nature. Chuong et al. told that the lesions exhibiting size equal to or greater than 5cm with rapid growth are considered to be aggressive lesions. They might show tooth displacement, root resorption, cortical bone thinning and recurrence after curettage. When compared to non-aggressive lesions, the aggressive lesions show high recurrence rate, however no histological difference has been noticed.[10] Nearly 70% cases of CGCG are of a nonaggressive nature which are asymptomatic, slow-growing and the remaining 30% displays aggressive and gradually destructive behavior.[11] The clinical behavior as already mentioned is variable in case of CGCG. It ranges from slow growing asymptomatic swelling to an aggressive lesion. Generally the swelling is painless.[9] However the swelling may be associated with facial asymmetry and can cause difficulty in mastication.[1] Only in about 25% cases the lesion may be painful. Sometimes it may be a by chance finding seen in the radiograph that has been taken for any other purpose. The teeth associated with the lesion may show mobility however uphold their vitality.[9]

Radiographically the lesion of CGCG shows variability in its appearance. It may present as a Unilocular or a multilocular lesion with solitary radiolucency. Multilocular appearance is more commonly seen with the formation of septa in locules by calcifications.[12] Most of the cases of CGCG are seen in mandible with their epicenter lying in the region of first molar in young patients however, after first two decades of life the epicenter may be seen in posterior region. In maxilla, the more commonly affected region is anterior to canine. Well-defined to ill-defined borders may be seen along with variable expansion and destruction of cortical plates.[1] Internally the lesion may show fine granular bone pattern accompanied with straight, coarse and wispy septa. Resorption and displacement of teeth may also be seen in some cases.[13]

CGCG histologically consist of two different types of cell population that are multinucleated giant cells and spindle shaped stromal cells irregularly distributed in collagenous stroma.[14] According to WHO, histologically CGCG is defined as an intraosseous lesion consisting of fibrous tissue containing multiple foci of hemorrhage, aggregations of multinucleated giant cells and occasionally trabeculae of bone.[11] The multinucleated giant cells seen in CGCG are found to be of a foreign body type or osteoclast-like which has approximately 30 nuclei and equally scattered around the lesion.[14] Some areas of hemorrhage with hemosiderin deposits, aggregates of inflammatory cell and fibrosis can be demonstrated in the connective tissue stroma of CGCG. Some interspersed blood vessels ae also seen.[4]

The differential diagnosis of CGCG includes aneurysmal bone cyst, benign chondroblastoma, and brown tumor of hyperparathyroidism, cherubim, fibrous dysplasia, non-osteogenic fibroma, osteosarcoma and true giant cell tumor.[8] All these lesions should be distinguished from CGCG before confirming the diagnosis.[14]

The management of CGCG includes both surgical as well as non-surgical treatment.[14] The Surgical treatment

comprises of simple curettage, curettage with peripheral ostectomy, enucleation, and en bloc resection. Aggressive lesions are managed by curettage.[1] Successful results have been reported with the use of intralesional injection of corticosteroids.[15] In addition, Calcitonin therapy has been seen to play in important role in the management of CGCG. The recurrence rate of CGCG ranges between 11% and 49% in case of curettage alone but it has been reported that aggressive subtype of this lesion has a high recurrence rate of nearly 72%.[1]

4. Source of Funding

None.

5. Conflict of Interest

The authors declare no conflict of interest.

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