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Case Report

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Central Giant Cell Granuloma of The Maxilla: Case Report and Literature Review

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ABSTRACT

Introduction: Central giant cell granuloma (CGCG) is a rare bony lesion in the Head and Neck region. It is a non-odontogenic tumor never seen in any other bone of the skeleton. It is 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.

Case Report: We report a case of a 50-year-old female patient with swelling on the right side of face for 4 months. Intraoral examination shows a mass in right lower jaw in the region of 45 and 46 edentulous areas. The swelling had smooth surface, firm and tender on palpation. There was no expansion of lingual region. The radiological examination revealed a well-defined multiloculated expansile and lytic lesion in the right mandible, extending from the 44 to 47 with a resorption of teeth 44. The patient underwent incisional biopsy and the diagnosis of CGCG and brown tumor of hyperparathyroidism was proposed. According to the clinical radiological and biological findings, the diagnosis of CGCG was confirmed. The enucleation of the lesion with the extraction of 44 was done.

Discussion: Central giant cell granuloma (CGCG) is a benign intraosseous lesion of the head and neck with potential for aggressive and locally destructive behaviour. Lesions of the maxilla tend to expand more than those of the mandible due to the thinner cortices and spongy tissue of this location. Surgical removal is the most common treatment; however, it may be disfiguring in aggressive cases, especially for lesions located in the maxilla. Alternative treatments, such as intralesional corticosteroid injections, have been performed with satisfactory results.

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Introduction

Central giant cell granuloma (CGCG) is 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. CGCG, as described by Jaffein 1953, is an idiopathic non-neoplastic proliferative lesion.The term reparative giant cell granuloma at one time was widely accepted, as CGCG was considered primarily to be a local reparative reaction of bone, possibly to intramedullary hemorrhage or trauma [1].

The etiopathogenesis of this lesion is unclear with genetic and reparative response being hypothesised as positive factors [2].

It typically presents as a painless, slow-growing lesion that may expand into surrounding tissues [3]. Due to the thinner cortical bone and spongy tissue of the maxilla, CGCGs in this location tend to expand more than lesions of the mandible [4].

Case Report

A 50-year-old female patient presented with swelling on the right side of face for 4 months. In her anamnesis, she reported that she had no systemic complaints, and she had already had extraction of her teeth 45 and 46 a few years before the consultation.

On extra oral examination, there was a facial asymmetry, no par aesthesia problem, and no history of difficulty in opening the mouth. There was no associated regional lymphadenopathy. The swelling was firm in consistency and was tender on palpation.

Intraoral examination shows a mass in right lower jaw in the region of 45 and 46 edentulous areas. The swelling was extending from 44 to 47 area obliterating the buccal vestibule. The swelling had smooth surface, firm and tender on palpation. There was no expansion of lingual region (Fig. 1).

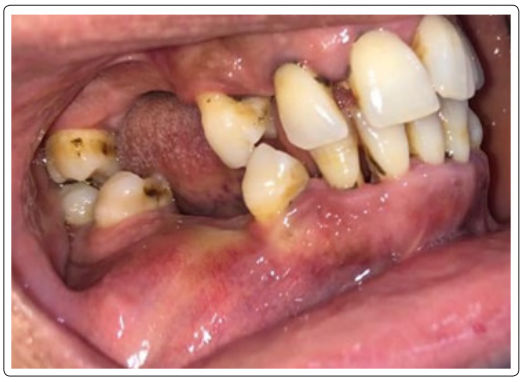

Figure 1: Swelling in right lower jaw in the region of 45 and 46 edentulous areas

The orthopantomogram and the three-dimensional images revealed a well-defined multiloculated expansile and lytic lesion in the right mandible, extending from the 44 to 47 with a resorption of teeth 44 (Fig.2). Axial scan revealed the destruction of the external cortical plate with repression of the inferior alveolar nerve (Fig. 3).

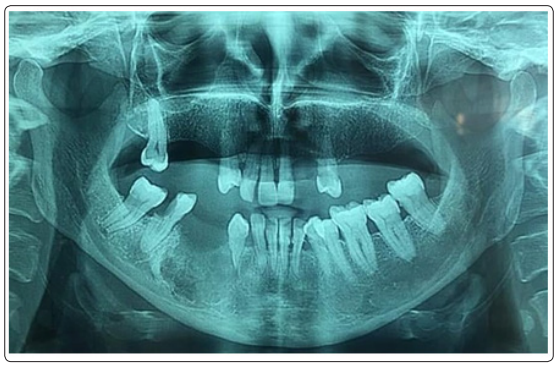

Figure 2: Panoramic radiograph showing a radiolucent lesion extending from the 44 to 47 with a resorption of teeth 44

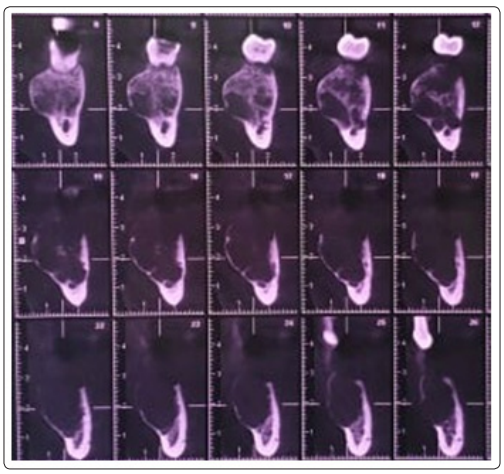

Figure 3: Axial scan revealed the destruction of the external cortical plate with repression of the inferior alveolar nerve

The patient underwent incisional biopsy to ascertain the nature of the lesion and to rule out a malignant etiology. Histopathological examination of the resected specimen revealed multinucleated giant cells surrounded by a collagen matrix. Hemosiderin pigment was observed.

As Central giant cell granuloma has a similar microscopic presentation to Brown tumours associated with hyperparathyroidism, the patient underwent tests to determine her serum ionized calcium and parathyroid hormone levels and was found to have values of 2,32 Mmol/L and 59,41 pg/mL respectively. Those values were normal. Final diagnosis of Central Giant Cell Granuloma was given.

The case was planned for surgery under regional anesthesia. Through the intraoral approach the lesion was exposed labially from 42 to 47 region. Enucleation with extraction of 44 was done. Histopathological examination showed similar features (Fig. 4, 5).

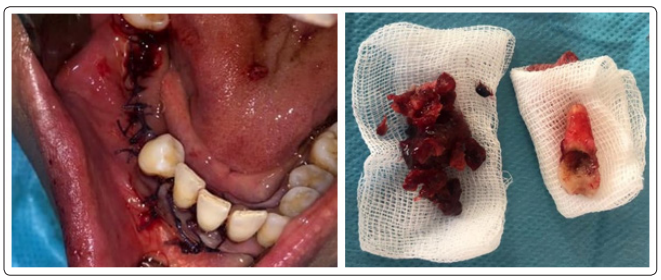

Figure 4,5: Enucleation of the lesion and the extraction of 44

Discussion

Giant Cell Granuloma is a rare bony lesion in the Head and Neck region. It is a non-odontogenic tumor never seen in any other bone of the skeleton.

World Health Organization defines it as an intra-osseous lesion consisting of cellular fibrous tissue and contains many foci of hemorrhage, aggregations of multinucleated giant cells and occasionally trabeculae of woven bone [1].

The CGCGs may occur at any age but are more common in those under 30 years of age [3]. Females are affected more frequently than males. They are more often located in the mandible than in the maxilla. The CGCG is more predominant in woman; it may be explained by recent suggestions of the association between hormonal secretion and the appearance of CGCG in females [5]. Our patient is a 50-year-old female, and the localization is in the mandible.

Clinically, the lesion may vary from an asymptomatic lesion that grows slowly without expansion, seen in this case, to an aggressive, painful process followed by root resorption and cortical bone destruction [6].

It can be aggressive and non-aggressive. The nonaggressive form is characterized by slow growth, is typically asymptomatic, and does not pierce cortical bone or induce root resorption; it has a low recurrence rate. The aggressive form is characterized by episodes of nonspecific pain, rapid growth, large lesions (>5 cm), paresthesia, root resorption, and cortical perforation [7]. In this case, CGCG caused a root resorption and cortical perforation.

On radiographic examination, CGCG varies from small apical lesions to large lesions involving multilocular radiolucent areas of maxilla. The presence of a thin opacification within the lesion is the most significant radiographic signal associated with CGCG. Its appearance is usually consistent with a unilocular or multilocular radiolucency, well or poorly defined, plus a varied expansion and destruction of the cortical plate. This pattern is not pathognomonic radiographically and can be confused with many other injuries in the maxilla and mandible [8]. In this case, the lesion was involving multiloculated radiolucent and well-defined area, with a resorption of teeth 44 and the destruction of the external cortical plate.

Histologically multinucleated giant cells in a cellular vascular stroma with new bone formation are detected. The osteoclast like giant cells has irregular distribution and is associated with areas of hemorrhage [9]. In our case, the histological examination revealed a multinucleated giant cell surrounded by a collagen matrix. Hemosiderin pigment was observed.

With regard to the diagnosis, there were several pertinent differential diagnoses. The age and site were not consistent for a diagnosis of ameloblastoma; the absence of dental caries ruled out periapical and radicular cyst; normal serum picture helped to rule out Brown tumor (hyperparathyroidism), and Cherubism due to its posterior presentation, size, and radiographic appearance. The incisional biopsy helped us narrow down the diagnosis to CGCG [10].

The traditional treatment of CGCL is surgical excision, enucleation, or resection. This choice depends on factors such as aggressive and non-aggressive form, location, size, and radiographic appearance [11]. The most aggressive types of lesions require a more radical approach. The management of these lesions depends on clinical and radiographic findings. In general, the enucleation of well-defined and localized lesions is associated with a low recurrence rate. In extensive lesions, based on imaging tests, where there has been cortical drilling, a more radical excision is mandatory. Enucleation remains the most common treatment modality for CGCG [12]. However, a rate of 24% recurrence was reported in non-aggressive lesions, so the preference for associations with other modalities is common [13]. To our patient, the management of the lesion was by the enucleation.

Other treatments include radiation, systemic injections of calcitonin, interferon, and intralesional injections with corticosteroids. The approach is calcitonin enhances and inhibits osteoclast activity. However, due to their great discomfort and relatively long treatment time, this treatment is not well accepted by all patients [14]. Bisphosphonate could be used for CGCG and fibrous dysplasia treatments in children. Bisphosphonates inhibit the formation of osteoclasts from immature precursor cells and induce the apoptosis of mature osteoclasts [15].

Intralesional injections with corticosteroids are increasingly used clinically, and some studies show excellent results. They can be considered a first treatment option. Intralesional injection is preferred than systemic injection, because in first one it is possible to achives a high drug concentration in tissue [14].

Kurtz & al. have injected a mixture that consists of equal amount of triamcinolone acetonide (10 mg/mL) and a local anesthetic (bupivacaine 0.5% with epinephrine 1:200,000). The suggested dosage is 2 mL per 2 cm of radiolucency and the injections should be administered in multiple locations once a week, for at least 6 weeks. In other studies, concerning the use of corticosteroid injections, authors suggested that 6 months to 3 years of treatment period is required for giant cell granuloma. This technique is well-tolerated and non-invasive. However, the lack of well-established protocols, especially in terms of drug dosage and treatment duration, warrants further controlled clinical trials which focus on long term follow-up and recurrence rates [15].

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