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CASE REPORT

Agressive central giant cell granuloma of the mandible: case report

Agressivo granuloma central de células gigantes de mandíbula: relato de caso

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ABSTRACT

Central giant cell granulomas (CGCG) are benign intraosseous proliferative lesions. Usually located are at the anterior region of the maxilla or mandible, although are more frequently found in the mandible. Etiopathogenesis of these lesions has remained unknown, however, some consider them as reparative response rather than neoplastic condition. Clinically CGCG present as asymptomatic, with expansive swelling causing deviation or proliferation of cortical bone. This condition is usually unifocal. Surgical removal is often the preferred treatment. Although nonsurgical treatment methods, such as intralesional corticosteroid injections, systemic calcitonin and interferon have been reported. This article describes the radiographic features of a large CGCG in the anterior mandibular region seen in a 9 year-old patient. Treatment of this lesion included resection of the anterior region of the mandible and replacement by tibia with bone growth factors.

KEYWORDS

Central giant cell granuloma; Reparative granulomas; Mandible; Jaws.

RESUMO

Granulomas de células gigantes (GCCG) são lesões benignas intra-ósseas proliferativas. Estas lesões podem aparecer na região anterior da maxila ou da mandíbula, porém mais frequentemente encontradas na mandíbula. A etiopatogenia permanece desconhecida, no entanto, alguns autores consideram como uma resposta reparadora, ao invés de uma condição neoplásica. Clinicamente, o CGCG é assintomático, podendo causar expansão com desvio ou a proliferação da cortical óssea. Esta condição é geralmente unifocal. A remoção cirúrgica é, na maioreia dos casos, o tratamento de escolha. Embora, os métodos de tratamento não-cirúrgicos, tais como injeções intralesionais de corticoesteróides, administração sistêmica de calcitonina e interferon foram relatados. Este artigo descreve as características radiográficas de um CGCG extenso na região anterior mandibular em um paciente de 09 anos de idade. O tratamento incluiu ressecção óssea com substituição por tíbia e aplicação de fatores de crescimento ósseo.

PALAVRAS-CHAVE

Granuloma central de células gigantes; Granuloma reparador; Maxila; Mandíbula, maxilares.

INTRODUCTION

Central giant cell granulomas (CGCG) are benign neoplasms usually located at the anterior region of the maxilla and mandible, and represent approximately 7% of all benign tumours of the jaws. Its aetiology is unknown, but bone haemorrhage from past trauma has been suggested as a probable cause [1-5]. Lesions are more frequently found in the mandible often crossing the midline, than the maxilla (2:1) [6]. As in the present case, these lesions can be detected incidentally on routine radiographic examination, so dentists should be aware of its features [3,7]. The objective of this article is to

present the radiographic features of a case of a CGCG in anterior mandibular region. Treatment may include enucleation and curettage and in some cases resection of the jaw [7]. Other treatment alternatives, avoiding invasive surgical procedures, are also described, such as intralesional corticosteroid injections and alpha interferon and calcitonin administration are the most used. [8] Recurrences are rare and more common in the maxilla [1,2,4,6].

CASE REPORT

A 9-year-old male patient was referred to the Department of Oral Radiology for evaluation of an asymptomatic rapid swelling in the anterior region of the mandible (Figure 1). The patient was completely asymptomatic and had no history of previous facial trauma or contributory medical factors. Panoramic radiography revealed an uniloculated radiolucency lesion which was causing teeth dislocation but no teeth resorption on the anterior region of the mandible (Figure 2).

A Computed Tomography (CT) was performed with a HiSpeed NX-I Dual Slice (General Electric), to evaluate the existence of expansion of the outer cortical plates. Axial slices of 1.0mm thick with an interval of 1.0mm, were obtained and these images were further reformatted using the software DentaScan to achieve cross-sectional images (Figure 2). The axial and cross-sectional images showed expansion and perforation of the buccal and lingual cortical plates (Figure 3 and 4). The lesion was uniloculated with well-defined and corticated margins. The internal structure showed ill-defined granular septa formed at right angles to the periphery. Histopathology revealed mucosa with giant cells, which confirmed a CGCG. Treatment of this lesion included resection of the anterior mandible and replacement by tibia with bone growth factors. The patient was followed up every year to evaluate the integration of the bone graft to the existent mandible, even though the recurrences are rare and more common in the maxilla. A CT scan was performed after the surgery, 3D images show the bone plates on the left and on the right sides used for the fixation of the tibia to the mandible (Figure 5).

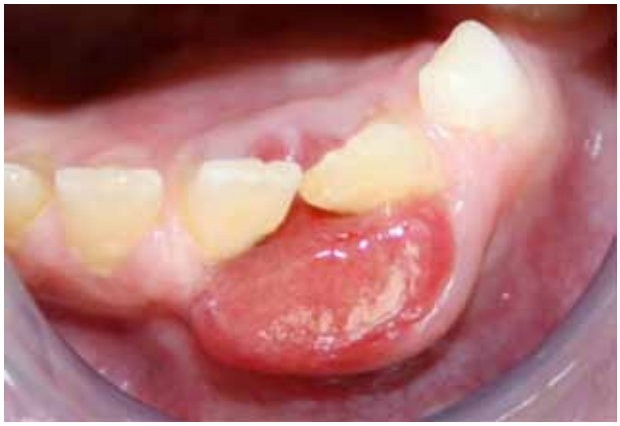

Figure 1 - Picture showing ulceration of the mucosal surface.

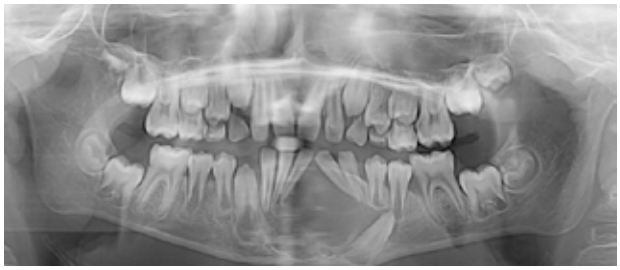

Figure 2 - Panoramic radiography showing large expansive radiolucent lesion in the anterior region of the mandible, causing teeth displacement.

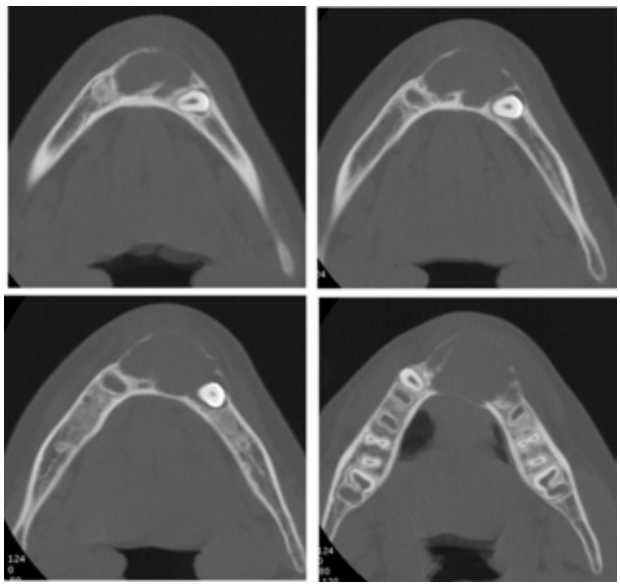

Figure 3 - Axial CT slice showing perforation and expansion of the cortical plates. Thin granular septum of calcification can be identified in the lesion.

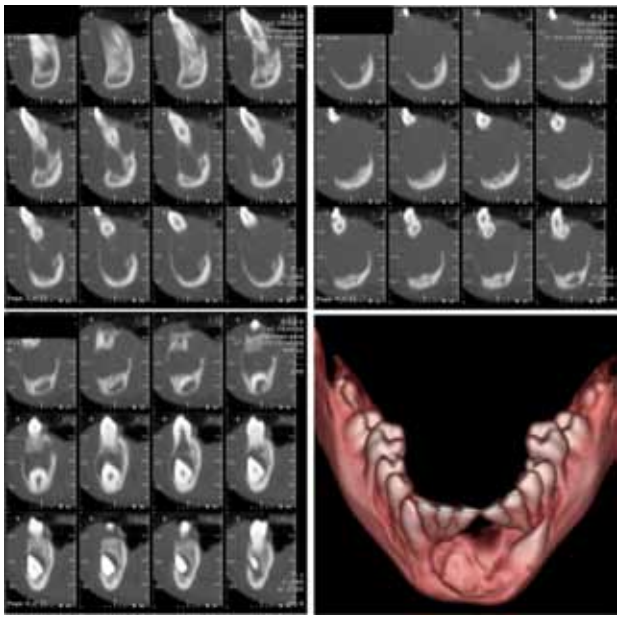

Figure 4 - CT cross-sectional slices and 3D image showing the extension of the lesion. Note expansion and perforation of the cortical plates.

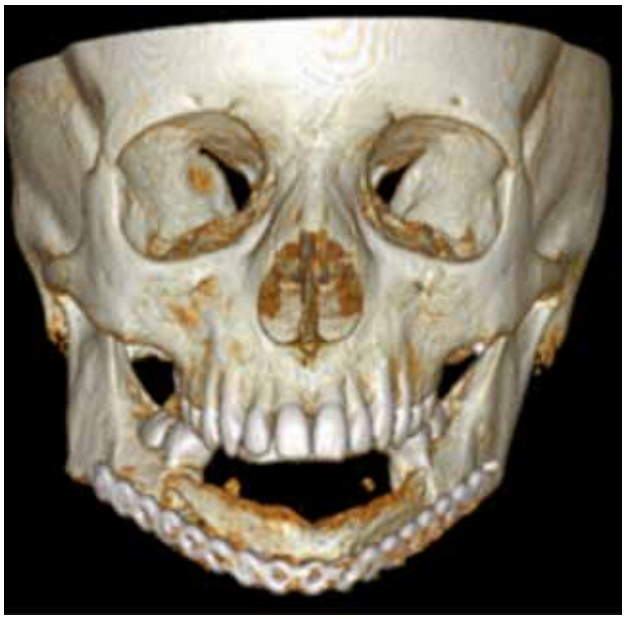

Figure 5 - CT 3D image after surgery showing reconstruction of the mandible.

DISCUSSION

Central giant-cell granulomas (CGCG) are benign, non-odontogenic lesions, usually located at the anterior region of the maxilla or mandible, counting for approximately 7% of all benign tumours of the jaws [1-4]. Its aetiology is unknown, but bone haemorrhage from past trauma has been suggested as a probable cause [1-3]. Lesions are more frequently found in the mandible often crossing the midline, than the maxilla (2:1) [3,5,6]. When located in the maxilla, CGCG are more prevalent in the molar region (66.6%) [9]. However, in older individuals this lesion can occur in greater frequency in the posterior aspect of the jaws [1,2]. The occurrence of CGCG in the mandibular condyle is rare and therapeutic challenge for oral and maxillofacial surgeons [10]. It is more common in female than in male, which may suggest the relation with hormonal factors [1,2]. Even though it may occur in all age groups, there is an age predilection in patients younger than 30 years of age [3,6]. Multiple lesions are considered to be rare, but strongly associated with systemic disorders such as neurofibromatosis type I and Noonan syndrome [4,7,11].

Conventional radiography is usually the first imaging modality performed. However, it provides limited information. Therefore, the use of CT offers important information, such as perforation of the cortical plates. This feature is used to classify CGCG as aggressive or non-aggressive. CT also reveals information concerning the involvement of related soft tissues and enables treatment planning [7].

The most common presenting sign is painless swelling. The overlying mucosa may have a purple colour [1,2]. Also, teeth displacement occurs frequently and can lead to malocclusion [6]. Clinical behaviour of CGCG ranges from non-aggressive to aggressive. Non-aggressive lesions present as slow-growing asymptomatic swelling and have a low recurrence rate. Aggressive lesions have high recurrence rate and are characterized by one or more features such as pain, paraesthesia, root resorption, rapid growth or cortical perforation. The aggressive type is mostly found in younger

patients. The radiographic appearance of CGCG is not pathognomonic and it may present as a unilocular or multilocular radiolucent area [1,2]. Due to the fact that this neoplasm grows relatively slow, its periphery usually produces a well defined radiographic margin in the mandible. In contrast, in the maxilla, it presents with ill defined, almost malignant-appearing borders. Some CGCG show no evidence of internal structure, especially small lesions. Other cases have a subtle granular bone pattern of calcification, which may be organized into ill-defined, wispy septa. These granular septa are characteristic of this lesion, especially if they emanate at right angles from the lesion periphery. If the internal structure of the CGCG contains septa the differential diagnosis may include ameloblastoma, odontogenic myxoma, and aneurismal bone cyst. If granular septa are present a cemento-ossifying fibroma may be considered. Treatment may include enucleation and curettage [4] or for the remaining lesion, the therapy indicated is curettage accompanied by peripheral osteotomy [12], or cryotherapy with liquid nitrogen [6,13] and in some cases resection of the jaw [5,14]. However, as in the present case, curettage treatment is not an effective therapy for CGCG in young patient who present aggressive signs and symptoms [13]. Therapeutic methods, revealed in the literature, may vary according to type lesion. With aggressive or recurrent lesions, bone resection, including part of healthy bone, is a choice. Although, it results in large surgical defects which are undesirable in children or young adults [4]. These may result in considerable facial deformities and tooth loss, an especially mutilating factor in children and young adults [9]. Therefore, surgical treatment of CGCG can be performed trying to preserve the surrounding anatomic structures [14].

The recurrence rate is variable and depends on the biological behavior of the CGCG [10]. Several studies found a higher propensity for recurrence in younger people [9]. Recurrences are rare and more common in the maxilla [1,2,5,11].

The treatment chosen for the present case was autogenous reconstruction with tibia graft. A few cases have been reported regarding the application of this modality for reconstruction with autogenously bone grafts [10,12,15].

Radiographic features identification together with the clinical characteristics is essential to diagnose a CGCG. Although its aetiology remains unknown, bone haemorrhage from past trauma has been suggested as a probable cause. The most common presenting sign is painless swelling, also the overlying mucosa may have a purple colour. The clinical behaviour of CGCG ranges from non-aggressive to aggressive. Non-aggressive lesions present as slow-growing asymptomatic swelling and have a low recurrence rate. Aggressive lesions have high recurrence rate and are characterized by one or more features such as pain, paraesthesia, root resorption, rapid growth or cortical perforation. So clinicians should look for these findings while examining the patient. Resection of the anterior mandible and replacement by tibia with bone growth factors was performed and is advised in similar aggressive cases.

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