Surgical Treatment of Aggressive Type Central Giant Cell Granuloma:A Case Report

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Abstract

Giant cell granulomas in the jaws are divided into two according to their location in the bone or soft tissue. Those that develop on the soft tissue basis are called peripheral type giant cell granulomas, while lesions that develop in the bone are called central type giant cell granulomas. Central giant cell granulomas are seen in both jaws, but are more common in the mandible. Although it is seen in both sexes, it is more common in women. Although etiology of central giant cell granuloma is not known exactly, it may be of neoplastic, traumatic and hormonal origin. Treatment options are surgical curettage and excision or medical treatments. In this case report, a case of aggressive central giant cell granuloma in the maxillary posterior region is discussed. The patient applied to our clinic with the complaint of swelling in the lesion area, and the mass was removed with general anesthesia.

Case Report (HRU Int J Dent Oral Res 2022; 2(2): 124-128)

Keywords: Central giant cell granulomas, osteoclastic giant cells, curretage.

Introduction

Central giant cell granuloma is non-odontogenic, intraosseous lesion. Central giant cell granuloma may occur as a result of trauma or reactive processes such as inflammation. The etiology of this lesion is undefined. Although it can be seen in both jaws, it is more common in the mandible. Although central giant cell granuloma is generally seen in benign character, there are cases with an aggressive course. It is more common in women and in the first three decades of life (1,2). The radiological appearance of central giant cell granuloma can be unilocular or multilocular. In some cases, there are cases whose borders are not clear, as well as defining the borders. Central giant cell granuloma may cause resorption of tooth roots and migration of teeth (3). Central giant cell granuloma presents clinically as a slow-growing swelling that is not painful and asymptomatic. As the lesion grows, it may cause pain and cortical destruction (4). Histopathologically, it is quite difficult to distinguish it from a brown tumor of hyperparathyroidism. Central giant cell granuloma histologically contains loose connective tissue fibroblasts and small blood vessels (5). Curettage or resection is preferred in its treatment. If the lesion is aggressive, resection is preferred, while curettage is preferred for non-aggressive lesions (6,7).

Case Report

In the clinical examination of a 43-year-old male patient who applied to our clinic with the complaints of left nasal cavity stenosis and difficulty in breathing due to this, swelling and expansion in the vestibule and palatal sides of the left maxilla posterior region were observed. The patient has no history of trauma or tooth extraction. As a result of the anamnesis, it was

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determined that the lesion had been symptomatic for 1 year. After the clinical and radiological examination of the patient,carried out an incisional biopsy. In the histopathological examination, edematous connective tissue and bleeding sites were seen in the sections, fibrohistiocytic stromal cells and osteoclastic giant cells were observed. (Figure 1) Morphological findings were reported to be compatible with central type giant cell granuloma. The sample conducted a biopsy on also contains reactive bone trabeculae.

Physical examination revealed swelling in the left maxillary region. The lesion is painful on palpation. At the same time, the consistency of the lesion was rubbery. The skin and mucosa over the mass were normal. The brown tumor of hyperparathyroidism is histologically identical to the central giant cell granuloma (CGCG), but these lesions can be differentiated based on history and laboratory findings. The patient's blood calcium and PTH levels were checked to rule out hyperparathyroidism. In the radiological examination of the patient, orthopantomography showed the lesion is extending from the left maxilla to the inferior edge of the orbit.

Advanced imaging techniques were preferred for radiological examination. In maxillofacial computed tomography, it was determined that the lesion caused nasal septum deviation in the three-dimensional image. In addition, destruction of the nasal septum and the inferior border of the left maxillary sinus was observed. (Figure 2,3) In the axial and coronal sections of the maxillofacial computed tomography, the lesion that completely filled the left maxillary sinus, extended to the orbital inferior margin, and caused expansion in the posterior region of the left maxilla was detected.

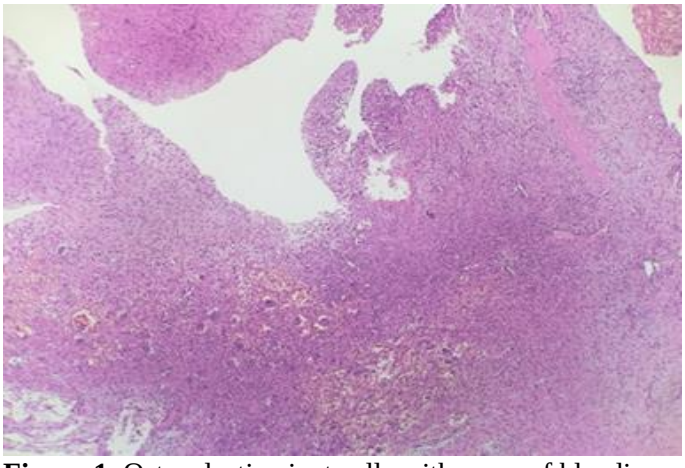

Figure 1. Osteoclastic giant cells with areas of bleeding.

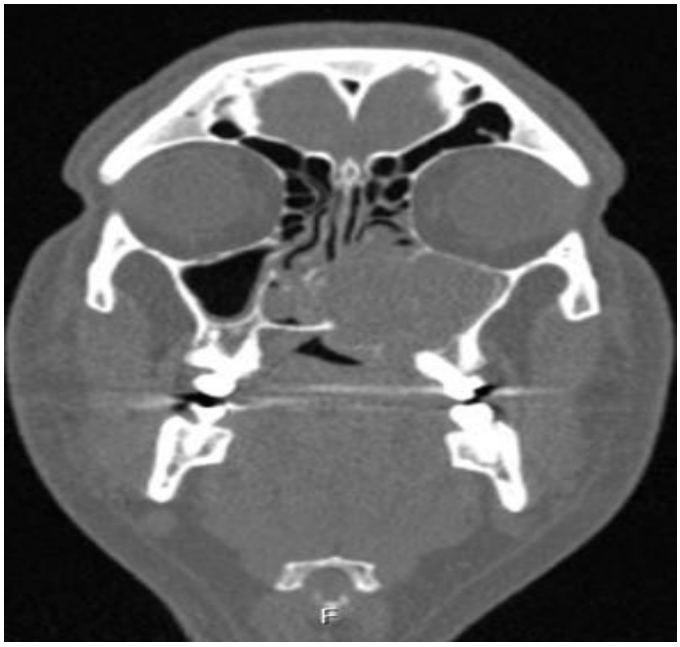

Figure 2. The appearance of the lesion on coronal CT.

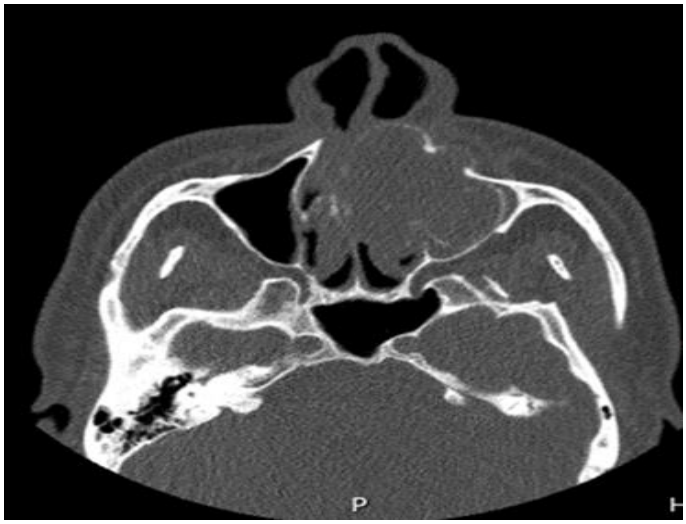

Figure 3. The appearance of the lesion on axial CT.

It was decided to remove the lesion with general anesthesia. After nasal intubation, relaxing vertical incisions were made in addition to the gingival sulcus incision in the left maxillary region, and the anterior border of the maxilla was reached, and it was observed that the lesion destroyed the anterior wall of the maxilla. (Figure 4) Osteotomies were performed to reach the center of the lesion. Blunt dissection was used to separate the lesion from the soft tissue. After the lesion was curetted completely, a gas iodoform tampon was placed

in order to provide hemostasis and to support the regeneration of the maxillary sinus tissues. (Figure 5) Gas iodoform tampon was passed through the lateral wall and sutured to the nasal cavity with 3-0 silk sutures. The wound margins were also sutured. (Figure 6) The tampon was removed from the nasal cavity after two days.

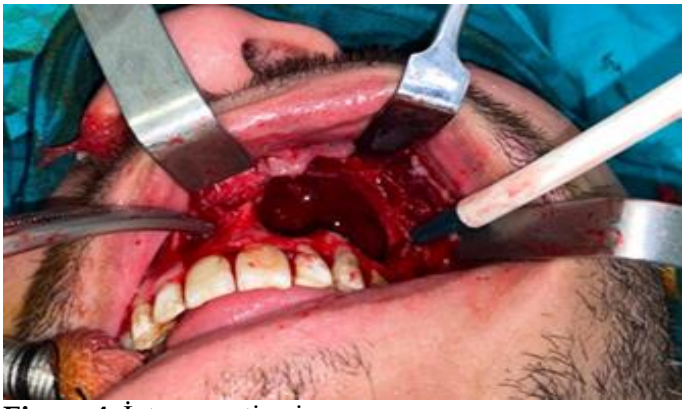

Figure 4. İntraoperative image.

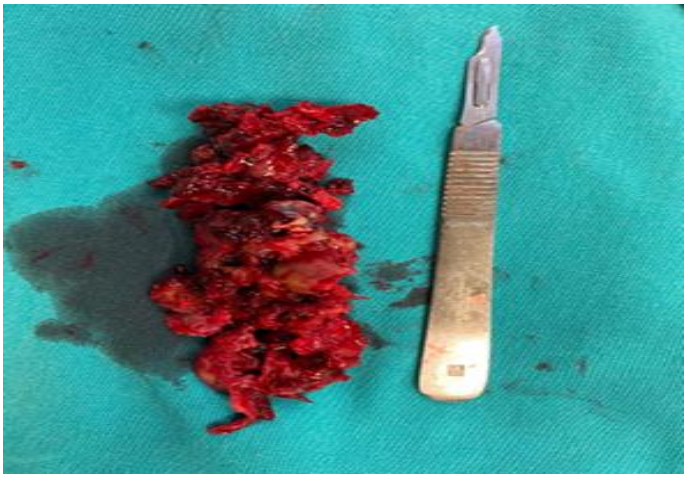

Figure 5. Image of the curetted lesion.

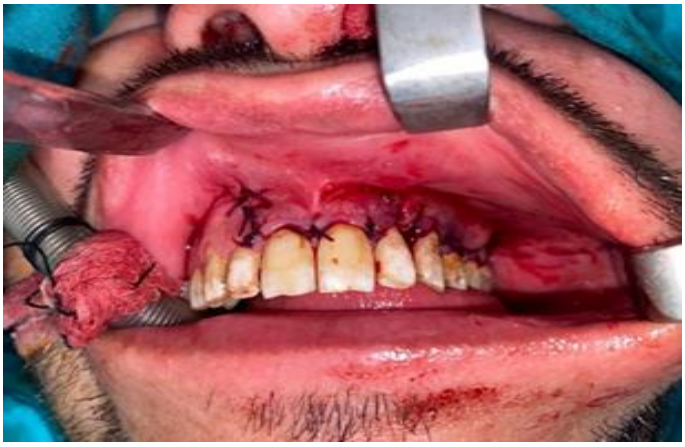

Figure 6. Postoperative image.

Discussion

The central giant cell granuloma was first described by Jaffe in 1953 (9,10). Central giant cell granuloma is a rare benign, local lesion of the jaws (8). It is more common in women (2). In this case, the patient is male. Thus, it differs with the literature in terms of gender.

Localization of central giant cell granuloma cases is often seen in the mandible, anterior to the first molar, but also in both jaws. Studies report that central giant cell granuloma is at least twice as common in the mandible as in the maxilla (7,16). De lange et al. (2005) reported that 8 out of 79 unilocular central giant cell granuloma cases occurred in the periapical region (16). It has been reported that most of the cases published in the literature are located in the anterior region of the mandible and maxilla (15,17,18) The central giant cell granuloma case seen in our report was localized in the left maxilla posterior region. Therefore, the case we presented differs in terms of location with the literature.

The etiology of central giant cell granuloma is not known for certain, but it is thought that local trauma, sex hormones and genetic factors may be effective in its formation (14,15).

When the central giant cell granuloma reaches clinically sufficient size, the deformity of the bone cortex becomes visible radiographically. Facial deformity, migration of teeth and resorption of tooth roots may occur with the enlargement of the lesion. As bone destruction increases, the margin of the lesion becomes clearer radiologically (11).

Radiographically, granulomas can be unilocular or multilocular. The lesion varies radiographically from small apical lesions to destructive multilocular radiolucency more than 4 cm in size, spread over a large area in the maxilla or mandible. Curettage is generally preferred for treatment. While partial resection is required in some cases, total resection is required in cases whose treatment is delayed. Central giant cell granuloma is usually painless. Pain depends on the size of the lesion and its proximity to nerve tissues (12,13,16)

Giant cell granulomas are divided into two as central and peripheral according to their localization. Peripheral giant cell granuloma occurs in the gingiva, while central giant cell granuloma occurs in the bone tissue. Peripheral giant cell granuloma forms areas of erosion under soft tissue. Central giant cell granuloma is seen radiologically as oval or round areas of destruction (7). When the panoramic radiography of our case was examined, a

multicollar lesion was detected starting from the left maxillary central tooth, extending to the second molar tooth and including the sinus. During the operation, destruction of the alveolar bone and anterior wall of the maxillary sinus was observed.

Central giant cell granuloma is classified according to whether or not it is clinically aggressive. If the lesion develops slowly, asymptomatically, without cortical bone perforation and resorption of the tooth roots, it is called non-aggressive. The recurrence rate of the lesion is low in non-aggressive central giant cell granuloma. The aggressive type has a high recurrence rate and the lesion grows rapidly and is painful. It can also perforate the cortical bone (19). Based on these findings, it was determined that the case had an aggressive type central giant cell granuloma because of the complaints of cortical perforation, pain and bone expansion.

In the histopathological section, bleeding areas, osteoclastic giant cells, fibrous connective tissue and cystic degeneration with membranous walls are seen (2). Cherubism, aneurysmal bone cyst, and brown tumor of hyperthyroidism are among the lesions seen in the maxillofacial region and have giant cells in histology. The deposits formed around the blood vessels in central giant cell granuloma are effective in differentiating them from cherubism. These deposits do not occur in cherubism. Large areas of blood are seen in aneurysmal bone cyst. If the patient's serum calcium, parathyroid hormone, alkaline phosphatase, and phosphorus levels are normal, a distinction is made between hyperparathyroidism and central giant cell granuloma (20). In our study, the patient's serum calcium, parathyroid hormone, alkaline phosphatase and phosphorus values were found to be normal, and it was differentiated from hyperparathyroidism.

There are surgical and non-surgical (therapeutic, medical) treatment options for central giant cell granuloma. Alpha interferon, calcitonin and corticosteroid injection are non-surgical treatments. Surgical treatments are the most preferred treatments. They are called traditional methods of treatment. Curettage with excision is preferred in small lesions, while resection is preferred in larger lesions (21,22). In our study, curettage treatment with excision was preferred in the treatment of central giant cell granuloma located in the left maxilla posterior.

Conclusions

Central giant cell granulomas are lesions that nonneoplastic, mostly seen in the anterior of the mandibular first molar. Central giant cell granulomas in the upper jaw are benign but rare lesions. Unlike malignant lesions, the growth rate is usually slow and is common in young people. However, the presence of areas of bone destruction and areas of mineralization on paranasal sinus tomography suggests this lesion. Considering the size of the lesion and the general health of the patient, surgical treatment options such as curettage and resection may be preferred. After surgical treatment, root canal treatment can be applied or extracted to the teeth associated with the lesion. Extracted teeth should be treated prosthetically.

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