

Peripheral Giant Cell Reparative Granuloma of Maxilla in a Patient with Aggressive Periodontitis

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Abstract

Peripheral giant cell reparative granuloma is a reactive and rare lesion of oral cavity with unknown etiology which is derived from periosteum and periodontal ligament and occurs frequently in young adults. Inflammation or trauma is underlying causative factor of reactive proliferation. In the present case report, a 35 year-old male with aggressive periodontitis and peripheral giant cell reparative granuloma is presented. The patient applied to our clinic with a complaining about a big nodule at his palate. The lesion was pedunculated and localized at his right maxilla between #16 and #17 which arose from distal aspect of #16, and the surface of the lesion was hyperkeratotic and the lesion was measured 22 x 30 mm at the largest diameter. He also had severe generalized aggressive periodontitis and hypertension. Amoxicillin clavulanate 625 mg, three times a day, metronidazole 500 mg three times a day and 0.2% chlorhexidine digluconate oral rinse, twice a day for a week, were prescribed to the patient. Then, scaling and root planing were performed along with systemic antibiotic treatment and he scheduled for surgery. The lesion was excised completely and #16 was extracted. After the healing period, periodontal surgery was planned for the treatment of aggressive periodontitis. Obtained tissue specimen was sent for histopathological examination. The diagnosis of peripheral giant cell reparative granuloma was confirmed with histopathological examination. No intra- and post-operative complications were seen.

Key words: Granuloma, Giant Cell, Generalized Aggressive Periodontitis, Pathology

Introduction

Giant cell granulomas, which are previously included in the group of giant cell tumor of bone, are described by Jaffe for the first time in 1953. Jaffe considered that these lesions develop due to the proliferative reaction of bone after trauma [1].

Giant cell granulomas are divided into two subgroups, depending on their location as follows; central or peripheral. Central lesions develop inside the bone and peripheral lesions originate from gingiva or edentulous alveolar mucosa in the oral cavity. Central form is rarely seen compare to peripheral form [2]. Central and peripheral lesions are histologically indistinguishable from each other [3]. Histopathologically, there are multiple hemorrhagic fragments in soft tissue and proliferation of fibroblasts and multinucleated giant cells in a dense stroma. Randomly located hemorrhagic and cell-rich regions form the characteristic granulomatous appearance [4].

The other terms that are used for peripheral giant cell granulomas are peripheral giant cell tumor, giant cell epulis, osteoclastoma and giant cell hyperplasia of oral mucosa. These lesions develop from periosteum or periodontal ligament, they may be stalked or sessile and their colors range from dark red to bluish red. They tend to bleed easily [5].

Aggressive periodontitis is characterized by rapid attachment loss and bone destruction in systematically healthy individuals. This type of periodontitis show familial aggregation and simply divided into localized and generalized forms.

Generalized aggressive periodontitis usually affects persons under 30 years of age, but patients may be older. There is poor serum antibody response to infecting agents,

pronounced episodic nature of the destruction of attachment and alveolar bone and generalized interproximal attachment loss affecting at least three permanent teeth other than first molars and incisors [6].

Case Report

A 35 year-old male applied to Department of Periodontology at Kocaeli University for the treatment of big nodule at his palate. He had been diagnosed as having hypertension and he stated that he quitted smoking 8 years ago. There was no pain, infection at the palate and lymphadenopathy. His primary concern was the characteristic/type of his lesion, and he complained about the localized swelling at his palate and difficulties in chewing and swallowing due to trauma.

Oral examination revealed pedunculated lesion localized at his right maxilla between #16 and #17 which arose from distal aspect of #16, and the surface of the lesion was hyperkeratotic and the lesion was measured 22 x 30 mm at the largest diameter (*Figure 1*). He also had severe generalized aggressive periodontitis (*Figure 2*). Radiographically, there was radiolucency at the periapical of mesiobuccal and distobuccal root of #16 (*Figure 3*).

After taking the patient's clinical and visual recordings, amoxicillin clavulanate 625 mg, three times a day, metronidazole 500 mg three times a day and 0.2% chlorhexidine digluconate oral rinse, twice a day for a week, were prescribed. Then, scaling and root planing were performed along with systemic antibiotic treatment. He was encouraged to practice regular dental brushing.

The patient underwent a clinical follow-up examination 4

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Figure 1. Hyperkeratotic, pedunculated lesion at maxillary right first and second molar region.



Figure 2. Radiographic view of severe bone loss due to generalized aggressive periodontitis.



Figure 3. Radiographic view of maxillary right first molar teeth.

weeks after his initial periodontal therapy. Then he scheduled for surgery. The lesion was excised completely, #16 was extracted, debridement and curettage of the soft tissues were performed and the operation site was coagulated by electrocautery. Obtained tissue specimens were sent to histopathological examination (Figure 4). On macroscopic examination excised specimen measured 1x1x0.8 cm, was brown tan in appearance and soft in consistency. When examined microscopically, overlying mucosa was lined by stratified squamous epithelium. Subepithelially, there was a cellular lesion composed primarily of fibroblastic and vascular mesenchymal tissue. Fibroblastic spindle cells had oval, vesicular nuclei with no evidence of atypia. There were focal aggregates of hemosiderin and scattered osteoclast-like

giant cells. The lesion was diagnosed as peripheral giant cell reparative granuloma (Figure 5). Seven days later, the region was washed with saline. The wound healing was uneventful (Figure 6). The patient was followed for a month (Figure 7), following the healing period, periodontal surgery was planned for periodontal defects, however he did not visit the clinic again.

Discussion

To date, development of peripheral giant cell granuloma in a patient with generalized aggressive periodontitis has not been reported in the literature.

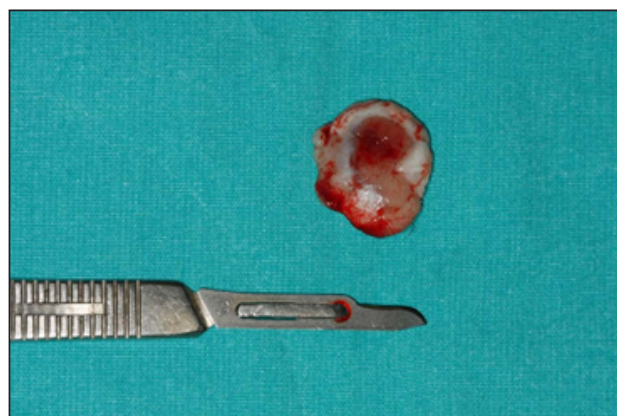


Figure 4. Removed tissue specimen.

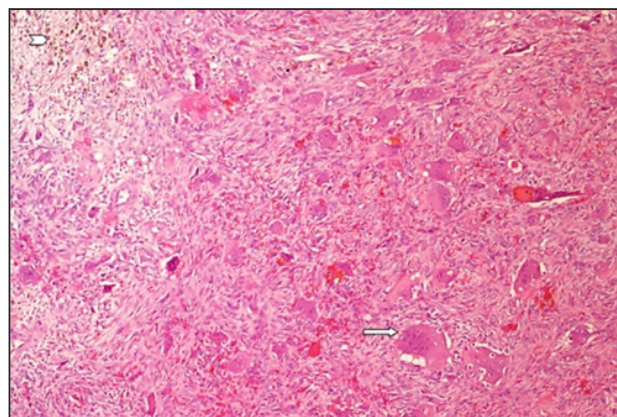


Figure 5. Histopathologically, mucosal lesion had cellular fibroblastic and vascular stroma with hemosiderin laden macrophages (arrowhead) and scattered osteoclast-like giant cells (arrow) (Hematoxylin Eosin, original magnification x200).



Figure 6. Post-operative first week, the wound healing was uneventful.



Figure 7. Post-operative fourth week.

Giant cell granulomas are not true neoplasms; they are benign hyperplastic reactive lesions that are related to local irritation or trauma [7]. Despite their etiology is not clear, many researchers agree that they occur due to the repair process after a damage [2,8]. Tooth extraction, incompatible dental restorations, mismatched dentures, plaque, calculus, food impaction and chronic trauma are among the local factors that may play a role in the formation of a peripheral giant cell granuloma [8].

Giant cell granulomas are reported to be seen most often at maxilla and mandible [1,8,9]; other than those they can be seen at the cranial bones including ethmoid [10], sphenoid [11], temporal bones [12] and the small bones of hands and feet [13]. They have not been reported to occur at pelvis and long bones until now. The involvement of vertebrae is rare [14].

Peripheral giant cell granulomas involve the mandible more frequently than the maxilla [4]. Oral peripheral giant cell granulomas' sizes differ from small papules to large masses and they are often localized at interdental papillary, edentulous alveolar ridge or marginal gingiva [7]. In the case that is reported, the lesion was located at the upper jaw, which is less common. The lesion was larger and had a wider base than most of the cases that were reported in the literature [15].

Peripheral giant cell granulomas can be seen at any age, but usually affect individuals between the ages of 40-60 [4]. These lesions have an equal prevalence in both females and males, whereas central giant cell granulomas occur more frequently in females [4]. In this case report, the patient was 35 years old and in this respect, there is a difference according to the literature.

Peripheral lesions are localized at soft tissues and therefore rarely cause bone erosion. Pain is not usually seen and an increase in the size of the lesion is related with recurrent trauma [7]. These lesions' surfaces are covered with squamous epithelium and their colors change from dark red to bluish red. Depending on the local trauma, the surface epithelium is often ulcerated [10]. In the present case report, the patient had no complaints about pain and the surface of the lesion was hyperkeratinized due to local irritations.

Surgery is the most common and the most traditional choice in the treatment of giant cell granulomas [16]. Lesions must be excised entirely with surgical resection and the etiologic factor must be eliminated; but if the resection is inadequate, recurrence may occur. If the lesion originates from periodontal membrane or affects periodontal membrane,

the related teeth must consider to be extracted [7,16]. In the present case report, after the surgical resection, #16 was extracted and then the region was cauterized to provide coagulation.

Generalized aggressive periodontitis is a multifactorial disease that microbiological, genetic, immunological and environmental/behavioral factors play a role in its formation [17]. The disease consists of active and remission periods. The remission period is asymptomatic; patients have pink, healthy view of gums, but with probing deep periodontal pockets can be detected. This period may last for weeks, months or even years and continues with the active period. During the active period, there is active attachment and bone destruction. Moderate to severe inflammation signs are observed in gums; gingiva is significant red, soft and edematous. There is bleeding on probing or spontaneous bleeding. During the advanced stages of untreated severe periodontal destruction, tooth extrusion, mobility or migration may occur; furcation involvement, generalized gingival recession or tooth loss may happen [18].

Radiographically, there is generalized bone loss that increases due to the severity of the disease. Bone defects are often vertical, but sometimes they may occur as a combination of vertical and horizontal defects [17].

Aggressive periodontitis differs from chronic periodontitis with its age of onset, the rapid progression, the nature and content of the related microflora, the alterations in the host immune responses and familial aggregation [19]. Besides, systemic health related periodontitis forms must be considered in the differential diagnosis. In this case, the evaluation of systemic condition in hematological and immunological view will guide the clinicians [17].

In the treatment of generalized aggressive periodontitis, non-surgical and surgical periodontal treatment and maintenance phases are essential. In non-surgical periodontal treatment, mechanical treatment and chemical antimicrobial treatment per se or chemical antimicrobial treatment along with mechanical treatment are applicable [17]. In this case report, application of scaling and root planing together with oral hygiene motivation and appropriate safe-care methods were the first step of the treatment. Then, to evaluate the treatment results, an appointment was given 3 weeks after the last session. In that evaluation, periodontal flap surgeries was planned for the upper left, and lower right and left molar regions.

Conclusion

In the present case report, we present a patient with generalized aggressive periodontitis and peripheral giant cell reparative granuloma which derived from periodontal ligament of right maxillary 1st molar teeth where severe bone destruction was observed. Development of peripheral giant cell granuloma in a patient with generalized aggressive periodontitis has not been reported in the literature to date. No intra- or post-operative complications were seen. The patient did not visit the clinic after the surgical phase.

Giant cell reparative granulomas are benign reactive lesions; but because of their clinical appearance, patients

usually worry about the characteristic of the lesion. Therefore, patients should be informed in detail. Although giant cell

reparative granulomas tend to recur, adequate excision of the lesion prevents the recurrence.

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