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PERIPHERAL GAINT CELL GRANULOMA – A CASE REPORT

Dentistry

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ABSTRACT

The peripheral giant cell granuloma (PGCG) is an inflammatory hyperplastic type of lesion, it is the most common type of oral giant cell lesion that probably involves a reactive response in the periosteum, periodontal ligament, and gingiva. The exact etiology is unknown, PGCG may occur due to response to local irritation. A 30 years old female patient reported with a chief complaint of swelling and loose teeth in the lower left front tooth region since more than a year. Intra-oral examination revealed the presence of a solitary, firm, smooth and sessile overgrowth. The superior surface of the lesion was bright red and ulcerated. The Orthopantomogram and intraoral periapical radiographs of the patient showed a well-demarcated oval radiolucency extending from mesial aspect of mandibular canine to distal aspect of mandibular first premolar and bone resorption and severe bone loss around involved teeth. Excisional biopsy was performed under local anaesthesia and tissue was examined histopathologically. The lesion was diagnosed as PGCG after thorough clinical, radiologic and histopathologic examination.

KEYWORDS

Peripheral giant cell, central giant cells, cupping resorption

INTRODUCTION

The peripheral giant cell granuloma (PGCG) is an inflammatory hyperplastic type of lesion, it is the most common type of oral giant cell lesion that probably involves a reactive response in the periosteum, periodontal ligament, and gingiva.[1] It is not a true neoplasm but rather a benign hyperplastic reactive lesion whose exact etiology is unknown, reactive lesions are generally characterized by excessive proliferation of connective tissue as a response to chronic irritation, such as tooth extraction, poor dental restorations, ill-fitting dentures, plaque, calculus, food impaction and chronic trauma.[2] The influence of hormones has also been suggested to be a contributory factor. Low socio-economic status of the patients and unfavourable oral hygiene also seem to be predisposing factors.[3] The lesion appears as a soft tissue extra-osseous purplish-red nodule consisting of multinucleated giant cells in a background of mononuclear stromal cells and extravasated red blood cells.

This lesion is also known as peripheral giant cell tumor, osteoclastoma, reparative giant cell granuloma, giant cell epulis and giant cell hyperplasia of the oral mucosa.[4] It is more frequently seen in women than in men, with a slightly higher prevalence in the 30 to 70 year old age group, and it largely affects the lower jaw (55%) than the upper jaw.[5] It is usually confined to the gingival tissue or the alveolar processes of the incisor and the canine region[6], though according to Pindborg[7] the preferential location is the premolar and molar zone and according to Motamedi et al,[2] PGCG more frequently involves the mandible, commonly in the areas posterior to the canines. The lesion ranges in size from small papules to enlarged masses, rarely reported exceeding 2 cm in diameter, and are generally located in the interdental papilla, edentulous alveolar margin, or at the marginal gum level,[8] it presents itself as a sessile or pedunculated lesion. Ulceration may occur secondary to trauma which gives the lesions a focal yellow zone caused by the formation of fibrin clot over the ulcer.[9]

CASE REPORT

A 30 years old female patient reported to the Department of Periodontics with a chief complaint of swelling and loose teeth in the lower left front tooth region since more than a year. History revealed that the swelling initially started as a small one and progressively increased to the present size over a period of 1 year. It was associated with occasional bleeding on brushing and mastication. There was no history of trauma, neurological deficit, fever, loss of appetite, loss of weight. There was no other similar swelling present in any other part of the body. The patient was otherwise systemically healthy.

Intra-oral examination revealed the presence of a solitary, firm, smooth and sessile overgrowth, the surface of the swelling was lobulated extending anterio-posteriorly from the mid aspect of mandibular lateral incisor to distal aspect of mandibular first premolar in the third quadrant obliterating the mandibular buccal vestibule.(Figure 1) The superficial surface of the lesion was bright red and ulcerated. On palpation, the growth was soft to firm in consistency, non-tender. The dimensions of the lesion were 3.5*3.0 centimetres. Intra-oral examination of the patient also showed the presence of grade III mobile teeth with respect to 31, 32, 33 and poor oral hygiene with extensive plaque and calculus deposits. There was interference in occlusion by the growth while chewing. There was generalized gingival inflammation and bleeding on probing. The patient was advised for routine blood investigations and all the parameters were in normal range. The Orthopantomogram (Figure 2) and intraoral periapical radiographs of the patient showed a well-demarcated oval radiolucency extending from mesial aspect of mandibular canine to distal aspect of mandibular first premolar in the third quadrant and bone resorption and severe bone loss around 31, 32, and 33.

The patient was thoroughly explained about the treatment plan and a written consent was taken for the same from the patient. Extraction was done with respect to 31, 32, 33 due to poor prognosis under emergency phase and the patient was recalled after a week to perform scaling and root planning under phase I therapy and was treated accordingly with plaque control measures. Patient was recalled after 2 weeks,4 weeks and 6 weeks (figure 3,4,5) to check the oral hygiene status as part of the maintenance phase as the patient had very poor oral hygiene on examination, phase I therapy was repeated and oral hygiene instructions were reinforced and the patient was motivated.

Although plaque control measures improved the periodontal status after 6 weeks, the lesion appeared static. Complete excisional biopsy of the growth was planned under local anaesthesia, 2% lignocaine hydrochloride with 1:200000 epinephrine, external bevel gingivectomy with scalpel was performed to completely remove the growth and the area was curetted and haemostasis was achieved by electrocautery.(Figure 6)

The lesion was stored in 10 % formalin and sent for histopathological examination, periodontal pack was placed (Figure 7) and the patient was advised to rinse with 0.2% chlorhexidine gluconate for 2 weeks. Post-operative instructions were given and analgesics (Diclofenac 50 mg twice daily for 5 days) and antibiotic (amoxicillin 500 mg thrice daily for 5 days) were prescribed. On gross examination, the excised nodule was red in colour and measured 35 x 30 mm in maximum

dimension.(Figure 8)

Microscopic examination of hematoxylin and eosin stained section revealed para keratinized, stratified squamous epithelium with a focal area of ulceration. The connective tissue showed dense inflammatory infiltration of predominantly lymphocytes and few plasma cells. Multi-nucleated giant cells and few budding capillaries were also seen.(Figure 9,10) All these features were suggestive of PGCG. After 1 week the patient was recalled and the periodontal pack was removed and the surgical site was examined and irrigated with Betadine (5%) and the healing was uneventful. Follow up appointments were performed at 1 month (Figure 11) and 3 months intervals.(Figure 12) There was no reoccurrence observed even after 3 months. During this period the patient did not report of any complaints.

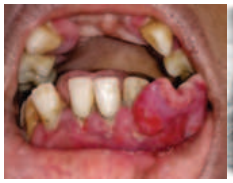

Figure 1-Pre- Operative

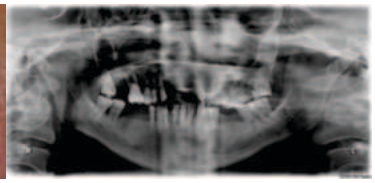

Figure 2 - Orthopantomogram

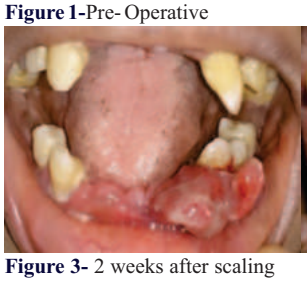

Figure 3- 2 weeks after scaling and root planning

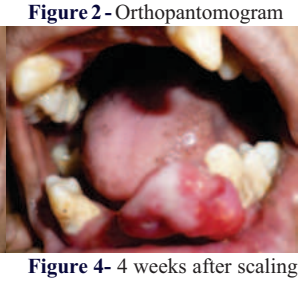

Figure 4- 4 weeks after scaling and root planning

Figure 5- 6 weeks after scaling and root planning

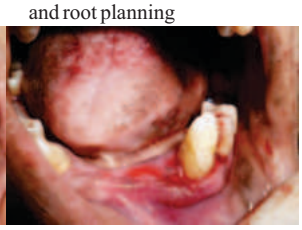

Figure 6- Immediate post - operative

Figure 7- Excised tissue

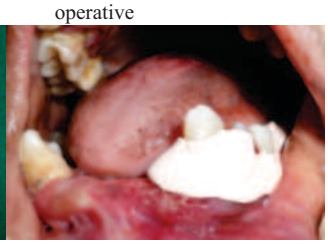

Figure 8- periodontal dressing placed

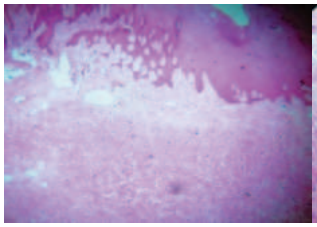

Figure 9- Histopathologic view

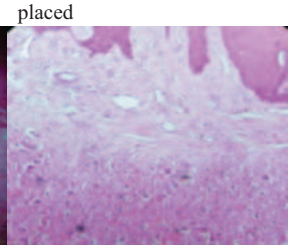

Figure 10- Histopathologic view- multinucleated giant cells

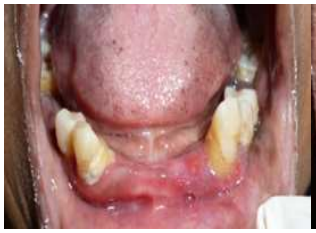

Figure 11- 1 month follow up

Figure 12- 3 months follow up

DISCUSSION

Peripheral giant cell granuloma (PGCG) is a benign lesion characterized by a hyperplastic reaction to local injury or chronic trauma, developing only within the oral cavity (Flaitz CM 2000). The usual localization for PGCG is the gingival tissue in premolar region and the crest of the edentulous ridge. It is never found on mucosa that is not attached to bone.[10]As the PGCG is a soft-tissue lesion that is present on gingival and alveolar mucosa, X-ray features are thereby nonspecific. Occasionally, bone involvement beneath the lesion has been seen that presents as superficial bone resorption, and which can be discerned easily on periapical radiographs, widening of the periodontal ligament space is also seen which is often accompanied by the mobility of associated teeth. Alveolar crest region or margin at interdental bone level of the lesion and associated teeth also exhibits resorption.[11]PGCG being a type of reactive lesion, radiographs occasionally reveal irritating factors such as subgingival calculus. When the lesion involves edentulous areas the cortical bone exhibits a concave resorption beneath the lesion, this typical feature is known as "leveling" effect, this feature is also known as "cupping"[12]resorption by many authors. PGCG is most common than central giant cell granuloma with a ratio of approximately 3:1.

Histologically, PGCG presents as a not-well circumscribed mass, constituted by fibrillar collagenous stroma containing two types of mononuclear cells (spindle and ovoid cells) and interspersed numerous multinucleated giant cells "osteoclasts-like" or larger than typical osteoclasts, having rarely normal bone resorptive function. It is present as a chronic and often acute inflammatory infiltrate and hemosiderin-laden macrophages surround areas of haemorrhage.[13]It is characterized by rich vasculature, particularly in the peripheral areas, consisting mainly of thin walled, small sized vessels. When compared to giant cell tumour, it is more fibrous. The lesion is usually asymptomatic, however repeated trauma due to occlusion can lead to its growth with eventual ulceration and secondary infection. Rarely, the lesion is painful in nature.

Differential diagnosis The spectrum of focal proliferative growths occurring on the gingival tissue that have a close resemblance with PGCG includes pyogenic granuloma, hemangioma, central giant cell granuloma, peripheral ossifying fibroma, and metastatic carcinomas,[14] that should be differentiated from non-ossifying fibromas, which differ in consistency and coloration; central giant cell granulomas, which are expansive and destructive intraosseous lesions that can perforate the cortex; chondroblastomas and metastatic carcinomas, which when localized in the gingiva, may provoke irregular bone destruction below the exophytic lesion and hemangioma, which unlike PGCG lesions, are pulsatile and disappear under pressure. Pyogenic granulomas (PG) are difficult to differentiate from PGCG lesions on clinical grounds but may be distinguished histopathologically, however, PGCG has a typical bluish-red hue in contrast to PG that has a characteristic bright red color. The peripheral ossifying fibroma is a reactive gingival growth that shares similar clinical features as the PGCG,[15] although this reactive lesion is often ulcerated and inflamed, it lacks the purple or blue discoloration that is commonly associated with the PGCG. Identification of small fleck of calcification within the tumor as seen on a radiograph aids in diagnosing the peripheral ossifying fibroma, when present.

The surgical resection with the elimination of the entire base of the lesion and removal of the underlying etiologic factors has yielded successful results in the treatment for PGCG. The superficial resection may lead to recurrence of the growth.[16]when the adjacent teeth are periodontally involved, their extraction may prove necessary to ensure full resection, although this is initially contraindicated. There has been reported a wide variation of 5% to 70.6% in the recurrence rate of PGCG.[12,17]

Recurrences are believed to be related to lack of inclusion of the periosteum or periodontal ligament in the excised specimen.[18]A re-excision should be performed for these cases. PGCG lesions are self-limiting.[19] Hence, recommended management of PGCG aims at the elimination of the entire base of the growth accompanied by eliminating any local irritating factors.

CONCLUSION

Peripheral giant cell granuloma is basically a vascularised, benign, hyperplastic lesion consisting of a large number of giant cells and mononuclear cell infiltrate. The treatment of PGCG comprises surgical

resection with elimination of the entire base of the lesion and suppression of the etiologic factor. If resection is only superficial, the growth may recur. Most lesions respond satisfactorily to thorough surgical resection, with exposure of all the bone walls.

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Conflict Of Interest - None declared

REFERENCES

1. Wood NK, Goaz PW. Differential Diagnosis of Oral and Maxillofacial Lesions. 5th ed. St.Louis: Mosby; 1997. p. 141-2.
2. Motamedi MH, Eshghyar N, Jafari SM, Lassemi E,Navi F, Abbas FM, et al. Peripheral and central giantcell granulomas of the jaws: a demographic study.OralSurg Oral Med Oral Pathol Oral RadiolEndod2007; 103(6): e39-e43
3. Eronat N, Aktug M, Glinbay T, Unal T. Peripheral giant cell granuloma: Three case reports. Journal of Clinical Paediatric Dentistry 2000;24:245-248.
4. Chaparro-Avendano AV, Berini-Aytes L, Gay-Escoda C. Peripheral giant cell granuloma. A report of five cases and review of the literature. Med Oral Patol Oral Cir Bucal 2005; 10(1): 53-57.
5. Reichart PA, Philipsen H. Atlas de Patologia Oral.eds.1 Masson; 2000. p. 164.
6. Shafer WG, Hine MK, Levi BM. Tratado depatologiaBucal. eds. 4th. Rio de Janeiro:Guanabara-Koogan; 1987. p.143-145.
7. BagànSebastiàn JV. Atlas de enfermedales de lamucosa oral. eds. 5th Barcelona; 1995. p. 186.
8. Flaitz CM. Peripheral giant cell granuloma: apotentially aggressive lesion in children. PediatrDent 2000; 22: 232-233.
9. Goyal R, Kalra D, Aggarwal S. Peripheral giant cell granuloma:A case report. Guident 2011;5:76-7.
10. Bodner L, Peist M, Gatot A, Fliss DM. Growth potential of peripheral giant cell granuloma. Oral Surg Oral Med Oral Pathol Oral RadiolEndod 1997;83:548-551
11. Mighell AJ, Robinson PA, Hume WJ. Peripheral giant cell granuloma: a clinical study of 77 cases from 62 patients, and literature review. Oral Dis 1995;1(1):12–19
12. Eversole LR, Rovin S. Reactive lesions of the gingiva. J Oral Pathol 1972;1:30-8.
13. Katsikeris N, Kakarantza-Angelopoulou E, Angelopoulos AP. Peripheral giant cell granuloma. Clinicopathologic study of 224 new cases and review of 956 reported cases. Int J Oral MaxillofacSurg 1988;17:94-99.
14. Nedir R, Lombardi T, Samson J. Recurrent peripheral giant cell granuloma associated with cervical resorption. J Periodontol 1997;68:381-384.
15. Farquhar T, Maclellan J, Dyment H, Anderson RD. Peripheral ossifying fibroma: a case report. *J Can Dent Assoc*. 2008;74(9):809–12.
16. Regezi JA, Sciubba JJ, Jordan RC. Red-blue lesions. In: Regezi JA, Sciubba JJ, Jordan RC, editors. Oral Pathology. Clinical Pathologic Correlations. 5th ed. St. Louis: Saunders; 2009. p. 107-25.
17. Neville B, Damm DD, Allen CM, Bouquot JE. Soft tissue tumors. In: Oral and Maxillofacial Pathology. 3rd ed; Elsevier Saunders, St. Louis; 2009. pp. 507-63.
18. Bhaskar SN, Cutright DE, Beasley JD 3rd, Perez B. Giant cell reparative granuloma (peripheral): Report of 50 cases. J Oral Surg 1971;29:110-115
19. Shadman N, Ebrahimi SF, Jafari S, Eslami M. Peripheral giant cell granuloma: A review of 123 cases. Dent Res J (Isfahan) 2009;6:47-50