IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

PERIPHERAL GIANT CELL GRANULOMA : A CASE REPORT AND REVIEW OF LITERATURE

Shweta singh[1*] , Soumya Krishna[2] , Abhishek Banerjee[3] , Puja Rai[4] , Priya Singh[5] , Saurabh Srivasatava[6]

[1] Senior lecturer, Department of Oral Medicine and Radiology, Babu Banarasi Das College of Dental Sciences, Lucknow, India 226028

[2] Professor, Department of Oral Medicine and Radiology, V S Dental College and Hospital, Bengaluru, India 560004

[3] Senior lecturer, Department of Oral Medicine and Radiology, Babu Banarasi Das College of Dental Sciences, Lucknow, India 226028

[4] Senior lecturer, Department of Oral Medicine and Radiology, Babu Banarasi Das College of Dental Sciences, Lucknow, India 226028

[5] Reader, Department of Oral Medicine and Radiology, Babu Banarasi Das College of Dental Sciences, Lucknow, India 226028

[6] Reader, Department of Oral Medicine and Radiology, Babu Banarasi Das College of Dental Sciences, Lucknow, India 226028

Abstract

Peripheral giant cell granuloma is a non-neoplastic tumour like reactive lesion which is the most common giant cell lesion occurring orally. It arises mainly from a poorly healing extraction socket, as a result of bony spicules or tooth fragments left within the socket. It presents itself as a soft tissue purplish-red nodule consisting of multinucleated giant cells in a background of mononuclear stromal cells and extravasated red blood cells. This case report and review of literature has focussed on a case of peripheral giant cell granuloma arising at the mandibular molar region in a 75-year-old female patient with possible differential diagnosis and treatment. The lesion was completely excised to the periosteum level and there is no residual or recurrent swelling or bony defect apparent in the area of biopsy after a follow-up period of 6 months.

Key Words – Granuloma, giant cells, extraction, oral lesion

Introduction

There are many exophytic lesions present within the oral cavity, peripheral giant cell granuloma is one of them described as a pathologic growth projecting above the normal contours of the oral mucosa. These lesions are nonneoplastic but are reactive in nature to the stimulus like local irritation to gingiva and periodontal ligament etc. They mimic true neoplasm, exhibits as a reddish blue solitary growth, nodule arsing from periodontal ligament into the oral cavity in the place of missing teeth. The incidence rate of PGCG varies from 5.1% to 43.6% intraorally. Diagnosis of PGCG is unusual as it mimics all other exophytic growths of oral cavity, hence it is necessary to know about other associated exophytic lesions of oral cavity. Thus, publishing a case of PGCG

with its review of literature to better understand the etiopathogenesis, clinical and radiological features with other differential diagnosis and treatment modalities.

Case Report

A 75 yrs old female patient reported to OPD with a complaint of growth in the mandibular anterior region of 1 week duration. Patient noticed the growth after extraction of the tooth in the same region a week ago. Patient complained of pain on eating with no history of bleeding and pus discharge from the involved site. Patient was known diabetic & hypertensive since 30 years and was on oral medication metformin (500 mg) and ACE (2.5 mg) once daily. On general examination patient was moderately built, moderately nourished with normal gait, posture and Vital parameters. On intraoral examination it was found that there was a solitary growth which was seen on the alveolar gingiva in the region of 44 measuring about 1x1 cm in size, cylindrical in shape reddish yellow in colour with purplish hue, Surface was smooth and lobulated with missing 43 & 44. On palpation it was confirmed that the swelling was soft, pedunculated with presence of bleeding on probing (Figure 1 and 2). After assessing the above findings provisional diagnosis of Epulis granulomatosum irt 44 was given. Differential diagnosis of Peripheral giant cell granuloma, Pyogenic granuloma, Peripheral ossifying fibroma, Inflammatory gingival hyperplasia, Peripheral odontogenic tumor were considered.

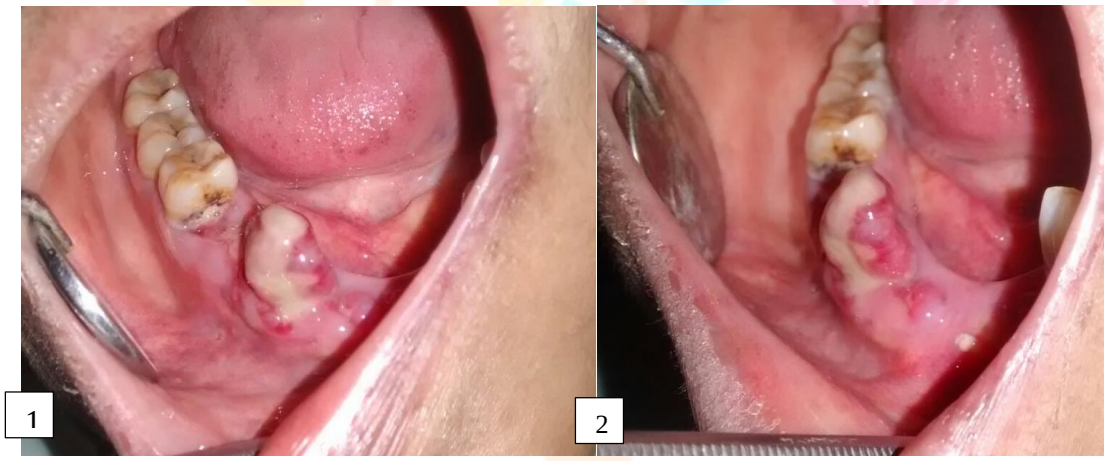

Figure 1 & 2 Intraoral picture showing the location of the swelling

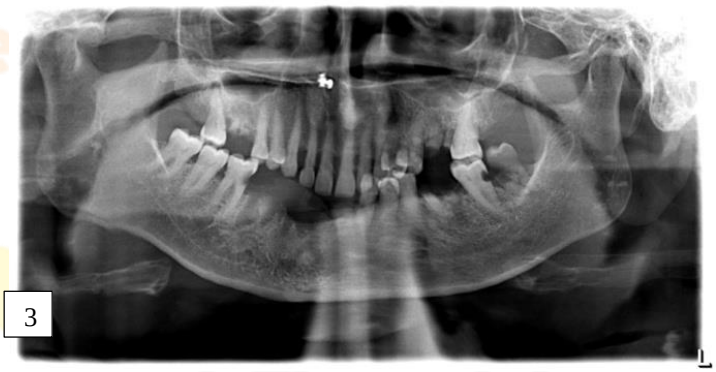

Figure 3 OPG

Panoramic radiograph was done but not show any significant changes (Figure 3). Routine blood investigations showed normal blood picture with good glycaemic control. Excisional biopsy of the growth was done (Figure 4 and 5), histopathology revealed hyperplastic parakeratinised stratified squamous epithelium of irregular thickness with areas of ulceration and there was connective tissue which was densely fibrous interspersed with plump, spindle shaped fibroblasts. Diffused lymphoplasmacytic inflammatory infiltrate along with foamy macrophages were also seen with numerous budding capillaries & thin-walled blood vessels lined by endothelial cells.

In correlation with the clinical & radiological features, histopathological features were indicative of Peripheral giant cell granuloma.

On regular 6 month follow up it was found that the lesion was subsided completely without any recurrence (Figure 6).

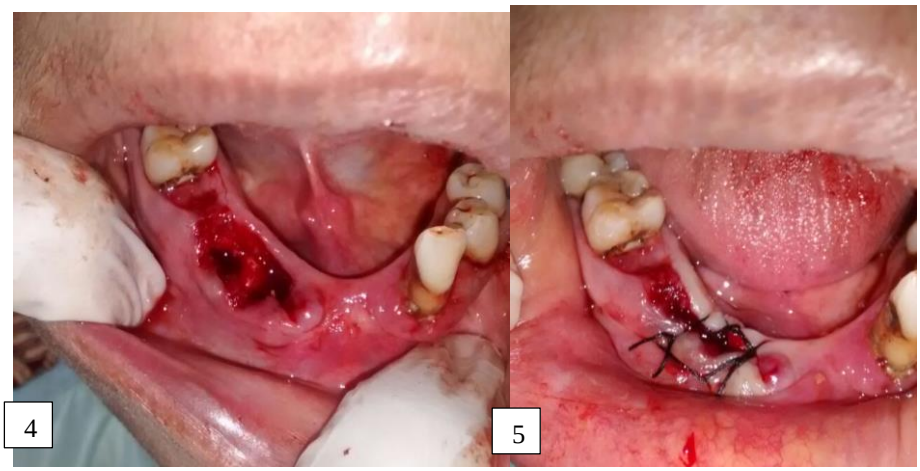

Figure 4 & 5 excision of the lesion and suturing

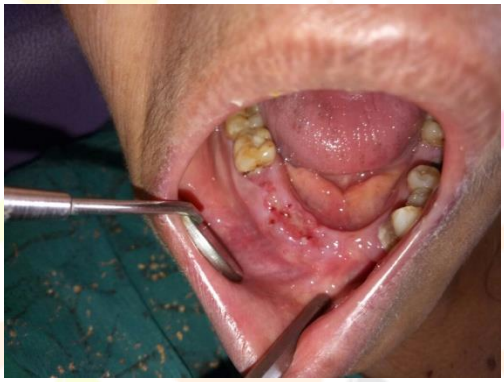

Figure 6. follow up 10 days

Discussion

Giant cell lesions of the oral cavity have been classified based on the type or histogenesis of multinucleated giant cells present within the lesions. Giant cells are of many different types and occur under different pathological conditions and assume different configurations accordingly. They are formed by fusion of several macrophages and are very common in many granulomatous inflammation like in infections such as tuberculosis, syphilis and others produced by fungi. Reaction to foreign substances like keratin, fat and cholesterol crystals are found to be also responsible for formation of these giant cells.[1]

Jaffe in 1953 has separated Giant cell lesions of the jaws from other jaw lesions when they were termed “giant cell reparative granulomas.” Initially these jaw lesions were supposed to be reparative lesions and hence resolves by itself spontaneously.[2]

Peripheral giant cell granuloma (PGCG) is the commonly occurring hyperplastic giant cell lesion in the oral cavity manifestating as a soft tissue extra-osseous purplish-red nodule consisting of multinucleated giant cells originating from or within the periodontal ligament or mucoperiosteum. This entity is not considered as a true neoplasm, but rather be reactive in nature. [3,4]

Synonyms

It is also termed as Giant cell reparative granuloma, Osteoclastoma, Giant cell epulis and Myeloid epulis.

Incidence

An epidemiological study by Mohajerani *et al*. has reported that 6.36% of all oral biopsies received in their lab were multinucleated giant cells lesions.[1] Amongst all reactive growths found intraorally the incidence rate of PGCG varies from 5.1% to 43.6%.[4] Buchner *et al*. in his study showed that PGCG was least encountered lesion among all other reactive lesions, consisting of about 18.7%, and was 1.25% of all the biopsies which were included in his study.[5]

Etiologic Factors

Till date it is not very much clear; many authors have put forth different etiologic factors . Chronic irritation of the local gingiva can also lead to the manifestation of range of reactive lesions, one of which is thought to be originated from the periodontal membrane which surrounds the tooth or from the periosteum of the underlying bone.

1. Chronic irritants

Sood*et al*. stated that PGCG is a reactive lesion which occurs in response to local irritation or any trauma. The different predisposing factors include plaque, calculus, badly finished restorations, chronic infections, trauma and retained food. Bodner *et al*. in his study had suggested that these lesions comprises of an abnormal proliferative response to aggregation.

2. Tooth extractions

Many literature and studies have shown that the occurrence of PGCG after extraction due to enriched blood clot and budding capillaries accumulation in the healing socket. Mighell*et al*. reported a case, where there was occurrence of PGCG just after 2 months of post orthodontic extraction of a deciduous molar.

3. Hormonal influence

Vittek*et al*. in 1982 found that progesterone and estrogen receptors are present on human gingiva. A study by Matter*et al*. suggested that this entity was propagated by pregnancy rather than being “pregnancy dependent.” His study stated that these lesions were not entirely hormone dependent, but it was the result of several combinations of causative factors such as an immunosuppressive action of hormones, along with hyperactivity of the gingiva to these hormones. Moreover, marked female predilection of PGCG also suggests a probable hormonal influence.

Other contributing factors could be immunocompromised states of the patient like diabetes, hyperthyroidism, xerostomia etc. [4,5]

Etiopathogenesis

Stimulus to mucosa

↓

Stromal cells stimulate blood monocyte immigration into tumor tissue

↓

There it secretes variety of cytokines and differentiating factors

↓

Which causes granulation tissue with multinucleated giant cells .

Characteristics	PGCG	Pyogenic granuloma	Epulis granulomatosum	Hemangioma	Peripheral ossifying fibroma
Age	4-5 decade	2-3 decade	5-6 decade	2-3 decade	2-3 decade
Sex (M:F)	1:2	1:4	2:1	1:3	1:2
Site	Anterior mandible (gingiva & alveolar ridge)	Anterior maxilla (gingiva)	Posterior mandible (Alveolar ridge)	Lips, tongue	Anterior maxilla
Size	<2cms	mm to cms	1.5- 5 cms	mms to cms	1.5-5 cms
Symptoms	Asymptomatic	Asymptomatic	Asymptomatic	Asymptomatic	Asymptomatic
Colour	Reddish purplish	Bright red	haemorrhagic	Bright red	Pink to red
Surface	Nodular, ulcerated	Lobulated & warty	smooth, lobulated or bosselated	erythematous and lobulated	Lobulated and ulcerated
Base	Sessile and pedunculated	Sessile and pedunculated	Sessile and pedunculated	Sessile and pedunculated	Sessile and pedunculated
Radiographic features	Cupping	No bone loss	Presence of bony spicule or root piece	None	Superficial erosion of underlying bone
Radiographic foci	Absent	Absent	Absent	Absent	Radiopaque foci are present
Treatment	Excision	Excision	Excision	No intervention, surgery, cryosurgery, intralesional injection	Surgical intervention
Recurrence rate	9%	16%	Not uncommon	Uncommon	7-20 %

Demographics

The PGCG occurs throughout life and peaks in incidence during the mixed dentitional years and in between fourth to sixth decade of life. The mean age of the patients are 33 years (ranges 6-75 years). It is more common amid females (60%). PGCG affects females more than males, 1:1.5 or 1:2 in proportion according to Reichart and Philipsen or Giansanti and Waldron studies, respectively. [3,4,5]

Site

PGCG affects mandible (55%) more than the maxilla; mandibular to maxillary predilection is 2.4:1. Tyagi *et al*.in their review confirmed the maxillary to mandibular site predilection ratio of this particular lesion to be (1:4). Though Pindborg had stated premolar and molar area as the most preferential location for the lesion. [5,6]

Clinical Presentation

The lesion is mostly asymptomatic in nature, manifested clinically as a small, painless, soft, nodular mass, usually red to reddish-blue in colour seems to be arised from deeper underlying tissues with sessile or pedunculated base. If trauma is present there will be surface ulceration and secondary infection which causes a "yellow zone" appearance due to the aggregation of a fibrin clot at the ulcer site. The lesions appear with different size and shapes according to different sites involved. The lesion has rapid growth ability which can reach an average diameter of about less than 20 mm.

Radiographic Features

Since PGCG is a soft tissue entity, radiographic features are usually nonspecific. Periodontal ligament space is widened with slight mobility of associated tooth. When the lesion involves edentulous space then it displays a concave resorption beneath the lesion, this characteristic feature is called as "leveling" or "cupping" effect.

Differential Diagnosis

Differential diagnosis of PGCG ranges from a variety of other lesions in the oral cavity that mimics PGCG which includes epulis granulomatosum, pyogenic granuloma, hemangioma, peripheral ossifying fibroma (POF) and peripheral ossifying tumors.

Microscopic Features

The histological features usually reveals hyperplastic stratified squamous epithelium with ulceration and multiple numerous foci of giant cells inside the connective tissue stroma with numerous young fibroblasts and diffuse chronic inflammatory cells and vascularized fibro cellular stroma with number of capillaries throughout the lesions.

Treatment & Recurrence

Treatment modality of PGCG includes excision with base of lesion and elimination of many underlying etiological factors. There are number of reports where these lesions are being eliminated using various methods like an electric scalpel, cryosurgery using liquid nitrogen or cryoprobe and lasers. Nowdays, laser resection is favourable as it causes less intra operative bleeding and sterilizes the wound completely without suturing. To avoid resection, it is advised to excise the lesion completely. If the adjacent periodontal membrane is affected, then extraction of the adjacent teeth is mandatory to ensure full resection to avoid any future recurrence. recurrence rate of this lesion ranges from 7-10%. [5,6,7,8]

Conclusion

In conclusion the treatment outcome is better if PGCG is diagnosed early so that extraction of teeth and bone resection can be avoided.

References

1. Ranjan V, Chakrabarty S, Arora P et al. Classifying giant cell lesions: A review. J Indian Acad Oral Med Radiol 2018; 30:297-301.
2. Pogrel AM. The diagnosis and management of giant cell lesions of the jaws. Ann Maxillofac Surg 2012; 2:102-6.
3. Tandon PN, Gupta SK, Gupta DS et al. Peripheral giant cell granuloma. Contemp Clin Dent 2012;3: S118-21.
4. Shadman N, Ebrahimi SF, Jafari S et al. Peripheral giant cell granuloma: a review of 123 cases. Dent Res J (Isfahan). 2009 Spring;6(1):47-50. PMID: 21528029; PMCID: PMC3075451.
5. Patil KP, Kalele KP, Kanakdande VD. Peripheral giant cell granuloma: A comprehensive review of an ambiguous lesion. J Int Clin Dent Res Organ 2014; 6:118-25.
6. Ahlawat S, Gupta S, Siddiqui ZR et al. Peripheral giant cell granuloma: A case report. Asian J Oral Health Allied Sci 2022; 12:6.
7. Ogbureke EI, Vigneswaran N, Seals M et al. A peripheral giant cell granuloma with extensive osseous metaplasia or a hybrid peripheral giant cell granuloma-peripheral ossifying fibroma: a case report. J Med Case Rep. 2015 Feb 4; 9:14. doi: 10.1186/1752-1947-9-14. PMID: 25649957; PMCID: PMC4417193.
8. Baesso RCP, de Lima Jacy Monteiro Barki MC, de Souza Azevedo R et al. Peripheral giant cell granuloma associated with a dental implant. BMC Oral Health. 2019 Dec 16;19(1):283. doi: 10.1186/s12903-019-0983-2. PMID: 31842866; PMCID: PMC6916108.
9. Newadkar UR, Khairnar S, Dodamani A. Pyogenic granuloma: A clinicopathological analysis of fifty cases. J Oral Res Rev 2018; 10:7-10
10. Manovijay B, Rajathi P, Fenn SM et al. Recurrent epulis granulomatosa: A second look. J Adv Clin Res Insights 2015; 2:140-142.
11. Hamed Mortazavi, Yaser Safi, Maryam Baharvand et al. "Peripheral Exophytic Oral Lesions: A Clinical Decision Tree", International Journal of Dentistry, vol. 2017, Article ID 9193831, 19 pages, 2017.
12. Dilsiz, Alparslan & Aydin, Tugba & Gursan, Nesrin. (2009). Capillary hemangioma as a rare benign tumor of the oral cavity: A case report. Cases Journal. 2. 10.4076/1757-1626-2-8622.
13. Barot VJ, Chandran S, Vishnoi SL. Peripheral ossifying fibroma: A case report. J Indian Soc Periodontol. 2013 Nov;17(6):819-22. doi: 10.4103/0972-124X.124533. PMID: 24554899; PMCID: PMC3917219.