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Plasma Cell Gingivitis - A Diagnostic Dilemma

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Abstract

Plasma cell gingivitis is the condition that affects the gingiva and is generally rare and benign. The condition is characterized by sharply demarcated erythematous and edematous gingivitis often extending to the mucogingival junction. It is mainly due to a reaction to few allergens, often agents that give flavour or ingredients in chewing gums like that of spices, toothpastes and lozenges. Here we report on two cases of this condition. In the first case the etiology behind this condition was change of tooth paste while the second case was the result of metal allergy. Both of the patients were treated with gingivectomy followed by the elimination of etiology gave good results.

Keywords: Metal allergy, Plasma Cell Gingivitis, Toothpaste allergy.

Introduction

Plasma cell gingivitis (PCG)is a rare benign condition of the gingiva characterized by dense infiltrate of normal plasma cells separated into aggregates of collagen strands.[1]It is an generally a rare condition of uncertain etiology often chewing gum that have distinct flavors, spices, certain foods, confectionaries or dentifrices.[2]The condition was more commonly termed with different terminologies like atypical gingivitis, allergic gingivitis, plasmacytosis of the gingiva, plasma cell gingivostomatitis and idiopathic gingivostomatitis.[3] The significance of this lesion is that it may cause severe symptoms like that of gingival inflammation, discomfort, and bleeding and may simulate other severe conditions. This condition has hence been classified into three categories, based on the etiology[4]

- PCG due to allergens.
- PCG due to neoplastic origin
- PCG due to unknown cause

Irrespective of the etiology, PCG usually shows itself as a red, edematous enlargening of the gingiva, which is friable and bleeds rapidly.[5] Lesions may mimic that of acute leukemia and histologically imitate multiple myeloma and extramedullary plasmacytoma. Hence, the diagnosis requires hematological screening along with clinical and histopathological examinations. Plasma cell gingivitis is entirely benign, and the identification and removalof the exposure to the allergic agent will result in the

reoccurenceof the condition.[3]Topical and systemic steroids are also used effectively for this condition.

CASE – 1

A 29 year old male patient came to the Department of Periodontics, Sree Mookambika Institute of Dental Sciences, Kulasekharam, with the chief complaint of swollen gums in upper and lower arch since 3 months. Patient noticed the swelling 3 months back which used to bleed while brushing and had tenderness present upon touching. The only positive finding was that patient changed the tooth paste three months back. After changing the tooth paste, he had started developing redness of gingiva.

Clinically, the patient presented with severe gingival inflammation which involved the marginal and attached gingiva of upper and lower anterior region **[Fig 1.1].** Blood examination was done to rule out other conditions. The complete hemogram were normal and patient presented no relevant medical history. Radiographic analysis showed no relevant findings other than the generalized horizontal bone loss **[Fig 1.2].**

A provisional diagnosis of chronic localized periodontitis was made. Initial treatment included patient education; motivation and oral hygiene instructions followed by scaling and root planing. Patient was strictly advised to change the tooth paste.

After the elimination of plaque and calculus gingival inflammation was subsided. A decision was made to excise the enlarged tissue under local anaesthesia. Excised tissue was given for histopathological examination. After excision periodontal dressing was placed to cover the surgical area.

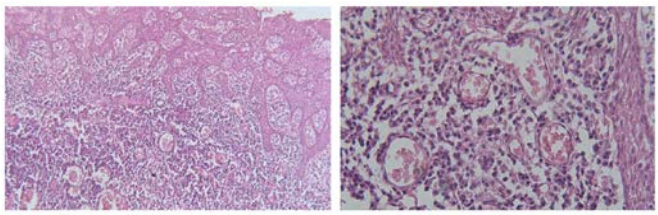
Histopathology Report

H/E stained section shows a highly dysplastic parakeratinised stratified squamous epithelium in association with moderately collagenous connective tissue stroma. Epithelium shows pseudoepitheliomatous hyperplasia. In connective tissue diffuse and dense chronic inflammatory cell infiltration predominantly of plasma cells were seen. Vascularity was high with few extravasated RBCs present **[Fig 1.3].**

Fig.1.1 Pre-operative view

Fig. 1.2 Pre-operative radiograph

Fig. 1.3 Histopathological pictures



CASE – 2

A 32 year old female patient came to the Department of Periodontics, Sree Mookambika Institute of Dental Sciences, Kulasekharam, with the chief complaint of swollen gums in upper and lower arch since 2 months. Patient had undergone fixed prostheses treatment 8 months back. After placing the crown, she had started

developing redness of gingiva but the prominent swelling appeared 2 months back and used to bleed while brushing. Patient reported a history of metal allergy. Whenever she wears a metal wrist watch, erythematous areas developed in the area of metal exposure. Clinically, the patient presented with severe gingival inflammation which involved the marginal and attached gingival of upper and lower anterior region with the swelling of size 5x8 mm present in relation to the buccal aspect of 21, 22 regions and a swelling of size 3x3 mm seen on the palatal aspect of 12 regions **[Fig 2.1].** Blood examination was done to rule out other conditions. The blood investigations were normal and patient presented no relevant medical history. Radiographic analysis showed no relevant findings other than the bone loss **[Fig 2.2].**

A provisional diagnosis of plasma cell gingivitis was made. Initial treatment included patient education; motivation and oral hygiene instructions followed by scaling and root planing.

After the elimination of plaque and calculus a decision was made to excise the enlarged tissue. Excision was done in both the buccal and palatal region under local anaesthesia. Excised tissue was given for histopathological examination. After excision, full thickness mucoperiosteal flaps were elevated and closed with figure of eight sutures. Periodontal dressing was placed to cover the surgical area. Patient reported after 2 weeks and the healing was uneventful **[Fig 2.3].** Advise the patient to change the metal prostheses to prevent recurrence of the lesion.

Histopathology Report

The given H/E stained soft tissue section shows an ulcerated stratified squamous surface epithelium in association with an inflamed fibrovascular connective tissue. The underlying connective tissue exhibits dense diffused chronic inflammatory cell infiltrate comprised predominantly of plasma cells. The connective tissue also shows macrophages, budding capillaries and bundles of collagen **[Fig 2.4].**

Fig. 2.1 Pre-operative view

Fig. 2.2 Pre-operative radiograph

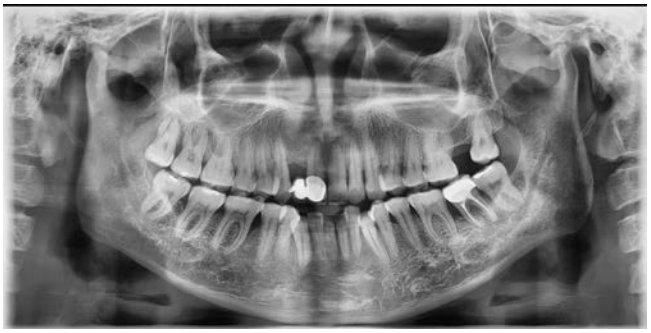
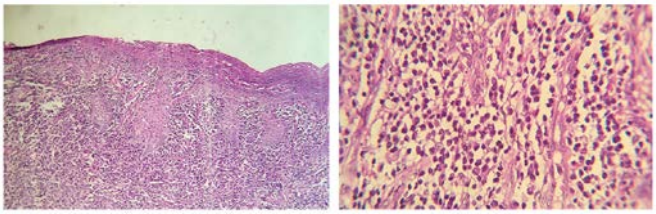


Fig. 2.3 Two weeks post-operative view

Fig. 2.4 Histopathological pictures



Discussion

Plasma cell gingivitis is a condition that is not very common. It is mainly due to the immunological reaction to allergens such as tooth paste, chewing gums, mint, intraoral prosthesis, and certain foods.[1]Histologically it is characterized by the presence of abundant plasma cells which are identified by their eccentric nuclei.

Both the patients showed that they had generalized chronic marginal gingivitis due to the accumulation of plaque. Even though the marginal gingivitis got cleared when the patients' control of plaque improved, but conditions that were underlying remained unchanged.

In the first case development of symptoms occurred after changing the tooth paste. Therefore there is always a need to ask patient history thoroughly before diagnosis and treatment planning.

Cinnamonaldehyde, that is added to dentifrices to reduce the unpleasant taste of pyrophosphate, has been closely related with the advent of plasma cell gingivitis.[6-7] Cinnamon, when used as a flavouring agent in tooth paste, was determined to be an etiological factor in cheilitis.[8] Otto et al in 2010 found flavouring to be one of the regular allergen, but cocamidopropyl betaine, propylene glycol, essential oils, parabens, and propolis are also regularly used components that could be potential allergens. There are some products that use either no flavouring or alternate flavouring which could be useful for this kind of patients.[9]

In the second case lesion appear after wearing the metal ceramic crown as the patient had a history of allergy to metals.

Same as that for ordinal contact dermatitis, the pathogenic mechanism for metal allergy has been categorized as type IV allergic reactions. It has been observed that in some cases the extraction of intraoral dental material reduces atopic dermatitis and general symptoms of asthma. This indicates that metal allergies may have an aspect of pathogenic mechanism for allergic reactions belonging to the type I category.[10] It has been identified that restorative materials such as gold, orthodontic wire, amalgam, and acrylates cause allergic contact mucositis.[11]

Both the cases the diagnosis of plasma cell gingivitis was confirmed on the basis of histopathological examination. It reveals the presence of increased number of normal plasma cells which is identified by their eccentric nuclei. The differential diagnosis is very important because of its similarity with some other oral lesions.

A negative Nikolsky's sign would help to exclude pemphigus. Radiographs and histopathological examination differentiate this condition from multiple myeloma and plamacytoma. Radiographic view of multiple myeloma consists of multiple punched out solitary lesion sand generalized osteoporosis may also seen.[12] Histologicallypresence of atypical plasma cells suggests malignancy such as multiple myeloma and solitary myeloma.[13]

Careful history taking, biopsy and hematological examinations are mandatory to exclude leukemia and other local manifestations of systemic diseases. Though recurrences are common, no studies till date report a progression of this condition to a malignancy of any type.[3]

Several treatment modalities have been used in the management of plasma cell gingivitis. The medical treatments triad includes, topical or systemic antihistamines, corticosteroids, antimicrobials, and surgical modalities including excision by scalpel or laser or electrocoagulation. In the first case the primary etiological factor was the changing of tooth paste. Advised the patient to change the tooth paste gave good results. In the second case it had occurred due to the presence of metal ceramic crown. Advised the patient to change the crown in order to have favourable outcome.

Conclusion

An early detection is mandatory as plasma cell gingivitis has the same pathologic changes seen clinically as in HIV infections, cicatrical pemphigoid, desquamative gingivitis, atrophic lichen planus or discoid lupus erythematosus. These conditions have to be categorized through hematologic and serologic testing. The cases that have been discussed here emphasize the negative effects of components of tooth pastes and metal prostheses. Thus, emphasizing the need for comprehensive history taking, investigation, and exact diagnostic tests to arrive at a correct treatment schedule for gingival conditions that are refractory to conventional periodontal therapy.

Abbreviations

PCG – Plasma cell gingivitis

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