Plasma Cell Gingivitis: An Unusual Entity- A Case Report

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ABSTRACT
Plasma cell gingivitis is an uncommon inflammatory condition marked by an extensive infiltration of plasma cells into the sub-epithelial connective tissue. Clinically, it is characterized by diffuse erythema and oedematous swelling of the gingiva, often sharply demarcated at the mucogingival junction. While this condition is frequently attributed to a hypersensitivity reaction to allergens, its exact aetiology remains ambiguous and poorly understood. Here, we present a rare and intriguing case of plasma cell gingivitis accompanied by distinctive features, including enlarged and fissured lips affecting the lower region and angular cheilitis—an unusual manifestation of this condition. Diagnosis was established through a combination of clinical examination and histopathologic evaluation. The treatment involved gingivectomy, which effectively managed the condition. This case adds to the growing body of knowledge about the clinical presentation and management of plasma cell gingivitis, particularly when associated with atypical findings like lip enlargement, angular cheilitis and fissuring.

1. Introduction

Plasma cell gingivitis is a rare but benign inflammatory condition affecting the gingiva, characterized by distinct redness and swelling. These changes are sharply defined and often extend to the mucogingival junction.[1] Over the years, this unusual form of gingival enlargement has been referred to by various terms, including atypical gingivitis, allergic gingivitis, plasmacytosis of the gingiva, plasma cell-gingivostomatitis, and idiopathic gingivostomatitis.[2] In some cases, localized lesions, known as plasma cell granulomas, have also been reported. This condition is believed to result from a hypersensitivity reaction to certain antigens, with common triggers including substances found in chewing gum,[3] toothpaste, and other foreign agents.[4] Flavoring agents like cinnamaldehyde and cinnamon are frequently identified as allergens responsible for causing plasma cell gingivitis.[5]

Clinically, the condition presents with red, friable gingiva that is prone to easy bleeding. In rare instances, ulceration of the gingiva may occur. Histopathological examination typically reveals a dense infiltration of mature plasma cells within the connective tissue of the lamina propria. Due to its resemblance to other serious conditions, such as acute leukaemia, or histological similarities to diseases like multiple myeloma and extramedullary plasmacytoma, proper diagnosis requires a comprehensive evaluation. This includes clinical assessments, histopathological analysis, and haematological screening to rule out malignant or systemic disorders.

While plasma cell gingivitis is benign, identifying and eliminating the allergen causing the reaction is critical to resolving the condition. Unfortunately, in many cases, the specific allergen remains unidentified even after thorough allergy testing. An even rarer presentation of plasma cell gingivitis is when it is associated with cheilitis, which involves inflammation of the lips. Such cases are scarcely reported in the literature. Notably, in 1971, Kerr and colleagues described a group of patients exhibiting a triad of plasma cell gingivitis, cheilitis, and glossitis, linked to allergic reactions from additives in chewing gum.[6]

In this report, we discuss a unique case of plasma cell gingivitis in a patient with enlarged lips and angular cheilitis. What makes this case particularly notable is the absence of any identifiable allergen or trigger, despite

extensive evaluations. This highlights the complexity of diagnosing and managing such conditions when their exact cause cannot be pinpointed.

2. Case Report

A 25-year-old male patient presented to the Department of Periodontics at MNR Dental College, Sangareddy, with the primary complaint of a swollen lower lip and enlarged gums, which he had been experiencing for the past one month. The condition initially began with a mild swelling of the lower lip, which he observed gradually increasing in size. Around the same time, he also noticed changes in his gums, including enlargement and bleeding during tooth brushing. Although these symptoms persisted, there was no associated pain. Concerned about his condition, the patient sought treatment from a dental surgeon and was prescribed medications along with oral prophylaxis. However, these interventions failed to provide significant improvement in his symptoms.

A thorough review of the patient's medical and personal history revealed no contributing factors. He denied experiencing any systemic symptoms such as fever, loss of appetite, or disturbances in sleep. Additionally, the family history was not relevant, and no hereditary predispositions were identified. When asked about recent lifestyle changes, the patient reported no alterations in his oral hygiene practices or products. He specifically denied the use of herbal toothpaste, khat leaves, mint candies, or any other potentially allergenic substances.

On clinical examination, the patient was systemically healthy, with no signs of underlying systemic disease. Extraoral findings revealed angular cheilitis and significant swelling of the lower lip. Intraoral examination showed gingival enlargement extending till attached gingiva which is a rare entity, with the gingiva appearing erythematous and oedematous, and bleeding was noted upon probing. Blood investigations, including a complete blood count, peripheral blood smear, and routine biochemical tests, were conducted to rule out systemic disorders. All results were within normal limits, ruling out haematological or systemic abnormalities.

A biopsy of the maxillary anterior gingiva, measuring 1.5 cm × 0.8 cm × 0.2 cm, was performed to confirm the diagnosis. Histopathological analysis of the gingival tissue revealed a dense infiltration of plasma cells in the subepithelial connective tissue, accompanied by a chronic inflammatory infiltrate of lymphocytes. These findings were consistent with plasma cell gingivitis with an unknown cause.

The treatment plan involved a multi-step approach to manage the condition. The patient first underwent oral prophylaxis to reduce local irritants. This was followed by an external bevel gingivectomy and gingivoplasty to restore the scalloped contours of the gingiva, ensuring a more aesthetic and functional outcome. Post-surgical care included the application of a protective periodontal dressing (Coe-Pack) to facilitate healing and provide comfort. Medications were prescribed, including a 0.12% chlorhexidine mouthwash (10 ml twice daily for one week), to maintain oral hygiene and reduce the bacterial load. The patient was also advised to avoid potential allergens, such as mint candies, herbal toothpastes, and spices, to prevent recurrence.

At the one-week follow-up, the patient reported significant improvement, with a noticeable reduction in the swelling of the lower lip. Healing of the gingival tissues was observed to be uneventful, with no signs of inflammation or complications. This comprehensive treatment plan, combined with patient education and avoidance of potential allergens, proved to be effective in managing the condition. The successful resolution of symptoms highlights the importance of a multidisciplinary approach and thorough diagnostic evaluation in cases of plasma cell gingivitis.

Fig 1: Extraoral features of the patient which shows Angular cheilitis and swelling of lower lip

Fig 2: Intraoral Pre-op features of the patient representing swelling of the gingiva extending until attached gingiva: Front View

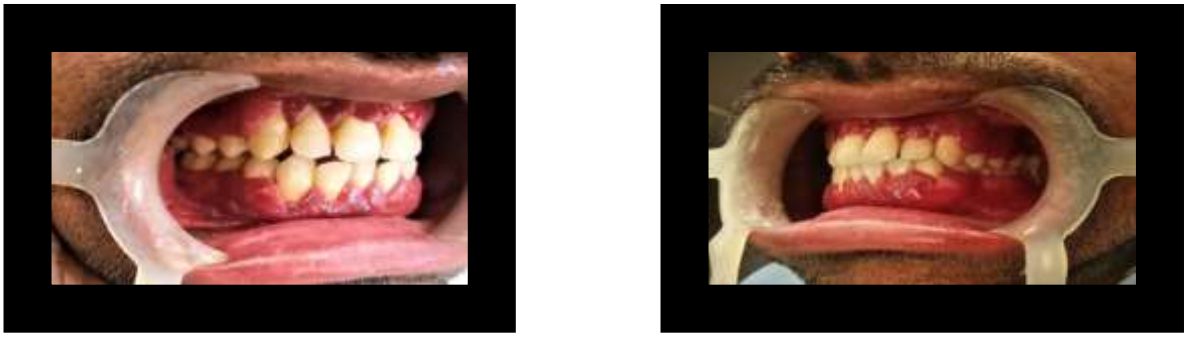

Fig 3: Intraoral Pre-op features of the patient representing swelling of the gingiva extending until attached gingiva: Side View

3. Discussion

Plasma cell gingivitis (PCG) is a rare, benign inflammatory condition characterized by diffuse gingival enlargement, particularly affecting the anterior maxilla and mandible. The infiltration of plasma cells into the subepithelial connective tissue suggests an allergic origin in some cases; however, most cases, including the one presented here, have no identifiable causative factor. Sollecito et al. (1995) classified PCG into three categories: allergen-induced, neoplastic, and idiopathic.[7] This case aligns with the idiopathic category, as no allergen or specific trigger could be identified.

Clinically, PCG typically involves both marginal and attached gingiva, unlike plaque-induced gingivitis, which affects only the marginal gingiva. The lack of response to plaque control measures, along with biopsy findings excluding granulomatous lesions and blood tests ruling out hematologic malignancies, supported the diagnosis of PCG.[8] The absence of fungal hyphae in microscopic examination ruled out Candida albicans as a potential etiological factor, as suggested by Vickers et al.[9] Differential diagnoses, including cheilitis granulomatosa, dermatitis venenata, actinic cheilitis, and plasma cell cheilitis, were excluded based on clinical and histopathological findings.

Historical cases provide valuable insights into PCG. Kerr et al. reported PCG due to cinnamonaldehyde in chewing gum, which resolved after discontinuation.[6] Silverman and Lozada described a syndrome involving gingivitis, cheilitis, and glossitis, similar to plasma cell mucositis, a benign condition marked by plasma cell infiltration in various mucosal sites.[2]

Treatment of plasma cell mucositis often involves both medical and surgical approaches. Several modalities have been explored, including corticosteroids (administered topically, intralesionally, or systemically), antibiotics, tissue destruction (using liquid nitrogen, carbon dioxide laser, or electrocoagulation), surgical excision, and radiation therapy. However, no single treatment has emerged as consistently effective across cases.[10] In this case, gingivectomy successfully resolved symptoms. Additional investigations ruled out drug-induced gingival hyperplasia, systemic conditions like Crohn's disease and Wegener's granulomatosis, hereditary gingival hyperplasia, leukemic gingival enlargement, granulomatous gingivitis, and tuberculosis.

Despite the unknown aetiology, theories suggest potential links to deficiencies in serum IgA and secretory IgA, leading to localized infections and plasma cell infiltration. Regular follow-up is critical for monitoring oral

hygiene and identifying potential allergens to prevent recurrence.

4. Conclusion

Plasma cell gingivitis is identified as a rare inflammatory condition, diagnosed through histopathological confirmation of plasma-cell infiltration after ruling out other possible aetiologies. While the condition is prone to recurrence, no evidence suggests malignant transformation, and it is hypothesized to represent a nonspecific inflammatory response to an unidentified antigen. Comprehensive diagnostic evaluation and personalized treatment strategies, including surgical interventions, are essential for effective management and reducing the likelihood of recurrence.

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MNR Dental College and Hospital

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Conflict of interest:

There are no conflicts of interest.

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