

Plasma cell gingivitis associated with dry flower buds of clove: a case report

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Plasma cell gingivitis (PCG) is an uncommon condition of the gingiva characterized by erythematous, edematous and easily-bleeding gingiva. Its etiology is unknown, but hypersensitivity reaction has been proposed. Here we reported a 35-year-old female who used dry flower buds of clove as herbal oral lozenge and later noticed redness of the lips and gingiva. Oral examination revealed fiery red gingiva with easily bleeding. Upper and lower labial mucosa showed moderate erythema with slightly erosive surface and burning sensation. Histopathological examination revealed a hyperplastic epithelium with spongiosis and exocytosis. The lamina propria showed intense infiltration of mature plasma cells with a few lymphocytes and numerous dilated capillaries. These characteristics were compatible with the diagnosis as PCG. Additionally, we proceeded direct immunofluorescent (DIF) study of the lesion. Besides oral hygiene care and suggestion to refrain from causative agents as well as herbal related products, the use of systemic and topical corticosteroids brought successful treatment outcomes with no need for surgical procedures. There was no sign of recurrence during the period of 2-year follow-up.

Key words: clove, corticosteroid, direct immunofluorescent (DIF) study, plasma cell gingivitis

How to cite: Panpradit N, Lapthanasupkul P. Plasma cell gingivitis associated with dry flower buds of clove: a case report. M Dent J 2017; 37:155-162

Introduction

Plasma cell gingivitis (PCG) is a rare inflammatory gingival condition with unknown etiology. Clinical features mainly present as diffuse gingival erythema with edematous swelling, as well as smooth, shiny and velvety texture involving free gingiva and attached gingiva. The lesion shows a sharp demarcation and frequently extends to mucogingival border [1,2]. Sometimes desquamation, erosion and ulceration have also been reported [3,4]. Due to the inflammation, this lesion is easily bleeding. PCG is seldom found as an exophytic mass mimicking pyogenic granuloma [5,6]. Most of the cases are asymptomatic, but

some cases presented with burning sensation and pain [1,2,4,7-10].

The other names of PCG such as idiopathic gingivostomatitis, atypical gingivostomatitis, plasmacytosis of gingiva and allergic gingivostomatitis are also mentioned in the literatures [11-12]. Although the precise etiopathogenesis is still unclear, the hypersensitivity reaction to some allergens such as components of chewing gums [11,13] and dentifrices [14-17] or specific leaves [3,4,18] were reported.

The differential diagnosis includes the lesions that possess similar clinical characteristics, including mucous membrane pemphigoid, pemphigus vulgaris, HIV gingivitis, and leukemia.

Histopathological features of PCG consist of a dense infiltration of plasma cells in the subepithelial layer, resulting in a disruption to the basement membrane, and dilated capillaries [19]. Hematological examination is one of the important supplementary investigations to rule out other serious plasma cell lesions, including multiple myeloma or solitary plasmacytoma, since the histopathological changes of PCG mimic those lesions [1].

No standard protocol for the management of PCG is available. In general, the management starts with avoidance of known relevant allergens, along with plaque and oral hygiene control [3,4,13-15,20]. Some of cases ended up with surgical treatment as gingivectomy and gingivoplasty [1,9,10,17,18,21,22]. While the benefits of using topical and systemic corticosteroid are still controversy [12,21,23], a few of other medications such as topical antibiotics [8] and anti-allergic drugs [24] are prescribed with successful results.

This report presents a case of PCG concomitantly occurring with mucositis of the labial mucosa in a female who is firstly described to have a relevant cause of using dry flower buds of clove. In addition, the description of direct immunofluorescent (DIF) finding is also reported.

Case report

A 35-year-old female presented to Oral Medicine Clinic, Dental Hospital, Faculty of Dentistry, Mahidol University with the chief complaints of swollen gums and burning sensation. The problems started since 2-3 months back, after she reported about using dry flower buds of clove (figure 1) as herbal oral lozenge with the believe that it might help to improve the oral malodor. She had put a bud onto the oral mucosa around 3 times per day, everyday for a month. During that time, the patient noticed redness of lips and had spicy feeling on oral mucosa. As a result, she then

stopped using that herb. However, the reactions further progressed and her gums had more swelling, more redness and severe burning sensation especially when contacting with hot, spicy or sour foods, as well as the feeling of tension on the lips. Around 2 weeks before presenting to Oral Medicine Clinic, she was prescribed with anti-inflammatory and anti-allergic drugs for 10 days with minimal reduction of the edema. At the same time, the patient also received full mouth scaling. Besides the history of prolong contact to dry flower buds of clove, she regularly used herbal toothpaste containing clove.

For medical history, patient had the last medical check-up around 2 years ago and denied any medical problems, except occasionally experiencing mild burning stomach pain. She also denied drug allergy, but had a history of allergic reactions as itching and rash when wearing the Silver-contained accessories. Extra-oral examination was unremarkable except the lower lip that appeared as a slightly swelling. Intra-oral examination revealed generalized edematous swelling of upper and lower gingiva with fiery red color and glistening surface. The margin of lesion at labial and buccal aspect of gingiva extended up to mucogingival junction (figure 2A) and the inflamed gingiva showed easily bleeding up on gently provocation. Both upper and lower labial mucosa showed moderate erythema with slightly erosive surface (figure 2B and 2C). Panoramic radiograph revealed no bony destruction, except lower right lateral incisor (tooth 42) had a periapical radiolucency (figure 3). Tooth 42 showed discoloration, negative to percussion and no response to electric pulp tester, confirming the diagnosis of pulp necrosis with asymptomatic apical periodontitis, and was referred to an endodontist for the root canal treatment.

At first visit, after history taking and oral examination, the incisional biopsy was done on the labial gingiva around lower left lateral incisor and canine (tooth 32 and 33). Biopsy specimens

were sent for histopathological and DIF investigations. In addition, blood investigation, urinalysis, chest x-ray and stool examination were also performed with insignificant results. The histopathological examination revealed a hyperplastic epithelium with thin elongated rete ridges and suprapapillary thinning. Spongiosis and exocytosis were noticed in the epithelium. The lamina propria showed an extremely intense infiltration of chronic inflammatory cells consisting predominantly of mature plasma cells. Numerous dilated capillaries and a few lymphocytes were also seen (figure 4A and 4B). Taken together, these characteristics were compatible with the diagnosis of PCG. DIF results showed negative (-) to immunoglobulin G (IgG), positive (+) to IgM, IgA and complement 3 (C3) at colloid bodies, + to Fibrinogen (F) at dermal-epidermal junction. Due to burning sensation and redness of the lesion, candida culture swabbed from generalized lesional mucosa was examined to rule out



Figure 1. Dry flower buds of clove.

erythematous candidiasis. The result revealed no growth of candida organisms.

The treatment began with systemic corticosteroid as prednisolone 25 mg/day (approximately 0.5 mg/kg). The prescription of omeprazole 20 mg/day was also added to prevent the side effects of corticosteroid since the patient reported experience of mild burning pain stomach if she unable to have a meal on time. A strong advice to refrain from any herbal contained



Figure 2. (A) Fiery red and edematous swelling gingiva extended to mucogingival junction. (B and C) Moderate erythema with slightly erosive surface on upper and lower labial mucosa.



Figure 3. Panoramic radiograph revealed no bony destruction, except tooth 42 showing periapical radiolucency.

products such as toothpaste or foods and food ingredients was informed. After 6 days, the lesion had dramatically regressed by reducing in redness and swelling of gingiva and labial mucosa. Thereafter, the step for tapering dose of prednisolone was started. Additionally, topical corticosteroid as fluocinolone acetonide 0.1% in oral paste was prescribed to apply at the lesion 3 times/day. Then adjusted dose was performed when the lesion was ameliorated. During the follow-up visits along 2 months, the lesion was

continuously improved. The stimulation of oral hygiene care and periodic periodontal treatment were also constantly proceeded. However, signs of occasionally exacerbations including mild erythema and slightly swelling gingiva with slight burning sensation when the patient tried some foods containing herbs and spices were noticed. Therefore, the management with topical corticosteroid was used to control the lesion. The clinical feature as completely free from the lesion was detected around 8 months after the initial treatment (figure 5A, 5B, 5C), since the patient strictly avoided any kinds of foods or products containing herbs. The periodically recall was scheduled and the oral mucosa was showed the remission of PCG even at the 2 year-visit of follow-up.

Discussion

PCG is a peculiar oral lesion that is mainly believed to relate with the allergic reactions, though the exact cause and mechanism of disease is still unknown [19]. The possible allergens were herbal containing products. The herbs mentioned in the literatures were black pepper, black salt, alum, ajwain [1], cinnamon [7,15], mint [7,17], clove [17], and acasia [22]. Some cases of PCG were associated with a direct contact or chewing the specific leaves such as khat [3,4] and colocacia (arbi) [18]. To the best of our knowledge, this is the first report that dry flower buds of clove is a causative allergen. Clove, an important medical plant, has a scientific name as *Syzygium aromaticum* or *Eugenia caryophyllata*. The dry flower buds are extracted for essential oil or clove oil in which eugenol is the main compound. Since clove oil has various benefits such as antioxidant, antimicrobial, antinociceptive, and antiviral

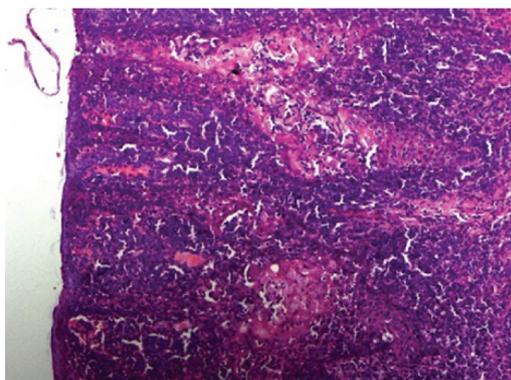


Figure 4A. The mucosa shows a hyperplastic epithelium with a heavy plasma cell infiltrate in the lamina propria (hematoxylin-eosin, original magnification x100).

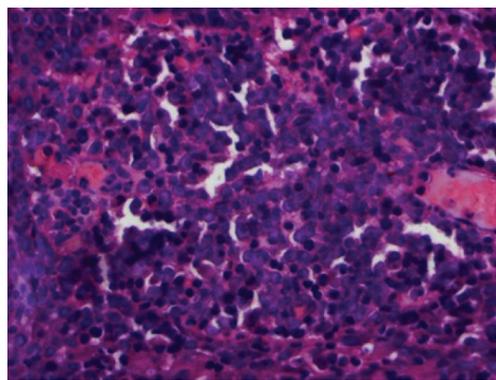


Figure 4B. A high-power view reveals numerous plasma cells and dilated capillaries in the lamina propria (hematoxylin-eosin, original magnification x400).



Figure 5. (A, B, C) Gingiva and labial mucosa appeared normal after 8 months of treatment.

activity, it is widely used in dental products [26,27]. In this case, the herbal toothpaste containing clove was also involved as a causative agent of PCG which similar to the previous report using herbal toothpaste containing mint and clove [17]. Interestingly, even the meticulous history takings were done, many reports could not identify any relevant or causative agents [2,8,9,12,21-24].

The diagnosis of PCG depended on a history of contacting to allergenic causes and heavy plasma cell infiltration in submucosal layer. To rule out other immune mediated disorders that possess similar clinical characters such as pemphigus or pemphigoid DIF investigation was performed. Our DIF results revealed as - IgG, + IgM, IgA and C3 at colloid bodies, + F at dermal-epidermal junction. Only one study reported DIF information of PCG as nonspecific reaction on IgG, IgM, IgA and C3 [23]. Another study showed an immunohistochemical examination revealing of IgG + plasma cells were 90% while of IgA and IgM + cells were less than 5% [8]. These results seem to be different from our study. However, until now there is no standard criteria for the diagnosis of PCG from DIF or immunohistochemical data. Further studies are required to gain more information and knowledge.

The important management of PCG is to absolutely avoid identified allergens or relevant products. Many studies showed the dramatically improvement merely refraining from the causative agents and intensive oral hygiene care [3,4,13-15,20]. Combined treatment using chlorhexidine gluconate mouthrinse was also reported [1,2,17,27]. The effective medication for PCG was scarce. One reported case used topical 2% fusidic acid in a tetracaine-containing adhesive ointment applying 4 times/day [8], while another reported case used topical Fucibet that contained betamethasone and fusidic acid for applying at least 3 times/day [27]. The treatment with modified

application of chlorpheniramine maleate 25 mg tablet crusting into powder form over the lesion 3 times/day also led to complete resolution [24]. However, some studies presented that surgical removal of hyperplastic gingival tissue with or without laser technic was necessary after noninvasive treatment was unsuccessful [1,9,10,17,18,21,22].

In this case, the initial dose of prednisolone 25 mg/day (approximately 0.5 mg/kg) could bring dramatically regression within 6 days. After tapering systemic corticosteroid, PCG could be controlled by application of fluocinolone acetonide 0.1% in oral paste. However, the former studies were disagreed with the affects of topical and systemic corticosteroids. One study reported successful treatment of 6 cases from 12 cases by using systemic prednisone with the doses not exceeding 40 mg/day [12]. Another study reported the decrease of symptoms and inflammation, but was unable to reach complete healing by topical 0.05% clobetasol proprionate or 0.05% fluocinonide [23]. Although, our case showed complete healing and no recurrence within 2 year-period of follow-up, the time to reach completely normal oral mucosa was long as 8 months. During that time, there were signs of recurrences when patient re-used herbal toothpaste containing clove, or contacting with spices and herb-containing foods. Consequently, the advice for strictly refraining from causative agents and relevant allergens is quite important and should be repeatedly done.

Until present, only a few information regarding the pathogenesis of PCG is available. There is no definite protocol or regimen for treatment PCG. Therefore, our report of PCG in a 35-year-old female added more information of allergenic cause, clinical features, DIF findings, and the alternative way for successful treatment without surgical procedure.

Acknowledgment:

Associate Professor Dr. Supanee
Rassameemasmaung for suggestions for revision.

Assistant Professor Dr. Jira
Kitisubkanchana for providing radiographic
illustration.

Funding: None

Competing interests: None declared

Ethical approval: Not require

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