Allergic contact stomatitis (stomatitis venenata): A case report of oral hypersensitivity reaction to toothpaste

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ABSTRACT

Allergic contact stomatitis (stomatitis venenata) might resemble oral lichen planus or oral lichenoid lesion clinically which can be acute or chronic in nature. Many offending agents have been attributed to their development and the most common being dental restorative materials, lipstick or flavouring agents in toothpaste or chewing gums. Allergic reactions can be in mild form to life-threatening anaphylaxis. The identification of the exact cause for allergy is difficult. Here, we report the case of a 37-year-old patient who presented with allergic contact stomatitis to a conventional daily routine product. Importance of history taking and awareness by the clinician about the contents of any new products being prescribed to the patient are emphasized by this case report.

Key words: *Contact hypersensitivity, Dentifrices, Drug hypersensitivity reaction, Stomatitis venenata*

Oral mucosal ulceration and lesions are highly prevalent in population all over the world, ranging from 1% to 10% with a female predominance [1]. The clinical presentations of the hypersensitivity reactions to different allergens in foodstuffs, medications, dentifrices, mouthwashes, candies, chewing gums, restorative materials, cosmetics, etc., can vary from mucosal ulcerations to lichenoid reactions [2]. Symptoms can arise as immediate as 15–30 min (type I hypersensitivity) or may be delayed (type IV hypersensitivity) and vary from type of allergens exposed and duration of contact [3].

Dentifrices or toothpaste is an inexorable product in today's world. Several toothpastes with different components are available with the essentials being abrasives, cleansing agents, binding agents, humectants, preservatives, and flavoring and coloring agents. According to the study conducted by Sainio *et al*., 30 of 50 compounds present in dentifrices were recognized to be allergens, particularly the flavoring and coloring agents [4].

CASE REPORT

A 37-year-old married female reported to the Department of Oral Medicine and Radiology with chief complaints of the sensitivity of teeth, peeling, and ulceration on the gums of upper right posterior teeth and lower right and left posterior teeth for 3 weeks. The lesions were of progressive increase in size with no bullae/vesicle history. 1 month before reporting to the department, she underwent oral prophylaxis, and due to hypersensitivity, she had changed her toothpaste and was applying the desensitizing paste on the same region for more than 10 min before proceeding with brushing. No prior history of ulcerations or presence of systemic disease was reported. She was cancerphobic about the lesions.

On local examination, multiple ulcers with erythematous borders and sloughy base were present on attached gingiva of 13 and 14 (Fig. 1a) and 25 and 26 region which was largest, approximately 5 mm×2 mm (Fig. 1b), on the marginal gingiva of 36. No lymph nodes were palpable. Pigmented areas with striated borders were present on the buccal mucosa adjacent to 37 and 47. There was a pigmented patch on the left posterolateral surface of the tongue. Both lesions resembled post-inflammatory pigmentation (Fig. 2).

Based on the clinical features, provisional diagnosis of allergic contact stomatitis to dentifrice with differential diagnoses of recurrent aphthous stomatitis and erythema multiforme was considered. Contact stomatitis was the first diagnosis because it can occur in any part of oral mucosa irrespective of being keratinized or non-keratinized, and the manifestations are also varied with a positive history of contact to the allergen. Recurrent aphthous stomatitis was considered due to round or ovoid ulcer surrounded by a region of an inflamed mucosa and the yellowish color. However, an absence of pain and involvement of both keratinized and non-keratinized mucosa are not common in aphthous ulcers. Erythema multiforme was considered due to sudden onset, sloughing of the mucosa, and diffuse redness with small red macules that may enlarge and show whitish center. It is usually seen in young adult men with the gingiva being rarely affected and macules progressing to form bullae which were against our case.

The patient was advised to discontinue the usage of the dentifrice. On follow-up after 1 week, the patient reported that regression of

the lesion started within 3 days after discontinuing the toothpaste confirms the diagnosis of allergic contact stomatitis (Fig. 3).

DISCUSSION

An International Consensus of drug allergy has classified drug hypersensitivity reactions (DHRs) clinically as immediate DHRs which typically occur within 1–6 h after the last drug administration and non-immediate DHRs which can be delayed and may occur at any time as from 1 h from the initial drug administration. DHRs can be defined as allergic and non-allergic [5].

Allergic contact stomatitis and/or oral lichenoid reactions might resemble oral lichen planus clinically which can be acute or chronic in nature. Elimination and provocation test of the suspected agent resulting in resolutions of lesions in 1 week is suggested. The patch test is the gold standard to identify the allergen [1]. The clinical presentation of lesions can be either diffused or localized [6]. Hence, when a patient presents with acute symptoms and positive history, it is prudent to discontinue the suspicious agent and see whether remission occurs before going for a biopsy. Many offending agents have been attributed to the development of such reactions and the most common being dental restorative materials or flavoring agents in toothpaste or chewing gum [4,5,7,8].

Certain medications, food additives, candies, mouthwashes, dental materials, and denture materials are other sources for the development of these lesions [9-12]. Oral lesions are less common than cutaneous manifestation, even though oral cavity is exposed to these materials more commonly than skin. The reasons maybe: (a) short duration of contact (b) dilution of the offending agent by the saliva, (c) less keratinization of oral mucosa as compared to skin making hapten binding difficult and d. high vascularity of oral mucosa [2].

Antigen fixation in the keratinocytes is the cause for tissue alteration which is recognized and destroyed by cells of the immune system, especially T lymphocytes. The literature regarding the pathogenesis of specific drug process is lacking, but the following hypothesis is suggested by Demoly *et al*. in International Consensus on drug allergy in 2014 as shown in Fig. 4 [5]. Thorough recording of history is mandatory to establish a diagnosis of allergic contact stomatitis. The patient might present with bright red areas of erythema and edema involving gingiva, tongue, lips, to white patches or plaques clinically like lichen planus, and erosions and ulceration with irregular borders with a red halo. Desquamation or peeling and vesicle formation are also noted in some cases [13]. The diagnostic criteria for oral allergic contact lesions are given in Table 1 [14].

The treatment of allergic contact stomatitis involves eliminating the allergenic agent. It may be confirmed by the reappearance of inflammatory lesions on reintroduction of the agent. Complete disappearance of the lesions can take up to 2 weeks. Patients experiencing more severe symptoms may need

Figure 1: Lesions present on gingiva of (a) 13 and 14 and (b) 25 and 26

Figure 2: Post-inflammatory pigmentation on left buccal mucosa and tongue

Figure 3: Regression of lesion on (a) 13 and 14 and (b) 25 and 26 gingiva following withdrawal

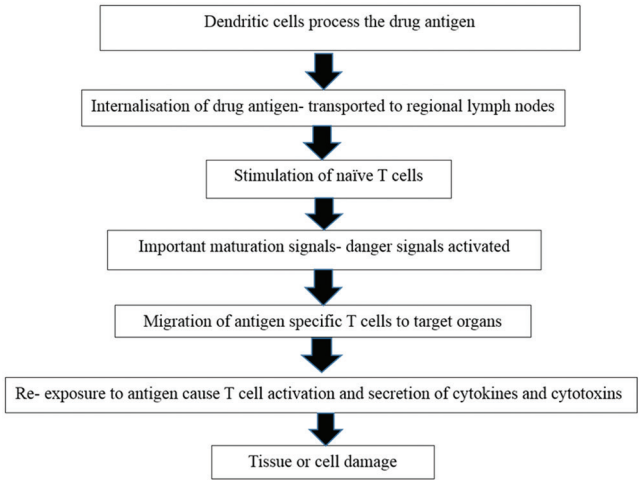

Figure 4: Proposed pathogenesis of drug hypersensitivity reaction

Table 1: Diagnostic criteria for oral allergic contact lesions

Diagnostic criteria	Findings
Clinical presentation	A topographic relationship between the offending agent and lesion
Histopathology	Not always required. Plasma cell infiltrate may be present
Patch test	Determination of the cause
Replacement or removal	Replacement or removal of offending agent will result in resolution of lesion

a topical corticosteroid in the form of a mouthwash, ointment, or gel to accelerate healing [15,16].

CONCLUSION

Oral ulcerations are encountered in daily clinical practice. Importance of history taking is emphasized by this case report. Every lesion does not require active therapeutic management. In this case, the patient's history helped in establishing a diagnosis and providing management by the withdrawal of offending toothpaste and avoidance of therapeutic intervention.

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