

Allergic contact cheilitis caused by menthol in toothpaste and throat medication: a case report

Pieter Bourgeois and An Goossens

Department of Dermatology, University Hospitals Leuven, B-3000 Leuven, Belgium

doi:10.1111/cod.12571

Key words: allergic contact dermatitis; cheilitis; cosmetics; *Mentha piperita*; menthol; oromucosal; peppermint; throat; toothpaste.

Cheilitis is an often-encountered problem in dermatological clinics, with many possible aetiologies, including allergic contact dermatitis. Here, we describe a patient who reacted to peppermint oil and menthol, the latter present in his toothpaste and throat medication.

Case Report

A 29-year-old man, suffering from dry skin, who had a brother with rhinoconjunctivitis, was referred to us by a private dermatologist in January 2016 because of erythematous and scaly lips, which had been almost continuously present for >8 years. The eruption had started at both corners of the mouth, but gradually spread to the entire upper and lower lips. At consultation, we also observed erythema and scales at the philtrum, arranged in two vertical lines divided from each other at the midline

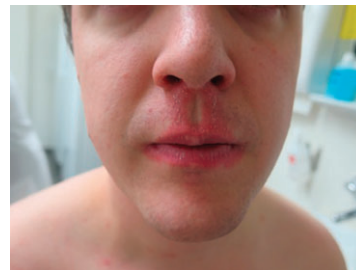


Fig. 1. Redness and scaling of the lips, extending to the perioral area and philtrum.

(Fig. 1). The eczema had been topically treated with several corticosteroids, tacrolimus, antibiotics, and antifungals, without achieving resolution. The patient also used to apply different lip balms, and had already tried several toothpastes, but without any positive effect on his cheilitis. He had never been patch tested.

He was in good general health, and was taking no medication except for the episodic use of nasal and throat sprays, some of which contained corticosteroids and local anaesthetics, and others of which contained vasoconstrictive and antiseptic agents.

Correspondence: Professor An Goossens, Department of Dermatology, University Hospital, Kapucijnenvoer 35, B-3000 Leuven, Belgium. Tel: +32 16 33 78 60. E-mail: an.goossens@uzleuven.be

Conflicts of interest: The authors declare no conflict of interests.



Fig. 2. Positive patch test reactions to menthol, peppermint oil, and the menthol-containing throat spray (D2 reading).



Fig. 3. Positive semi-open test result with the patient's own toothpaste (D2 reading).

We performed patch testing with IQ Ultra Chambers™ (Chemotechnique Diagnostics, Vellinge, Sweden) covered with Mefix® (Mölnlycke Healthcare, Göteborg, Sweden), applying the European baseline series and a cosmetic series (Chemotechnique), and the patient's own products and ingredients; his toothpaste was tested 'semi-open' (1). We performed readings at day (D)2 and D4 according to ESCD criteria (1). Positive reactions were observed to peppermint oil 2% pet. (Almirall-Hermal, Reinbek, Germany) (+ at D2 and D4), menthol 2% pet. (Chemotechnique) (+ at D2 and D4), Medica® throat spray (Qualiphar, Bornem, Belgium) (+? at D2, and + at D4, tested 'as is'), and Viofluor® toothpaste, tested semi-open (Aldi, Essen, Germany) (+ at D2 and D4) (Figs 2 and 3).

It turned out that both the toothpaste and the presently used throat medication contained menthol, as did a previously used oromucosal spray, that is, Neo-Golaseptine®

(SMB Laboratories, Brussels, Belgium). The patient was thereupon advised to stop using these products, and instead to use 'homeopathic' toothpastes (containing neither peppermint nor menthol), after which he experienced considerable improvement of his lesions.

Discussion

Several studies concerning cheilitis caused by toothpaste have been published, with frequencies of the affected subjects varying between 18.5% (2), 24% (3), and even 45%; the last of these reports was a small series, which possibly overestimated the frequency because of the inclusion of patients in a tertiary clinic who had already undergone previous examinations (4). The culprits most often responsible for allergic contact cheilitis (and sometimes also stomatitis and perioral dermatitis) are cinnamal, spearmint and peppermint oils, carvone, and anethole (5).

Intraoral allergic contact dermatitis is quite rare, the most commonly implicated allergens being metals incorporated into dental appliances (6). In lozenges, mouthwashes, and mouth sprays, potential allergens are, for example, cinnamal (5), bromelain (6), propolis (7, 8), eugenol (9), and cocamidopropyl betaine (10). Also, corticosteroids present in nasal sprays and bronchial inhalers can cause mucosal contact allergy (11). Moreover, immediate immunological hypersensitivity reactions caused by mouth washes and throat sprays have also been described, caused by cetylpyridinium chloride (12) and chlorhexidine (13).

The first cases of allergic contact dermatitis caused by mint were described in 1940 in two bartenders in Florida who were handling *Mentha piperita* leaves to prepare drinks (14). Peppermint is a popular herb that can be used in numerous forms, the essential oil being the most popular. It is used in cosmetics, pharmaceutical products, food, and personal hygiene products, for both its flavouring and its fragrance properties. Peppermint oil contains >30 known components, including substantial amounts of menthol (35–60%) and menthone (30%), but also constituents such as menthyl acetate, eucalyptol, limonene, and pulegone. Allergic contact dermatitis caused by it has been well documented in individuals with either dermatitis or disorders of the oral mucosa (15).

To conclude, toothpastes and pharmaceutical throat medications are potential causes of cheilitis, with peppermint oil and menthol as potential allergenic culprits.

References

- Johansen JD, Aalto-Korte K, Agner T et al. European Society of Contact Dermatitis guideline for diagnostic patch testing – recommendations on best practice. *Contact Dermatitis* 2015; **73**: 195–221.
- Lim J T, Ng S K, Goh C L. Contact cheilitis in Singapore. *Contact Dermatitis* 1992; **27**: 263–264.
- Françalanci S, Sertoli A, Giorgini S et al. Multicentre study of allergic contact cheilitis from toothpastes. *Contact Dermatitis* 2000; **43**: 216–222.
- Lavy Y, Slodownik D, Trattner A, Ingber A. Toothpaste allergy as a cause of cheilitis in Israeli patients. *Dermatitis* 2009; **20**: 95–98.
- Isaac-Renton M, Li M K, Parsons L M. Cinnamon spice and everything not nice: many features of intraoral allergy to cinnamic aldehyde. *Dermatitis* 2015; **26**: 116–121.
- Raison-Peyron N, Roulet A, Guillot B, Guillhou J J. Bromelain: an unusual cause of allergic contact cheilitis. *Contact Dermatitis* 2003; **49**: 218–219.
- Garrido Fernández S, Lasa Luaces E, Echechipía Modaz S et al. Allergic contact stomatitis due to therapeutic propolis. *Contact Dermatitis* 2004; **50**: 321.
- Budimir V, Brailo V, Alajbeg I et al. Allergic contact cheilitis and perioral dermatitis caused by propolis: case report. *Acta Dermatovenerol Croat* 2012; **20**: 187–190.
- Vilaplana J, Grimalt F, Romaguera C, Conellana F. Contact dermatitis from eugenol in mouthwash. *Contact Dermatitis* 1991; **24**: 223–224.
- Agar N, Freeman S. Cheilitis caused by contact allergy to cocamidopropyl betaine in '2-in-1 toothpaste and mouthwash'. *Australas J Dermatol* 2005; **46**: 15–17.
- Gonzalo Garijo M A, Bobadilla González P. Cutaneous-mucosal allergic contact reaction due to topical corticosteroids. *Allergy* 1995; **50**: 833–836.
- Shima K, Tanizaki H, Endo Y et al. Immediate hypersensitivity caused by cetylpyridinium chloride in a throat spray. *Contact Dermatitis* 2015; **73**: 248–249.
- Chopra V, Chopra H, Sharma A. Allergic urticaria: a case report of rare skin allergy with a common mouthwash. *Indian J Dermatol* 2013; **58**: 85.
- Sams W M. Occupational dermatitis due to mint. *Arch Dermatol* 1940; **41**: 503–505.
- Herro E, Jacob S E. Mentha piperita (peppermint). *Dermatitis* 2010; **21**: 327–329.