

VIGNETTE IN CONTACT DERMATOLOGY

Allergic contact cheilitis from a lipstick misdiagnosed as herpes labialis: Subsequent worsening due to Zovirax® contact allergy

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SUMMARY

A 29-year-old Turkish woman with allergic contact cheilitis from a lipstick was misdiagnosed as herpes labialis and subsequently worsened with the application of Zovirax® cream. Patch tests were positive to Zovirax® cream, propylene glycol, the patient's favourite lipstick and propyl gallate. No reaction was seen with Zovirax® ophthalmic ointment and Zovirax® tablet. The propylene glycol component of the Zovirax® cream and the propyl gallate component of the lipstick were regarded as the responsible contact sensitizers. The differential diagnosis was challenging due to concomitant contact sensitization with these agents.

Key words: eczema, herpes simplex, lip cosmetics, lip, patch test, propyl gallate, propylene glycol.

INTRODUCTION

Allergic contact cheilitis is usually characterized by erythema, oedema, scaling and fissuring that is more prominent on the vermilion border of the lips.¹ If vesiculation occurs, the clinical presentation and recurrent attacks may cause difficulties in differentiating it from recurrent herpes labialis. Herein, we report a patient with allergic contact cheilitis that was misdiagnosed as herpes labialis.

CASE REPORT

A 29-year-old woman presented with a 1- to 2-month history of recurrent erythema and vesiculation on her lips. This had been diagnosed clinically as herpes labialis but had wors-

ened with the topical application of Zovirax® cream containing aciclovir in a propylene glycol base. The patient reported that she had used the same antiviral cream for herpes zoster 4 months ago without any adverse reaction. Occlusive patch testing was performed initially with various Zovirax® products. The cream and the ophthalmic ointment were applied neat, whereas the tablet was tested in a dilution series of 1%–5%–10% both in petrolatum and in water using IQ-Chambers (Chemotechnique Diagnostics, Sweden). The patches were left for 48 hours, and readings were taken at 48, 72 and 96 hours according to the grading system recommended by the International Contact Dermatitis Research Group.² A +++ positive reaction developed only with Zovirax® cream (Fig. 1). No reaction was seen with Zovirax® ophthalmic ointment and Zovirax® tablet, indicating that aciclovir was unlikely to be the relevant allergen. As Zovirax® cream contained propylene glycol in addition to aciclovir, further patch testing was performed with propylene glycol, which was also +++ positive at 96 hours.

Unexpectedly, 2 weeks later, the patient presented again with her so-called 'herpes labialis'. An acute cheilitis with erythema, swelling and vesiculation was observed (Fig. 2). Vesiculation was more prominent on the vermilion margins of the lips and on the middle portion of the upper lip. This might have led to the diagnosis of herpes labialis in previous attacks. There was no history of the use of Zovirax® cream or any cosmetics or topical medications containing propylene glycol. The lesion rapidly healed with the application of 0.1% hydrocortisone-17-butyrate cream. There was no personal or family history of atopy.

Further patch testing was performed with the extended European standard series,³ with series of preservatives, emulsifying vehicles and fragrances (all provided by Brial Allergen GmbH, Greven, Germany), and additionally with the patient's own cosmetics, perfumes, toothpaste and chewing gum. Test allergens were applied in IQ-Chambers (Chemotechnique Diagnostics) for 48 hours. Readings were taken at 48, 72 and 96 hours. Apart from a nickel sulphate positivity with past relevance, the patient's favourite lipstick (Christian Dior, Dior Addict Ultrashine No. 650) (Fig. 3) and

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Figure 1 A+++ patch test reaction to Zovirax® cream (at 48 hours).



Figure 3 A++ patch test reaction to the lipstick (at 96 hours).



Figure 2 Acute cheilitis with erythema, swelling, and vesiculation. Vesiculation was more prominent on the vermilion margins of the lips and on the middle portion of the upper lip.

propyl gallate were also positive (Table 1). The lipstick contained propyl gallate but no propylene glycol. The patient recalled that she had developed a 'herpes' attack each time she used her favourite lipstick. The patient remained free of lesions after she strictly avoided cosmetics and topical creams containing propyl gallate and propylene glycol in a 3-month follow up.

DISCUSSION

The initial diagnosis was 'recurrent herpes labialis with subsequent contact sensitization from propylene glycol in Zovirax® cream'. During follow up, we had the chance to observe a new attack and to identify that the vesicular cheilitis was not related to herpes labialis. Therefore, the correct diagnosis was 'allergic contact cheilitis initially from a lipstick, and subsequently from Zovirax® cream'; the latter was started because the contact cheilitis was misdiagnosed as herpes labialis.

Propyl gallate was regarded as the causative contact allergen in the lipstick that was free of propylene glycol. Allergic

Table 1 Relevant patch test results according to the ICDRG scoring system²

Test substances	48 hours	72 hours	96 hours
Zovirax [®] cream as is	+++	+++	+++
Zovirax [®] tablet, 1%–5%–10% pet.	–	–	–
Zovirax [®] tablet, 1%–5%–10% aq.	–	–	–
Zovirax [®] ophthalmic ointment as is	–	–	–
Christian Dior lipstick as is (Dior Addict Ultrashine No. 650)	+	++	++
Propylene glycol, 5.0% pet.	++	+++	+++
Propyl gallate, 0.5% pet.	++	+++	+++

aq., water; ICDRG, International Contact Dermatitis Research Group; pet., petrolatum.

contact cheilitis from lip cosmetics due to propyl gallate, an antioxidant, is well documented.^{4,5}

Propylene glycol was regarded as the sensitizing component of Zovirax[®] cream in the presented case, because patch testing with two other aciclovir containing preparations (i.e. Zovirax[®] tablet and Zovirax[®] ophthalmic ointment) that were lacking propylene glycol, was negative. Sensitization to propylene glycol, a solvent, moisturizer and preservative agent, has been reported as the most frequent cause of contact allergy to Zovirax[®] cream.^{6,7}

In addition to being included as an ingredient/component in topical therapeutics and cosmetics, both propylene glycol (synonyms: propanediol, dihydroxypropane) and propyl gallate (synonyms: gallic acid propyl ester, N-propyl gallate, propyl 3, 4, 5-trihydroxybenzoate) are also widely used additives in processed food. A cross-reaction is not expected as propyl gallate and propylene glycol are not chemically related. Propyl gallate is particularly used in bakery goods and frying oils, whereas propylene glycol mainly in salad dressings and cake mixes.⁸ The intake of foods containing propylene glycol may cause systemic contact dermatitis in

propylene glycol-sensitive patients.⁹ Double-blind tests were performed with ingestion of capsules containing propylene glycol.¹⁰ Fifteen of 38 (39.5%) propylene glycol-sensitive patients developed an exanthem 3–16 hours after ingestion of 2–15 mL of propylene glycol. It was concluded that propylene glycol is a potential food allergen.¹⁰ On the other hand, no reported cases or studies regarding systemic contact dermatitis from foods containing propyl gallate could be found.

In conclusion, this was a case of allergic contact cheilitis from two different cosmetic ingredients (i.e. propylene glycol and propyl gallate) misdiagnosed as herpes labialis. The differential diagnosis was challenging due to concomitant contact sensitization with these agents.

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