A patient allergic to multiple chemically unrelated dyes

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KEYWORDS: allergic contact dermatitis, case report, textile dye dermatitis

CASE REPORT

A 63-year-old woman visited the allergology department with dermatitis of the face and forearms, occurring after wearing a new unwashed blue synthetic jacket (90% polyamide and 10% down) in the rain. In the past she experienced dermatitis on the breasts after wearing an unwashed new black bra. She had no atopic personal or family history. Patch testing, performed with the European baseline, local supplementary, and perfume series according to the ESCD guideline,[1] showed positive results for Disperse Blue 106, textile dye mix, fragrances, and preservatives. Additional testing with textile dyes from Chemotechnique Diagnostics (Vellinge, Sweden) (1% pet.) showed positive patch test reactions to acid, basic, disperse, and reactive dyes, namely, *Acid* Red 118, *Basic* Red 46, *Disperse* Blue 35, 106, 124, and 153, as well as Disperse Brown 1, Orange 3, Red 17, and Yellow 3. Moreover, *Reactive* Black 5, Blue 238, and Red 123, 228, and 238 elicited positive patch test reactions. These were not considered to represent an angry back syndrome. These positive results were considered clinically relevant because of a clear correlation between wearing some unwashed garments and a flare-up of dermatitis. Wearing white or light-colored clothes and washing new clothes before wearing was recommended. After pimecrolimus cream 10 mg/g treatment and eliminating all allergens, the skin lesions disappeared. During the next 6 months short-lasting eczema occurred after shopping for new clothes.

DISCUSSION

An Italian multicenter study observed concomitant reactions among textile dyes and/or finishing resins in 50.0% of 277 patients.[2] The multiple sensitizations were explained by cross-sensitization between similar chemical dye structures. In case of sensitization to more than one reactive dye, all compounds shared the same reactive group.[3] In our case, Reactive Blue 238 and Reactive Black 5 share a vinyl sulphonyl moiety. The reactive group of other reactive dyes tested positive in this case are unknown. Disperse Blue 106 and 124 have similar chemical structures. Cross-sensitization between Disperse Blue 106 and 124 occurs most often.[2]

Simultaneous positive reactions to different chemical dye groups resulting in co-sensitization can be attributed to the mixture of dyeing agents used to dye a fiber blend in textiles.[4] For example, Red and Yellow dyes are used to achieve different shades of blue. Another explanation could be that the purity of the dyes used for patch testing was insufficient, resulting in extensive allergic reactions. Dyes are not routinely tested in most countries, and extensive testing is exceptional; therefore co-sensitization and cross-sensitization is researched only in small samples.[5] Few cases are described with sensitization to chemical unrelated dyes.[3,6] Positive reactions to all four different chemical dye types (our case) have not been described before.

Health care professionals should be aware that multiple allergies to various types of dyes are possible. In patients with multiple positive reactions to chemically (un)related dyes, angry back syndrome, cross-sensitization, and co-sensitizations should be considered. Curiosity and routinely additional testing in patients reacting to a dye(mixture) may add insights into the threats of a colorful life. Collaboration between doctors and dyeing (textile) industries is required.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

AUTHOR CONTRIBUTIONS

Tirza Blom: Conceptualization; investigation; project administration; resources; writing-original draft; writing-review and editing. **Edith de Boer:** Conceptualization; investigation; resources; supervision; writing-review and editing. **Thomas Rustemeyer:** Conceptualization; investigation; resources; supervision; writing-review and editing.

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How to cite this article: Blom T, de Boer EM, Rustemeyer T. A patient allergic to multiple chemically unrelated dyes. *Contact Dermatitis*. 2021;84:198–199. https://doi.org/10.1111/cod.13705

Photoallergic contact cheilitis from methylchloroisothiazolinone/methylisothiazolinone: Where is the culprit product?

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KEYWORDS: case report, methylchloroisothiazolinone/methylisothiazolinone, photoallergic contact cheilitis, self-transported dermatitis

CASE REPORT

A 39-year-old woman was referred to our Contact Eczema Department with chronic cheilitis lasting 8 months. The patient had no medical history of interest and worked in a cosmetics store. Among her hobbies, she reported painting pictures. Treatment with topical corticosteroids (methylprednisolone aceponate 0.1% cream) achieved complete improvement of cheilitis. However, the lesions recurred within 4 to 6 days after stopping treatment three times. She reported intense itching associated with the skin lesions. The patient did not introduce any new cosmetics in the last 6 months. She suspected that sun exposure worsened her cheilitis.

Physical examination showed an erythematous-squamous plaque over the Cupid's bow area (Figure 1A). One day after sun exposure, this skin lesion worsened (Figure 1B). Examination of the oral and gingival mucosa was unremarkable. Eczematous lesions were not observed in any other body area.

Patch tests were performed with the European Comprehensive Baseline Series (Chemotechnique Diagnostics, Vellinge, Sweden) and Photopatch Series plus methylchloroisothiazolinone/methylisothiazolinone (MCI/MI) 0.02% aq. (Chemotechnique Diagnostics). The results were interpreted according to the criteria of the International Contact Dermatitis Research Group. Patch tests were read on day (D) 2 and D4. The patient showed a positive photopatch test reaction (UVA 10 J/cm^2) to MCI/MI at D2 and D4, with a crescendo pattern. No other positive reactions were note.

Photoallergic contact cheilitis caused by MCI/MI was diagnosed. Lip balms, toothpaste, mouthwashes, lipsticks, face creams, face soaps, and sunscreens from the patient were screened, but this allergen was not found as an ingredient in any of them. Delving deeper into the patient's history, the patient reported that she used to touch her mouth while painting pictures. We investigated the possible presence of MCI/MI in the paints she used, and identified MCI/MI. The patient touched her lips with a brush soaked with the MCI/MI-containing paint. Thus, "self-transported" dermatitis was suspected. We suggested avoiding the habit of touching the mouth while painting. Complete clearance of the cheilitis was visible in 2 weeks (Figure 2).

DISCUSSION

The biocide MCI/MI is widely used as a preservative in household and industrial products, including paints. MCI/MI is a well-known potent allergen, having been nominated as "allergen of the year" in 2013.[1] A new clinical entity has been suspected with MCI/MI,[2] in terms of photoaggravated allergic contact dermatitis having been observed in some