

Patch and prick test results are usually disappointing with RTI.⁴ However, the diagnosis of ACD was confirmed in this case because the patch test results were positive for RTI and cobalt chloride. We think that the sensitization to cobalt is relevant because this metal might be found as a contaminant in RTI.^{2,3} The exogenous pigment found in the biopsy could be RTI and/or traces of metallic pigments (probably cobalt), but we do not have techniques to analyse it.

Verification of allergic sensitization to RTI by patch testing may be difficult due to the poor penetration into the skin of the applied azo pigments. Although tests with RTI are generally negative,³ we recommend performing them because even if they are negative at D2 to D4, they may become positive in 1–2 weeks, as observed in some pseudolymphomatous contact allergies to metals.⁴ We did not perform intradermal tests with the RTI due to the risk of lasting cutaneous reactions or infections.³ In conclusion, we present a patient with ACD triggered by RTI and with positive PT result to the RTI and CC.

CONFLICTS OF INTEREST

The authors have no conflict of interest to declare and all give their permission for the publication of this manuscript.

AUTHOR CONTRIBUTIONS

Gomez Elisa: Investigation; supervision. **Monica García-Arpa:** Methodology. **Alejandro Raul Gratacos Gomez:** Resources. **Maria Rogel-**

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REFERENCES

- Forbat E, Al-Niaimi F. Patterns of reactions to red pigment tattoo and treatment methods. *Dermatol Ther (Heidelb)*. 2016;6(1):13-23.
- Serup J, Hutton Carlsen K, Dommershausen N, et al. Identification of pigments related to allergic tattoo reactions in 104 human skin biopsies. *Contact Dermatitis*. 2020;82(2):73-82.
- Price A, Tavazoie M, Meehan SA, Leger M. Identification reaction associated with red tattoo ink. *Cutis*. 2018;102(5):E32-E34.
- Gaudron S, Ferrier-Le Bouëdec MC, Franck F, D'Incan M. Azo pigments and quinacridones induce delayed hypersensitivity in red tattoos. *Contact Dermatitis*. 2015;72(2):97-105.

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Erythroderma caused by allergic contact dermatitis from Solvent Yellow 33 in a patient with psoriasis

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Erythroderma is complex to diagnose and usually attributed to medications or pre-existing disorders, including psoriasis and dermatitis. Here we report a case of allergic contact

dermatitis (ACD) from Solvent Yellow 33 in an argan oil product applied as a treatment for psoriasis, manifesting as erythroderma.

CASE REPORT

A 58-year-old male patient with a history of psoriasis, alcohol dependence, and former parenteral drug abuse was referred to us with rapidly developing and intensely pruritic erythroderma (Figure 1), with systemic symptoms (chills, asthenia, arthralgias, leg oedema). The patient admitted to regularly treating psoriasis with a homemade blend of rosemary marinated in a mixture of olive oil, almond oil, aloe vera-based moisturizer, and an argan oil product. Additionally, he used a mometasone furoate nasal spray, a flurbiprofen throat spray, and N-acetylcysteine tablets for a respiratory infection. The patient was hospitalized and the lesions cleared within 5 days of oral corticosteroids, plus cessation of the previous treatments.

A biopsy showed mixed features of both psoriasis and drug eruption. We focused on topical and systemic treatments as the most likely triggers owing to the rapid healing. Patch tests were performed (Table S1), according to ESCD guidelines, and positive reactions observed with one personal product, namely, the argan oil (Agrado, Quimi Romar) “as is” (Figure S1A) (+++ on day (D) 2, D4, and D7) and methylisothiazolinone. Further patch tests with the individual ingredients of the argan oil, kindly provided by the manufacturer, showed positive reactions to Solvent Yellow 33 0.00026% (C.I. 47000) in medical white oil, +++ (D2, D4, and D7) (diluted by the manufacturer) (Figure S1B).

The patient then provided multiple colored drinks that he drank often and a food coloring additive with tartrazine that he regularly used in cooking for further patch tests. Positive results were observed with

an “alcohol-free” apple liqueur (++) on D2; +++ on D4 and D7). Patch tests with Solvent Yellow 33 were repeated, with positive results (+++ on D2, D4, and D7) (Figure S1C). The manufacturer stated that the apple liqueur did not contain Yellow Solvent 33, but E-102 (tartrazine) and E131 (patent blue V) as food colorings. E-102 (tartrazine, AllergEaze, SmartPractice), was patch tested with negative results. E131 was not available for patch testing. Provocation tests with the three systemic medications were negative. Twenty controls patch tested with Solvent Yellow 33 were negative. With the avoidance of yellow dyes in topical products, beverages, and foods, the patient has noticed a lessening of skin problems at 6-months-follow up.

DISCUSSION

Solvent Yellow 33 (C.I. 47 000; CAS no. 8003-22-3; synonyms: D&C Yellow 11; Quinoline Yellow SS; Quinoline Yellow Base; Quinoline Yellow Spirit Soluble; Yellow No. 204; Waxoline Yellow T; Arlosol Yellow S) is a fat-soluble polycyclic compound related to the quinophtalone pigment group.¹ Used in hair dyes as well as lipid-rich cosmetics, it rarely causes sensitization. One explosives factory worker² with occupational allergic contact dermatitis (ACD) caused by Solvent Yellow 33 in coloured detonator smokes, and several non-occupational cases from pigment in lipsticks (5 cases),^{3,4} rouges (2 cases),^{3,5} eye cream (one case),⁶ brilliantine (one case),⁷ and a bar of toilet soap (one case),⁸ have been published, mostly in the 1970s and early 80s. Some of the cases



FIGURE 1 (A) Erythema and inflammation with thin scales diffusely involving trunk and limbs with (B) a few well-defined areas of healthy skin, (C) involvement of both palms and (D) onychodystrophy: yellow discoloration and thickening of the nail plate involving several nails

experienced extremely severe edematous reactions requiring systemic corticosteroids.

Solvent Yellow 33 is not authorized in foods. However, some authors suggest that cross reactions with the food additive Quinoline Yellow (D&C Yellow 10, C.I. 47005; E104) are possible owing to their chemical similarities.^{9,10} Other authors propose that some brands of Quinoline Yellow may contain traces of quinophthalone (the main component of Solvent Yellow 33).¹¹

Our patient developed an erythrodermic ACD reaction to Solvent Yellow 33 in a product that he applied on the whole-body surface. We believe that its transdermal absorption is likely to have caused a clinical picture reminiscent of a cutaneous drug reaction, with distant sites' involvement through a systemic mechanism. Psoriasis possibly played a contribution to it, through a "Koebner" phenomenon. Accordingly, the lesions were initially psoriasiform, although disproportionately inflamed and pruritic, and erythroderma totally and rapidly cleared with minimal treatment based primarily on allergen avoidance. The reason for the positive patch tests to the apple liqueur remains uncertain, and the clinical relevance of contact allergy to methylisothiazolinone is still unknown.

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AUTHOR CONTRIBUTIONS

Maria-Elena Gatica-Ortega: Conceptualization; formal analysis; investigation; supervision; writing-original draft; writing-review and editing.

MARIA PASTOR-NIETO: Conceptualization; formal analysis; investigation; supervision; writing-original draft; writing-review and editing.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interests.

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REFERENCES

1. Palazzolo MJ, DiPasquale LC. The sensitization potential of D & C Yellow No. 11 in guinea pigs. *Contact Dermatitis*. 1983;9(5):367-371.
2. Noster U, Hausen BM. Berufsbedingtes Kontaktekzem durch gelben Chinophthalonfarbstoff (Solvent Yellow 33: C.I. 47000). *Hautarzt*. 1978;29(3):153-157.
3. Calnan CD. Quinazoline Yellow SS in cosmetics. *Contact Dermatitis*. 1976;2(3):160-166.
4. Sasseville D, Joncas V. Allergic contact cheilitis from D&C Yellow 11. *Contact Dermatitis*. 2009;60(5):294-295.
5. Larsen WG. Cosmetic dermatitis due to a dye (D and C Yellow # 11). *Contact Dermatitis*. 1975;1(1):61.
6. Calnan CD. Quinazoline yellow dermatitis (D & C Yellow 11) in an eye cream. *Contact Dermatitis*. 1981;7(5):271.
7. Monk B. Allergic contact dermatitis to D & C Yellow 11 in a hair cream. *Contact Dermatitis*. 1987;17(1):57-58.
8. Jordan WP Jr. Contact dermatitis from D & C yellow 11 dye in a toilet bar soap. *J Am Acad Dermatol*. 1981;4(5):613-614.
9. Björkner B, Niklasson B. Contact allergic reaction to D & C Yellow No. 11 and Quinoline Yellow. *Contact Dermatitis*. 1983;9(4):263-268.
10. Björkner B, Magnusson B. Patch test sensitization to D & C Yellow No. 11 and simultaneous reaction to Quinoline Yellow. *Contact Dermatitis*. 1981;7(1):1-4.
11. Sato Y, Kutsuna H, Kobayashi T, Mitsui T. D&C nos. 10 and 11: chemical composition analysis and delayed contact hypersensitivity testing in the guinea pig. *Contact Dermatitis*. 1984;10(1):30-38.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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