

Allergic contact dermatitis caused by resorcinol and sodium dehydroacetate in a patient with leg ulcers

Caterina Foti, Paolo Romita, Grazia Ettore, Gianni Angelini and Domenico Bonamonte

Department of Biomedical Science and Human Oncology, Dermatological Clinic, University of Bari, 70124 Bari, Italy

doi:10.1111/cod.12575

Key words: allergic contact dermatitis; leg ulcers; resorcinol; sodium dehydroacetate.

Resorcinol, also known as resorcin (1,3-dihydroxybenzene; CAS no. 108-46-3), is an important ingredient of Castellani's paint solution, an antifungal preparation that is commonly used in daily dermatological clinical practice. Apart from its use in hair dyes, resorcinol is also used in several other topical preparations, because of its antipruritic, keratolytic and antimycotic properties. Sodium dehydroacetate (CAS no. 4418-26-2) is a preservative used in several topical products, in particular for the treatment of ulcers, and has already been reported to be sensitizing (1, 2). We describe a case of allergic contact dermatitis caused by resorcinol and sodium dehydroacetate in a patient affected by leg ulcers.

Case Report

A 64-year-old non-atopic diabetic man presented with eczematous lesions that had developed around leg ulcers, which he had been treating for several months with

Bionect® Start cream, Fitostimoline® cream, Iruxol® cream, Connectivin® cream, and Castellani's paint. Far from benefiting from this treatment, he showed worsening of the lesions, which had an ulcerated appearance, exuded serum, and were associated with severe erythema and oedema of the legs. Three months after the resolution of the dermatitis, achieved by curettage, cleansing with povidone iodine, and topical application of corticosteroids to the periulcerative area, we performed patch tests with the Italian Society of Allergological, Occupational and Environmental Dermatology (SIDAPA) baseline series (Euromedical, Calolziocorte, LC, Italy) and all of the topical drugs that the patient had used before the onset of the dermatitis. Patch tests were applied on the back, and occluded for 2 days with Al Test® (Euromedical) on Scanpor® tape (Norgesplaster, Vennesla, Norway). Readings were performed at day (D)2 and D4 according to the European Society of Contact Dermatitis guideline, and showed positive reactions to Castellani's paint solution (++), and Connectivin® cream (++). Hence, patch tests were performed with the ingredients of the preparations kindly provided by the manufacturers, at the appropriate concentrations, and there were positive (++) reactions to sodium dehydroacetate 3% pet., contained in Connectivin® cream, and resorcinol 2% pet., contained in Castellani's paint solution (Fig. 1). A

Correspondence: Professor Caterina Foti, Unit of Dermatology, Department of Biomedical Science and Human Oncology, University of Bari, Policlinico, Piazza Giulio Cesare 11, I-70124 Bari, Italy. Tel: +39 080 5478107; Fax: +39 080 5478107. E-mail: caterina.foti@uniba.it

Conflicts of interest: None of the authors has any conflict of interest to report.



Fig. 1. Positive patch test reactions at D4 to resorcinol 2% pet. and sodium dehydroacetate 3% pet.

repeated open application test with resorcinol 2% pet. was performed on the volar aspect of the forearm (twice daily 5 × 5-cm applications for a maximum of 7 days),

and showed a positive reaction after two applications. Ten healthy volunteers were patch tested with resorcinol 2% pet., with negative results.

Discussion

We report a case of allergic contact dermatitis caused by resorcinol and sodium dehydroacetate in a patient with leg ulcers. Sodium dehydroacetate has already been described as an emerging allergen related to modern dressings in patients with chronic leg ulcers (1, 2). Resorcinol was described in 2007 as mildly sensitizing, according to the local lymph node assay (3), its sensitizing potential being declared as approximately two orders of magnitude lower than that of *p*-phenylenediamine. The sensitizing potential of resorcinol is, in any case, considered to be low in daily clinical practice (4) and on the basis of experience from humans (5). This evidence is also confirmed by the few reports of allergic contact dermatitis caused by resorcinol in the literature (5–8). In all of the reported cases, patients used Castellani's paint solution on damaged skin (6, 7), or physicians used it to delineate the radiation area of radiotherapy (5, 8). Such skin conditions, as also the leg ulcers in our patient, in combination with the repeated daily application of Castellani's paint solution may enhance the risk of onset of allergic contact dermatitis caused by resorcinol. We may speculate that allergy to resorcinol could be underestimated, and that patch testing with this ingredient should be performed in all cases of eczematous dermatitis arising or worsening after the application of Castellani's solution.

References

- 1 Valois A, Waton J, Avenel-Audran M et al. Contact sensitization to modern dressings: a multicentre study on 354 patients with chronic leg ulcers. *Contact Dermatitis* 2015; **72**: 90–96.
- 2 Foti C, Antelmi A, Guida S et al. Sodium dehydroacetate: an emerging allergen. *Dermatitis* 2012; **23**: 243.
- 3 Basketter D A, Sanders D, Jowsey I R. The skin sensitization potential of resorcinol: experience with the local lymph node assay. *Contact Dermatitis* 2007; **56**: 196–200.
- 4 Sosted H, Rustemeyer T, Gonalo M et al. Contact allergy to common ingredients in hair dyes. *Contact Dermatitis* 2013; **69**: 32–39.
- 5 Marks J G, West G W. Allergic contact dermatitis to radiotherapy dye. *Contact Dermatitis* 1978; **4**: 1–2.
- 6 Broeckx W, Blondeel A, Doooms-Goossens A, Achten G. Cosmetic intolerance. *Contact Dermatitis* 1987; **16**: 189–194.
- 7 Langeland T, Braathen L R. Allergic contact dermatitis from resorcinol. *Contact Dermatitis* 1987; **17**: 126.
- 8 Pecegueiro M. Contact dermatitis due to resorcinol in a radiotherapy dye. *Contact Dermatitis* 1992; **26**: 273.