

Severe allergic contact dermatitis caused by octylisothiazolinone in a leather sofa: two new cases

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Recently, 6 cases of non-occupational allergic contact dermatitis caused by octylisothiazolinone (OIT; CAS no. 26530-20-1) present in leather goods, including one sofa, were reported (1). Here, we describe 2 new cases of severe dermatitis caused by OIT in leather sofas.

Case 1

An 89-year-old non-atopic woman presented with a waxing and waning, but progressively worsening, dermatitis predominantly involving the back, and also the

posterior sides of the upper arms, thighs, and calves. A skin biopsy confirmed the diagnosis of eczema. The medical history and topography of the skin lesions were strongly suggestive of allergic contact dermatitis caused by a new leather armchair, which the patient had been using for several months. No maintenance product had been used to clean it, and, after resolution of the dermatitis, the patient was able to continue using the chair without any relapse of dermatitis, as long as she used a thick fabric for protection. Patch tests with IQ Ultra™ chambers (Chemotechnique, Vellinge, Sweden) applied on the back and covered with Mefix® (Mölnlycke Health Care, Göteborg, Sweden) were performed with the European baseline series, cosmetic, textile and dyes series, OIT 0.1% pet., and benzylisothiazolinone (BIT) 0.05% pet., all from Chemotechnique, and with a piece of the leather armchair, tested 'as is'. Readings, performed on day (D) 2 and D4 according to ESCD guidelines (2),

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showed negative results for all allergens on D4, except for thiuram mix (++), considered to be of past relevance), OIT (+), and the piece of the leather sofa (+). Patch tests with methylisothiazolinone (MI) 0.2% aq. and BIT remained negative. Subsequently, high-performance liquid chromatography with ultraviolet detection (HPLC-UV) analysis of the leather sample at the Antwerp laboratory showed the presence of OIT (28 ppm), whereas MI, methylchloroisothiazolinone (MCI), BIT and dichloro-OIT (DCOIT) were not found.

Case 2

A 75-year-old non-atopic woman was referred because of a persistent, diffuse and itchy dermatitis that had been present for 1 year. She had ischaemic heart disease, which had been previously treated with coronary stents, and she was taking diltiazem and acetylsalicylic acid as chronic medication. Moreover, she had a 4-year history of palmoplantar eczema of unknown origin. The dermatitis improved with the use of topical corticosteroids, but relapsed as soon as treatment was stopped. A skin biopsy was compatible with eczema.

Patch tests with IQ Ultra™ chambers fixed with Urgoderm® tape (laboratoire Urgo, Chenôve, France) were performed on the upper back with the European baseline series, cosmetic and metal series, and OIT 0.1% and BIT 0.05% (all from Chemotechnique). Readings were performed on D2 and D3, according to ESCD guidelines. Reactions were seen to fragrance mix I (++) and II (++) , which were considered to be of 'possible' relevance because the patient used perfumed cosmetics. Also, a ++ reaction was seen to OIT on D2 and D3, without clear relevance at that time. Potassium dichromate and cobalt chloride gave negative results, whereas MI 0.2% aq. gave a doubtful reaction at D3. No later readings were performed.

A few months later, despite avoidance of scented products by the patient, the eczema had worsened, and the patient realized that the onset of her dermatitis had coincided with the purchase of a new recliner leather sofa, on which she used to take a nap for > 2 h every day. No particular leather care product was used to treat the sofa. Clinical examination showed eczematous, diffuse skin lesions on the back, and on the posterior sides of the upper arms, thighs, and calves (Fig. 1). All symptoms eventually disappeared after 1 month, when the patient replaced the sofa with a fabric sofa. A second series of patch tests were then performed, with pieces of the suspected leather sofa moistened with acetone, water, and ethanol. These all gave strong reactions (++) on D2 and D3. Moreover, MI 0.2% aq. and OIT 0.1% pet. were retested, and both gave



Fig. 1. Eczema of the back (case 2).

positive reactions on this occasion, that is, + on D2 and ++ on D3 for MI, and ++ on D2 and even +++ on D3 for OIT; BIT 0.05% remained entirely negative. HPLC-UV analysis of the leather sample showed the presence of OIT (60 ppm) and lower amounts of MCI (11.5 ppm) and MI (2.3 ppm); DCOIT and BIT were not detected.

Discussion

OIT is an isothiazolinone derivative that is not as frequently used as a biocide and reported as a contact allergen as MI and MCI/MI (3). It may be present in water-based paints, glues, cutting and cooling fluids, wood preservatives, household detergents, textiles, leatherwear, and fur (1, 3–5). Although it is not authorized for use in cosmetics, illicit use in such products has been reported (6). Mainly occupational dermatitis has been attributed to OIT. However, recently, several non-occupational cases, resulting from its use in leather goods, including one sofa, have been reported (1). A similar case of sofa dermatitis, caused by MI in a leather care product, has been described (7). In chemical products, no safe use concentrations of OIT have been determined, and no concentration limits have been imposed on the

(leather) industry so far, although rules of 'self-regulation' seem to exist (1).

Partial immunological cross-reactions between non-chlorinated isothiazolinone derivatives, and between MI and OIT in particular, have been suggested to occur (1, 8), but are detected only if these derivatives are patch-tested in high enough concentrations (1, 9). In daily clinical practice, primary sensitization is often attributable to MI, through the use of cosmetics, with sometimes non-relevant cross-reactivity to OIT (8). In 2 recent cases of non-occupational allergic contact dermatitis caused by OIT in leather, patch tests with OIT 0.1% pet. gave stronger reactions than patch tests with MI 0.2% aq., suggesting that OIT was the primary sensitizer (1). In our second case, a patch test with MI initially yielded only a doubtful reaction (although no reading later than D3 was performed), and OIT gave a strong patch test reaction, whereas, 5 months later, MI had already become

clearly positive on D2, but to a less pronounced extent than OIT, suggesting that, also in this case, OIT may be regarded as the primary sensitizer. In the same case, OIT was present in the leather at a higher concentration than MCI and MI, whereas only OIT was detected in the first case.

In conclusion, isothiazolinone derivatives in general, and OIT in particular, are potential allergens in cases of dermatitis suspected to be caused by leather goods, including sofas, especially when other well-known leather allergens, such as potassium dichromate and cobalt chloride, remain negative. In some cases, as previously reported (1) and illustrated here once again, exposure to OIT in leather may even lead to primary skin sensitization.

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