

Contact dermatitis to dimethylfumarate in armchairs

P. Mercader*, E. Serra-Baldrich, A. Alomar

Key words: contact allergens; dermatology contact dermatitis; dimethylfumarate.

Furniture is an infrequent cause of contact dermatitis, nevertheless, in the last year has been published several reports related to an outbreak of contact dermatitis to sofas or armchairs in northern Europe (1–3). The origin of this dermatitis seems to be a novel potent allergen, dimethylfumarate (DMF). In a recent report (3), DMF has been identified in samples from sofas or armchairs of patients with dermatitis related to this type of furniture, and also three patients had positive patch-tests to the same molecule. This report proposed that DMF is used as an antimicrobial and mould preventive agent by the Chinese furniture fabricants. We present two cases of furniture dermatitis related with DMF diagnosed in Spain.

A 45-year-old man with no previous history of allergy or skin disease consulted in may 2007 because of an extensive dermatitis in back and buttocks for 2 months that not improved with topical corticosteroids (Fig. 1). His wife, a 43-year-old woman with previous history of intolerance to metals, had a similar dermatitis and also respiratory symptoms, with wheezing and shortness of breath. Both patients associated their symptoms with two new armchairs imported from China that were bought

15 days before the symptoms started. When the armchairs were removed the cutaneous lesions of both patients and the respiratory symptoms of the woman disappeared in few days without treatment. Both patients were tested with the standard Spanish series (Marti-Tor, Barcelona, Spain), plastics and glues series (Marti-Tor) and isocyanates series (Chemotechnique, Malmö, Sweden). These entire tests were negative, except nickel and cobalt in the woman. But there were no positive test that may explain the clinical picture. A few months later, when we knew that there were other cases in Europe and that the cause seems to be DMF, we made patch-test with an aqueous dilution of this product (Acros,

Geel, Belgium) in the man at 0.0001% and 0.001%, with positive reaction (+) to DMF 0.001% at 96 h, the woman refused to be tested. Five control patients were negative with both dilutions.

Fumaric acid esters are used for the treatment of psoriasis since 1994 (4) furthermore the esters of the fumaric acid are widely used in the plastics industry in the production of polyesters (5). DMF is a known irritant, can induce non immunologic contact urticaria and has been classified as a moderate contact sensitizer in animal models (6) and so its use in furniture or in others objects that could be in contact with the skin, should be avoided. Due to the high risk of irritant reactions and active sensibilisation we recommended to patch DMF at low concentrations.

Our findings confirm that patients with sofa/armchair dermatitis are sensibilized to DMF and showed that dermatitis related with sofas is not restricted to northern Europe. There are no previous reports of respiratory symptoms in patients with contact dermatitis to DMF like in our female patient, although we cannot confirm with patch-test the relation with DMF, she has no previous history of respiratory illness and improved when the armchairs were removed so the relation is quite probable.

*Dermatology Service
Hospital General Universitario Morales
Meseguer
Murcia
Spain
Tel.: +34 868941397
Fax: +34 968330261
E-mail: pmercader@ono.com

Accepted for publication 26 November 2008
Allergy 2009
© 2009 The Authors
Journal compilation © 2009 Blackwell
Munksgaard
DOI: 10.1111/j.1398-9995.2009.01978.x

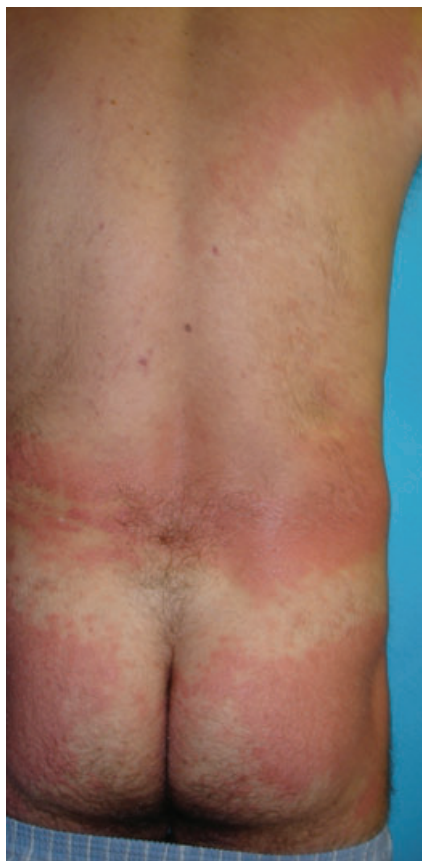


Figure 1. Extensive dermatitis involving back and buttocks.

References

1. Darné S, Horne HL. Leather suite dermatitis. *Br J Dermatol* 2008;**159**: 262–264.
2. Williams JDL, Coulson LH, Susitaibal P, Winhoben SM. An outbreak of furniture dermatitis in the U.K. *Br J Dermatol* 2008;**159**:233–234.
3. Rantanen T. The cause of the Chinese sofa/ chair dermatitis epidemic is likely to be contact allergy to dimethylfumarate a novel potent contact sensitizer. *Br J Dermatol* 2008;**159**:218–221.
4. Yazdi MR, Mrowietz U. Fumaric acid esters. *Clin Dermatol* 2008;**26**:522–526.
5. Hansson C, Thörneby-Andersson K. Stereochemical considerations on concomitant allergic contact dermatitis to ester of the cis-trans isomeric compounds maleic acid and fumaric acid. *Skin Pharmacol Appl Skin Physiol* 2003;**16**: 117–122.
6. De Haan P, von Blomberg-van der Flier BME, de Groot J, Nieboer C, Bruynzeel DP. The risk of sensitization and contact urticaria upon topical application of fumaric acid derivatives. *Dermatology* 1994;**188**:126–130.