

Correspondence

Follicular allergic contact dermatitis due to methylchloroisothiazolinone/methylisothiazolinone (MCI/MI) in a rinse-off soap product

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Methylchloroisothiazolinone/methylisothiazolinone (MCI/MI) (e.g. Kathon® CG; Dow Chemical Co., Midland, MI, USA) is a mixture of MCI and MI in a ratio of 3 : 1, currently used as a preservative in cosmetic, industrial and domestic products.^{1,2} In 1980, MCI/MI was included as an allergen in the European Baseline Series, where it is currently one of the most frequent contact allergens,² especially since the recent introduction of MI in cosmetics. The maximum permitted use concentrations in cosmetic products in the EU are 15 ppm for MCI/MI and 100 ppm for MI.³

In 2010, a 48-year-old man presented to the Department of Dermatology, Hospital Universitario de la Princesa, and was suspected to have disseminated allergic contact dermatitis (ACD).

A patch test was performed with our extended European baseline series, a shoes series (Chemotechnique® Diagnostics; Modemgatan, Vellinge, Sweden) and the material of the patient's own shoes, under occlusion in Finn Chambers® (Chemotechnique® Diagnostics). The

chambers were removed on day 2, and evaluated according to International Contact Dermatitis Research Group criteria at on days 2 and 4. The patient showed ++ reactions at days 2 and 4 to MCI/MI, Mercapto Mix, Black Rubber Mix, *para*-phenylenediamine, isopropyl-phenyl-phenylenediamine, Disperse Orange 3, Acid Yellow 36, octylisothiazolinone and the shoe material.

In February 2012, the patient was admitted to hospital for acute epididymo-orchitis. Three days later, he developed sudden onset of multiple, slightly scaly and pruritic papules, a few millimetres in size, on the periumbilical area, and within days these papules progressively spread, primarily to the back and arms. The cutaneous lesions had a follicular distribution (Fig. 1).



Figure 1 Multiple erythematous papules with slight scaling and marked follicular distribution, seen in the periumbilical area.

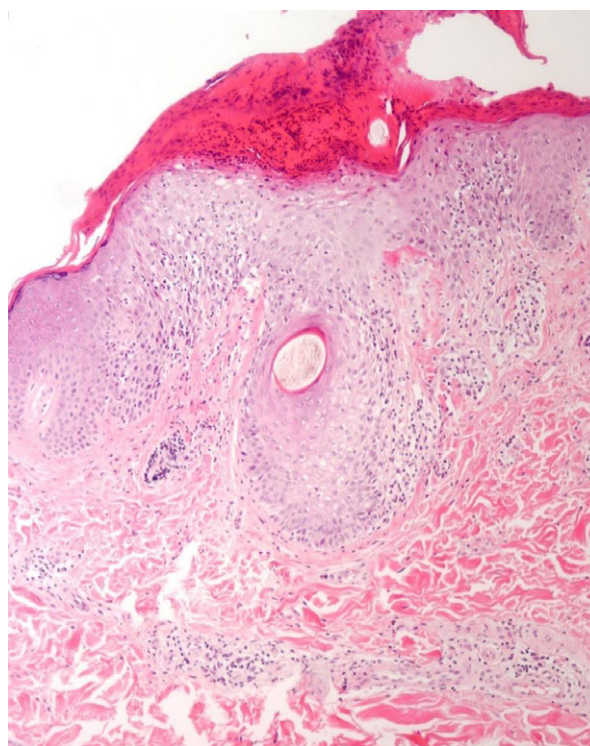


Figure 2 Mild hyperkeratosis with areas of parakeratosis, and acanthosis with foci of spongiosis in a perifollicular distribution (haematoxylin and eosin, original magnification $\times 20$).

Histopathological examination identified mild hyperkeratosis with areas of parakeratosis. Acanthosis with foci of spongiosis with no vesiculation was observed in the Malpighian layer (Fig. 2). These foci were primarily found in relation to the infundibulum of the hair follicle or the adjacent epidermal layers.

The condition regressed with topical corticosteroid treatment, clearing up in 10 days, which was just after the patient was discharged. During his hospital stay, possible contact allergens were reviewed. The patient reported that for personal hygiene, he used BEGOSAN®-soaped foam sponges (Jalsosa, Granada, Spain) on the areas where the lesions appeared. Among other substances, this soap contains MCI/MI at 8.3 ppm.

The patient was diagnosed with follicular ACD was established, confirmed by the finding that MCI/MI was present in the pre-soaped sponges.

This was an unusual case of a morphological pattern of follicular predominance of ACD in a patient with contact sensitization to MCI/MI. To our knowledge, this specific type of inflammatory reaction pattern associated with MCI/MI has not been described previously. However, other unusual clinical patterns associated with the contact allergy have been described from MCI/MI, including urticaria,⁴ airborne contact dermatitis,⁵ and seborrhoeic dermatitis, Jessner lymphocytic infiltrate, lupus erythematosus and photodermatitis.⁶

Follicular contact dermatitis is a finding that is infrequently described in the literature, and may occur as an allergic and/or irritative phenomenon. The first reported cases were caused by formaldehyde and coloured permanent-pressed sheets in textile material.⁷ Subsequent cases were found to be related to selenium salts in the glass industry, homomenthyl salicylate, methyl glucose sesquisteate, tocopherol linoleate and polyoxyethylene lauryl ether in cosmetic products.^{7,8} There are also reports of follicular reactions from nickel, chrome, copper and fluoride in patch tests, which may be interpreted as an irritative phenomenon.⁷

Another interesting aspect of the case is that despite the low concentration (8.3 ppm) of the preservative MCI/MI found in the sponge, our patient, who was already sensitive to MCI/MI, developed clinical dermatitis upon contact. We would therefore recommend that the current legislation is modified to completely prohibit MCI/MI in both rinse-off and leave-on cosmetics and toiletries.

The mechanisms involved in perifollicular inflammation are unknown. Given that the sponge did not have a very high concentration of MCI/MI, follicular penetration of the allergen may be especially relevant for hydrophilic chemical substances such as MCI/MI.^{9,10} However, as one side of this pre-soaped sponge is rough,

allowing exfoliation and friction upon contact with skin, this may have contributed to corneocyte removal from the skin, assisting with penetration of the allergen into the skin.

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