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Allergic contact dermatitis caused by insect repellent wipes

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Wet wipes are frequently used to clean the genital and perianal area of children during nappy changes. In recent years, their use has increased, as more general skin cleansers, as makeup removers, and even as topical insect repellents (1). An unusual case of severe contact dermatitis caused by insect repellent wet wipes in an atopic child is reported.

Case Report

A 3-year-old atopic boy developed widespread itching eczematous dermatitis involving his trunk and limbs. The child's mother stated that she had applied insect repellent wipes (VAPE derm herbal wipes®) on the days before the onset of dermatitis. Treatment with oral antihistamines and topical potent corticosteroids achieved resolution of the lesions within 10 days.

The child was patch tested with the Italian (SIDAPA) baseline series, and an insect repellent series comprising hydroxycitronellal 5% pet., citronellol 2% pet., eucalyptus oil 2% pet., pyrethrum 2% pet., and diethyl toluamide (DEET) (CAS no. 134-62-3/26545-51-7) 1% pet. Patch tests were applied on the patient's back for 2 days, and read on day (D) 2 and D3 according to ICDRG criteria. Positive reactions to methylchloroisothiazolinone (MCI)/methylisothiazolinone (MI) (D2, +; D3, +) and to hydroxycitronellal 5% (D2, –; D3, +) were observed. The patch test performed with the patient's own wipes (see above) tested 'as is' showed a positive (+) reaction at D3. The wipes, as declared on the packaging, contained DEET as the active principle, citriodiol, ethanol, and 'perfume'.

The wipes were analysed with liquid chromatography and mass spectroscopy (LCMS). MCI and MI were not identified. A peak [molecular weight (MW) 192], in accordance with DEET, was observed. Another peak (MW 173) was detected that corresponded to the MWs of both hydroxycitronellal and citriodiol.

Discussion

Some reports claim excellent cutaneous tolerability of baby wipes, stating they may be safely used even on sensitive skin and in children with atopic dermatitis (1). However, there have been reports of cases of allergic contact dermatitis (ACD) caused by both preservatives (MCI/MI, MI, DMDM hydantoin, 2-bromo-2-nitropropane-1,3-diol, quaternium-15, formaldehyde, and iodopropynyl butylcarbamate) and by fragrances (2, 3). The majority of cases have been reported in adults who developed hand dermatitis after using wet wipes on their children, or face and genital dermatitis after personal use of wet wipes as hygiene products. Recently, cases of ACD in children have been reported, all caused by MI in cleansing wet wipes (4).

In our case, a relevant patch test reaction to insect repellent wipes was found in an atopic child allergic to MCI/MI and hydroxycitronellal. MCI/MI was not labelled on the wet wipes, and LCMS did not detect these allergens, thus confirming that these isothiazolinones were not the responsible allergens in our case. Hydroxycitronellal was not labelled on the wet wipes, whereas LCMS showed a peak congruent with both hydroxycitronellal and citriodiol. It is hypothesized that hydroxycitronellal, a fragrance that is frequently found in perfumes and cosmetics, was an undeclared component of the scent in wipes (5). Hydroxycitronellal, one of the 26 fragrance sensitizers that must be labelled by European legislation, does not need to be labelled if the concentration is <0.001% (5). Mislabelling is also possible.

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Second, sensitization to citriodiol cannot be excluded (the substance was unavailable as an allergen, and therefore could not be tested). Citriodiol is a mixture that is widely used in the cosmetic industry, and citronellal may be present in the mixture. Furthermore, citriodiol, citronellal

and hydroxycitronellal may be converted into each other in an aqueous solution kept in ambient air (6).

This case shows that allergens other than MCI/MI or MI alone in (insect repellent) wet wipes may induce contact allergy.

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