

'Dermatologically tested' baby toilet tissues: a cause of allergic contact dermatitis in adults

AN TIMMERMANS, SOFIE DE HERTOOG, KRZYSZTOFA GLADYS, HILDE VANACKER AND AN GOOSSENS

Department of Dermatology, University Hospital, K.U. Leuven, B-3000 Leuven, Belgium

We describe 4 adults with an allergic contact dermatitis for moist baby toilet tissues, being used either for their personal hygiene or for their babies (children). The allergen proved to be the preservative mixture of methylchloroisothiazolinone and methylisothiazolinone (MCI/MI). Allergic contact dermatitis from moist toilet paper has been infrequently reported but is probably not rare. The cases we describe here have been observed over a short period of 6 months. The question arises if the use of MCI/MI as a preservative, still often used in leave-on products, should not be abandoned from cosmetics.

Key words: allergic contact dermatitis; baby wipes; cleansing; cosmetics; formaldehyde releasers; fragrances; methylchloroisothiazolinone; methylisothiazolinone; moist toilet tissues; preservatives.

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Baby toilet tissues have occasionally been reported to cause contact allergy in babies and those who take care of them. The allergens considered most often are fragrances and preservatives. We describe here 4 adults with an allergic contact dermatitis from moist baby toilet tissues, being used either for their personal hygiene or for their babies (children). In the frame of an ongoing European Environmental and Contact Dermatitis Research Group (EECDRG) study, the patients described (except case 1) were also tested with methylchloroisothiazolinone and methylisothiazolinone (MCI/MI) 200 p.p.m., and methylisothiazolinone (MI) 1000, 1500, and 2000 p.p.m.

Case Reports

Case 1

A 44-year-old woman, hairdresser, presented in May 2006 with hand dermatitis of 3-year duration, mainly located on the palms and fingers (Fig. 1). Patch testing with the European standard and hairdresser series, and the topical products used only showed a contact allergy to MCI/MI 200 p.p.m. and a doubtful reaction to MCI/MI 100 p.p.m. (Table 1). She used moist baby toilet tissues (Broekies[®]; Intigena AG, Zug, Switzerland) (Fig. 2) for her child, as well as Lactacyd[®] femina wash (Glaxo Smith Kline Consumer, Zeist, the Netherlands), a product for personal intimate

hygiene. These products both contain MCI/MI as a preservative. The patient did not react on patch testing with the moist baby toilet tissues tested as such, nor to Lactacyd[®] (semi-open test). She had never had symptoms in the genital area. When she stopped using these products, however, her hand dermatitis clearly improved.

Case 2

A 24-year-old man with an atopic constitution suffered since many years from dermatitis on his hands and face. When tested in 1999, he had reacted to fragrance mix I, Euxyl K 400[®] (the methylidibromo glutaronitrile-phenoxyethanol mixture), and MCI/MI 100 p.p.m. His symptoms had never disappeared completely. The patient was retested in November 2006 in our department and again we found a positive test to fragrance mix I and hydroxycitronellal, and MCI/MI, both at 100 and 200 p.p.m. (Table 1). MI remained negative at all concentrations. These allergens were considered relevant as he was still using several products containing both fragrance components and MCI/MI, i.e. several personal hygiene products (shampoo, hair care gel, shower cream, and soap), as well as the same moist baby toilet tissues Broekies[®] as in case 1, which he was using for his children who were 8 months, 2 and 4 years old. As the patient has replaced all his personal



Fig. 1. Case 1: clinical presentation.

hygiene products containing these allergens, his lesions got better; however, according to his spouse, he still remained in contact with the same baby wipes for use in his children!

Case 3

A 30-year-old man presented to us with dermatitis on his hands, feet, back, and scrotum in September 2006. Patch testing with the European standard, shoe, and textile dye series, and the topical products used showed positive reactions to formaldehyde releasers, to MCI/MI 200 p.p.m. (only), and Bodysol[®] hand cream (Omega Pharma, Nazareth, Belgium) (Table 1). We could explain his symptoms because he used products that contain these allergens: imidazolidinyl urea in his shampoo, diazolidinyl urea in Bodysol[®] hand cream, and both imidazolidinyl urea and MCI/MI in the moist baby toilet tissues (Broekies[®]) used for his personal intimate hygiene.

Case 4

A 48-year-old woman was referred to our department in October 2006 because of eczematous

lesions on the hands and feet, as well as genital pruritus. She also used the moist baby toilet tissues (Broekies[®]) for intimate hygiene. Patch testing with the European standard and shoe series, and the topical products used showed contact allergy to nickel and cobalt (relevant for jewellery intolerance), and MCI/MI both at 100 p.p.m. and 200 p.p.m. (Table 1), MI remaining negative. The moist baby toilet tissues had also been tested as such, but gave no reaction. She stopped using the toilet tissues and after 3 weeks, the itching had improved significantly. We contacted her again 3 months after testing, and she had not suffered anymore from genital itching. She still had intermittent lesions on the hands, especially when in contact with cleansing products, which we considered to be an irritant dermatitis; she was, in fact, not protecting her hands during household work.

Discussion

MCI/MI is widely used as a preservative in household, industrial, and cosmetic products because it is effective at very low concentrations against a wide spectrum of bacteria, yeasts, and fungi (1, 2). It is, however, an important cause of allergic contact

Table 1. Positive patch test results in the 4 patients

		Day 2	Day 4	Day 5
Case 1	MCI/MI 100 p.p.m.	–	?	NR
	MCI/MI 200 p.p.m.	–	+	NR
	Broekies [®]	–	–	NR
Case 2	Fragrance mix I	+	++	NR
	Hydroxycitronellal	+	++	NR
	MCI/MI 100 p.p.m.	++	++	NR
	MCI/MI 200 p.p.m.	++	++	NR
Case 3	Formaldehyde	+	++	+
	Imidazolidinyl urea	+	NR	+
	Diazolidinyl urea	+	NR	+
	Hydantoine	–	–	+
	MCI/MI 200 p.p.m.	–	(+)	+
	Bodysol [®] hand cream	++	+	NR
Case 4	Cobalt	–	+	NR
	Nickel	+	++	NR
	MCI/MI 100 p.p.m.	++	++	NR
	MCI/MI 200 p.p.m.	++	++	NR
	Broekies [®]	–	–	NR

MCI/MI, methylchloroisothiazolinone and methylisothiazolinone; NR, not read.



Fig. 2. Broekies[®] (Intigena AG), moist baby toilet tissues.

dermatitis. In adults, MCI/MI sensitization seems to be most common among women and in patients with facial and hand dermatitis (3). However, in our clinic, contact allergy to MCI/MI is more frequently observed in men, and the frequency is increasing every year (data not shown), most cases being induced by leave-on cosmetics, especially moisturizing cream, and moist toilet paper, and recently also by rinse-off products such as liquid soaps. Tosti et al. (3), however, also found MCI/MI to be a frequent cause of contact dermatitis in children, i.e. in 7 of 95 children between 3 and 11 years old.

Introduced primarily for babies, moist toilet paper is now also widely used by adults for their intimate hygiene, and sometimes even to control pruritus ani. The main ingredients are water, fragrances, humectants such as sorbitol, glycerine and propylene glycol, and surfactants, but also several preservatives, particularly if alcohol free, as in this case. Recently, Zoli et al. (4) examined all brands of moist toilet papers available in Italy to verify the presence of contact allergens. They found that 91.3% of them indeed do contain potential sensitizers, especially fragrances and preservatives (5), i.e. imidazolidinyl urea, iodopropynyl butylcarbamate, phenoxyethanol, parabens, and MCI/MI, the latter being the main allergenic culprit reported in this regard (6, 7). Broekies[®] does not only contain the preservatives MCI/MI, imidazolidinyl urea, and chlorhexidine digluconate, but also 12 of 26 fragrance ingredients to be labelled. Hence, no reason for a label such as 'dermatologically tested', which has no meaning anyway!

It was Guimaraens et al. (8), who described the first woman with hand dermatitis from using moist toilet paper for her baby, as was the case in 2 of our patients (cases 1 and 2). The other two (cases 3 and 4) used them for their own intimate hygiene.

All four patients described here also suffered from hand dermatitis. In case 1, we considered an irritant component, and in case 2 an atopic dermatitis as a probable facilitating factor for the development of contact allergy.

Testing with the moist baby toilet tissues as such (case 1 and 4) did not produce a positive reaction, but false-negative reactions have also been reported in other cases (3, 5). Moreover, also MCI/MI tested at 100 p.p.m. might be false negative (Table 1).

Conclusion

Hygiene products for babies are not as safe as they seem and even adults can develop hand or perianal dermatitis when using them. As such products, especially when alcohol free, are very easily colonized by micro-organisms, often several antimicrobial ingredients are present.

We could identify, over a relatively short period of time, the preservative MCI/MI as the allergenic culprit in 4 patients because of its presence in the same brand of moist baby toilet tissues. Taking into account that testing with MCI/MI at 100 p.p.m. gave rise to false-negative results, its allergenic properties have been even underestimated. The question arises if the use of MCI/MI as a preservative, still also often used in leave-on products, should not be abandoned from cosmetics. With the introduction of MI alone as a preservative in cosmetics and industrial products, the problem of contact allergy from isothiazolinones might not be solved because MI has contact allergy potencies and induction capacities (9). Hence, a careful monitoring is needed. Moreover, many MCI/MI-sensitive patients (although not in those 3 reported here) do also react to MI, and accordingly, patients allergic to MCI/MI and/or MI should avoid exposure to MI-containing leave-on products (B. Gruvberger, American Contact Dermatitis Society meeting, February 2007, Washington D.C., pers. comm.).

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Address:

A. Goossens
Department of Dermatology
University Hospital, K.U. Leuven
Kapucijnenvoer 33
B-3000 Leuven
Belgium
Tel: 00 32 16 33 78 60
Fax: 00 32 16 33 70 12
e-mail: an.goossens@uz.kuleuven.ac.be