

Patch tests in children: a review of 14 years experience

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Studies in children with dermatitis vary widely in observed reactivity to patch tests (1–9), the mean ranging around 40% (6, 8). From 1980–1993, we patch tested approximately 5900 patients of all ages with suspected contact dermatitis. Of these, 232 were children under the age of 16 years (>6 months); 87 boys and 145 girls. All children were patch tested with a modified European standard series (Trolab, Hermal, Germany), and with additional series as indicated, according to ICDRG guidelines, standard adult concentrations of test substances being used in all cases.

Of the 232 children patch tested, 101 (43.5%) were positive to at least 1 allergen. The 2 recent studies from the Italian (5) and Portuguese contact dermatitis groups (3) also used adult concentrations, and report frequencies of positive patch tests of 35.5% and 52%, respectively, in children under 14 years. The hands were involved in 38% of the 101 reactive children, the face and the feet in 16% each, and the body in 6%. Multiple skin sites were involved in 24%. The age and sex distributions are shown in Table 1. 53% of the girls and 39% of the boys were reactive. Increased reactions in girls versus boys became evident over the age of 10 years, which could be explained by the higher incidence of nickel sensitivity among girls (Table 2).

Metals were the most common allergens and nickel sensitivity predominated (Table 2). This finding is consistent with other reports (6–8), though Levy et al. (4) and Camarasa et al. (9) have reported more positive tests to mercury than to nickel in children. The 2nd most common category of allergens was fragrances and preservatives and here there was no sex predominance, in agreement with Rademaker & Forsyth (8). As compared to other studies, relatively few of the children in our study reacted to medicaments and antiseptics (3–5), which may be explained by differences in formulations of topical products from country to country and in the frequency with which they are applied to the skin.

We also examined the association of atopic dermatitis and contact dermatitis in children. The % of atopic children who reacted was 28%, versus 50% of non-atopic

Table 2. Positive patch tests to the modified European standard series among 232 children (87 male/145 female)

Allergens	No. positive patch tests		
	male	female	total (%)
nickel sulfate 5% pet.	3	35	38 (16.3)
cobalt chloride 1% pet.	10	10	20 (8.6)
fragrance mix 8% pet.	8	9	17 (7.3)
pot. dichromate 0.5% pet.	6	4	10 (4.3)
formaldehyde 1% aq.	2	2	4 (1.7)
PPD 0.5% pet.	1	8	9 (3.8)
PTBPF resin 1% pet.	2	7	9 (3.8)
mercapto mix 2% pet.	5	2	7 (3.0)
quaternium 15 1% pet.	—	2	2 (0.8)
neomycin 20% pet.	1	2	3 (1.3)
am. mercury 1% pet.	3	2	5 (2.1)
balsam of Peru 25% pet.	4	1	5 (2.1)
MBT 2% pet.	2	2	4 (1.7)
black rubber mix 0.6% pet.	1	1	2 (0.8)
ethylenediamine 1% pet.	1	—	1 (0.4)
benzocaine 5%	—	1	1 (0.4)
pristin 0.01% pet.	—	1	1 (0.4)
Kathon CG 0.01% aq.	—	2	2 (0.8)
thimerosal 0.1% pet.	2	2	4 (1.7)
thiuram mix 1% pet.	1	—	1 (0.4)
total	52	93	145

children, but there was no difference in the distribution of allergens. This observation is not new (4, 5).

Occupational contact dermatitis was diagnosed in 16 children, all 13–16 years old. 13 were hairdressers (12 girls, 1 boy) and 3 were construction workers. Occupational dermatitis has also been reported by the Portuguese study group (3). Patch testing can be useful in the choice of future occupations in such children.

In summary, children constitute only a small % of the total patients patch tested. This study, as well as other recent studies, suggests that contact dermatitis should be looked for more in children because it is not uncommon, particularly in older ones.

Table 1. Sex and age distribution in 232 patch tested and 101 reactive children

Age (years)	Male		Female	
	tested no.	positive no. (%)	tested no.	positive no. (%)
0–5	12	6 (50)	2	1 (50)
6–10	21	10 (48)	30	11 (37)
11–14	28	9 (32)	49	34 (69)
15–16	26	9 (35)	64	41 (64)
total	87	34 (39)	145	77 (53)

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Contact dermatitis from jojoba oil and myristyl lactate/maleated soybean oil

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Case Report

A 44-year-old woman had applied a moisturizing cream (Clinique Advanced Cream[®]) daily to her face for at least 5 years. For the past 3 months, itching had occurred a few hours after application, and for the past 2 weeks there had been dermatitis on her face.

She was patch tested with the European standard series, an ointment series, Clinique Advanced Cream[®], and Clinique Dramatic Cream[®]. Subsequently, she was patch tested with the 23 individual ingredients of Clinique Advanced Cream[®] in pet., provided by Clinique USA; and finally with Clinique Advanced Cream[®], jojoba oil 1.5% (Clinique), the mixture myristyl lactate 0.5%/maleated soybean oil 1.5% (Clinique), myristyl lactate 0.5% (Clinique), myristic acid 0.5% ($\text{CH}_3(\text{CH}_2)_{12}\text{OOH}$, Fluka, Switzerland), myristoleic acid 0.5% ($\text{CH}_3(\text{CH}_2)_3\text{CH}=\text{CH}(\text{CH}_2)_7\text{CO}_2\text{H}$, Sigma, Germany), maleated soybean oil, not deodorized, 1.5% (Clinique), maleated soybean oil, deodorized, 1.5% (Clinique), soybean oil 1.5%, the mixture glyceryl stearate 4.9%/polyoxyethylene 23-lauryl ether (Laureth 23) (Clinique), DL-alpha-stearin 4.9% ($\text{CH}_3(\text{CH}_2)_{16}\text{COOCH}_2\text{CH}(\text{OH})\text{H}_2\text{OH}$, Fluka, Switzerland) and stearic acid 4.9% ($\text{CH}_3(\text{CH}_2)_{16}\text{COOH}$).

To exclude irritancy, we tested 20 controls (10 female, 10 male, mean age 36.0 years, range 14 to 71 years) with the substances used in the final patch tests.

Results

The patient showed a +++ reaction to Clinique Advanced Cream[®] initially (Table 1), but did not react to Clinique Dramatic Cream[®], the standard series or the ointment series. Of the 23 individual ingredients of Advanced Cream[®], she reacted ++ to Advanced Cream, ++ to jojoba oil 1.5%, + to myristyl lactate 0.5%/maleated soybean oil 1.5%, and + to glyceryl stearate/Laureth-23. In the final patch tests, she was ++ to Advanced Cream, + to myristyl lactate 0.5%/maleated soybean oil 1.5%, and ?+ to maleated soybean oil, not deodorized, 1.5%, though not to myristyl lactate 0.5%. No reactions were seen in 20 controls, except in 1 man who was ?+ to glyceryl stearate 4.9%/Laureth 23.

Discussion

The patient had allergic contact dermatitis from Clinique Advanced Cream[®], proven in 3 consecutive patch tests over a period of 2 years. According to a personal communication from Clinique Austria in 1993, the preparation of the cream had changed about 2 years ago, since when 2 further cases of suspected contact dermatitis due to the cream seem to have occurred in Austria.

Jojoba oil is widely used in cosmetics, such as moisturizers, sunscreens, shampoos and conditioners. Con-

Table 1. Patch test reactions to Advanced Cream and its components

	Test 1 (April 1993)	Test 2 (May 1994)	Test 3 (June 1995)
Clinique Advanced Cream [®]	+++	++	++
jojoba oil 1.5%	NT	++	—
myristyl lactate 0.5% and maleated soybean oil 1.5%	NT	+	+
maleated soybean oil 1.5% not deodorized	NT	—	?+
maleated soybean oil 1.5% deodorized	NT	—	—
soybean oil 1.5%	NT	NT	—
myristyl lactate 0.5%	NT	—	—
glyceryl stearate 4.9% and polyoxyethylene 23-lauryl ether	NT	+	—

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