

Contact allergy in monozygous twins

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Key words: children; monozygous twins; allergic contact dermatitis; foot dermatitis; atopic dermatitis; rubber chemicals; carba mix; mercapto mix; thiuram mix; mercaptobenzothiazole. © Munksgaard, 1997.

Case Report

2, 9-year-old monozygous girls (Fig. 1), born in 1987, were investigated in 1989 and found to have mild to moderate atopic dermatitis. 1 of them was treated for impetiginized eczema in the gluteal region in 1990. Both developed changes in the feet compatible with dermatitis plantaris sicca. However, 1 of them was patch tested in order to exclude contact allergies. A TRUE Test™ (Pharmacia, Hillerød, Denmark) revealed ++ reactions to carba mix, mercaptobenzothiazole, mercapto mix, and thiuram mix (Fig. 2). To exclude an "angry back" phenomenon, the test was repeated after 7 months, when eczema activity was very minor. Exactly the same reaction pattern occurred. Furthermore, there were no signs of "irritation" under test panel I of the TRUE Test™.

The twin sister also had dermatitis plantaris sicca, and, due to the findings in her sister, she was also TRUE Tested and showed exactly the same pattern of contact allergies (Fig. 2). Later, the parents were patch tested, but with negative results.

8 months after the last patch tests, both girls are free from eczema. There is, from time to time, some abnormal dryness with a tendency to fissuring on the heel. The atopic dermatitis has also gone.

Discussion

Twins have a very similar exposure to external antigens. This pair of monozygous twins had atopic dermatitis early in life, with relapse from time to time. From 1994 to the spring of 1996, they presented with symptoms

clinically compatible with dermatitis plantaris sicca. An identical pattern of cutaneous contact allergies was observed in both twins. It is not hard to envisage that identical exposure might lead to identical cutaneous allergies in genetically identical individuals. These twins may have been sensitized through the use of rubber shoes, which were found to exacerbate disease activity. However, the eczema has now gone, with the exclusion of rubber-containing shoes not strictly conducted, though they do try to avoid this eliciting factor. The pronounced allergic contact reactions are surprising, because it is known in adult patients with atopic dermatitis that induction of contact sensitivity is reduced (1). However, it could be a matter of exposure time and amount of allergen.

A recent study showed that monozygous twins have high concordance in their overall patterns of V gene usage (2). The study documented that "post-thymic modulations, including environmental stimuli, and other random processes are not significant factors in the expression of V region genes on mature circulating T cells, but that the available repertoire is predominantly genetically predetermined". Is allergic contact dermatitis, then, more based on "genetics" than on the exterior? We have recently described how skin-homing T lymphocytes from atopic dermatitis patients, from a positive cutaneous nickel patch test and from psoriasis, can show antigen-independent, but cytokine-driven, in vitro proliferation (3, 4). The findings in this case report confront us with the possibility that cutaneous Type IV allergies may be a consequence of genetically determined selection processes occurring during the establishment of a peripheral T lymphocyte system.

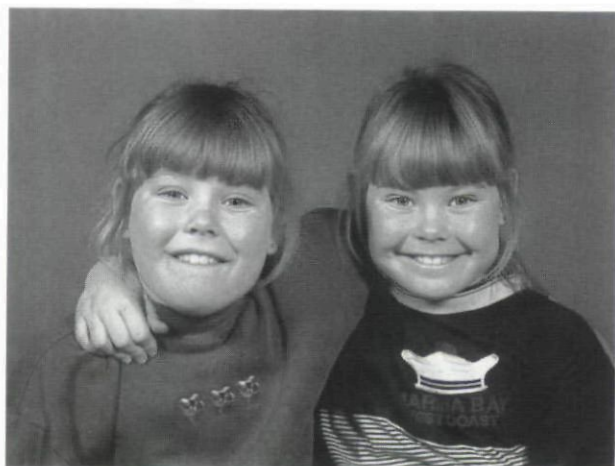


Fig. 1. The twins.

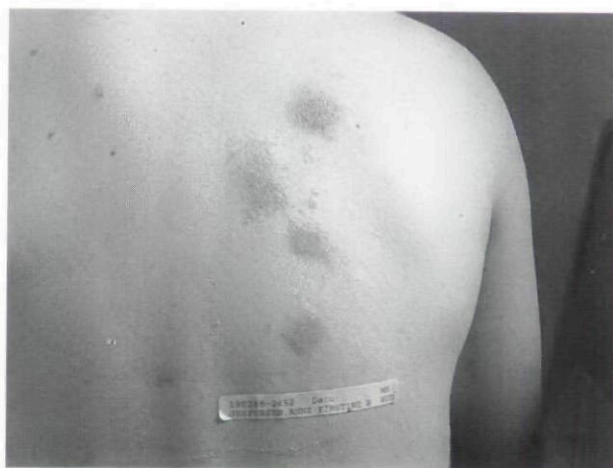


Fig. 2. The patch test results.

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Occupational allergic contact dermatitis from 5-chloro-1-methyl-4-nitroimidazole

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Key words: 5-chloro-1-methyl-4-nitroimidazole; azathioprine; imidazoles; TLC analyses; contact allergy; occupational; pharmaceutical industry. © Munksgaard, 1997.

Case Report

A 46-year-old man, working on azathioprine synthesis, developed a rash on the face, especially the eyelids, neck and hands, after minimal exposure to the drug intermediate AZA III (Fig. 1) in powder form, when he weighed the chemical in small amounts, without protective gloves.

He was patch tested in 2 patch test sessions with a European standard series, a series of medicaments and cosmetics, a dilution series of AZA III, azathioprine, an azathioprine tablet, and 9 fractions obtained on thin-

layer chromatography (TLC) analysis of azathioprine. 6 imidazole derivatives used in systemic or topical antifungal preparations were also tested (Table 1). Patch testing was performed as previously described with an occlusion time of 2 days (1). In addition, the purity of

Table 1. Results of patch tests

Test substance	Result
<i>1st patch test session</i>	
AZA III containing more than 98% 5-chloro-1-methyl-4-nitroimidazole	
10% pet.	++
1% pet.	++
0.1% pet.	++
0.01% pet.	++
0.001% pet.	??
0.0001% pet.	-
<i>2nd patch test session</i>	
AZA III containing more than 98% 5-chloro-1-methyl-4-nitroimidazole	
0.001% pet.	+
0.0001% pet.	??
azathioprine containing 0.004% 5-chloro-1-methyl-4-nitroimidazole	
10% pet.	??
1% pet.	-
Imurel® tablets containing 50 mg azathioprine	
100% (crushed)	+
50% pet.	+
antifungal imidazole drugs	
tioconazole, 2% eth.	+
econazole, 2% eth.	+
miconazole, 2% eth.	??
clotrimazole, ketoconazole, itraconazole, 2% eth.	-
fractions from thin-layer chromatography (TLC) of azathioprine	
fraction no. 2, as is	+
fractions nos. 1, 3-9, as is	-

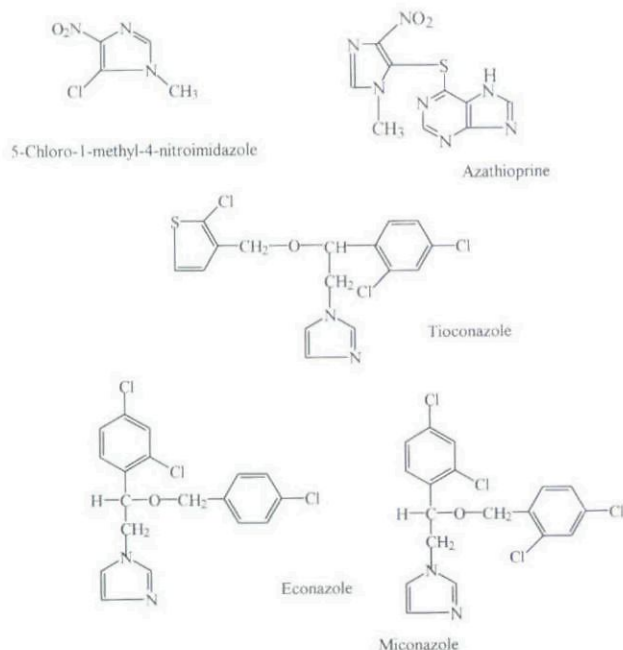


Fig. 1. Chemical structures.

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