

Co-sensitivity to disperse and reactive dyes

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Textile dyes, which can be divided into several types (i.e. disperse, acid, direct, and reactive), are the main cause of textile contact dermatitis; disperse dyes are the principal cause, especially those with an azo structure, causing approximately 50–60% of reported cases.

Case Report

A 27-year-old woman, working in bakery delivery, presented with a 7-month history of pruriginous eczematous lesions affecting the medial aspect of her arms, palms, submammary folds, flanks, periaxillary, and lumbar areas. She had a history of mild atopic dermatitis, controlled with emollients. The patient presented with similar lesions on the neck, arms, and dorsum of the hands in 2003. At that time, patch tests showed reactions to methylchloroisothiazolinone, colophonium, cobalt, nickel, and palladium, and, with appropriate avoidance, her symptoms cleared for 3 years. On representation, she was patch tested (Finn Chambers® on Scanpor®) to cosmetics and textile series (Chemotechnique®) together with a fragrance mix 1, methyldibromo glutaronitrile, budesonide, and tixocortol pivalate. At D2, no reactions were seen, but at D4, positive reactions (++) were seen to disperse blue 106 (1% pet.), disperse blue 124 (1% pet.), reactive black 5 (1% pet.), reactive blue 21 (1% pet.), reactive orange 107 (1% pet.), and reactive red 228 (1% pet.).

Table 1. Reported patients sensitized non-occupationally sensitized to reactive dyes

Age, sex	Sites of involvement	Allergy to reactive dyes	Allergy to other textile dyes
70, M (2)	Upper limb	Reactive orange 107	No
34, F (2)	Trunk and arm	Reactive blue 122	No
		Reactive red 123	
12, F (2)	Hand	Reactive yellow 17	No
29, F (2)	Trunk	Reactive blue 122	No
43, F (2)	Face and limbs	Reactive orange 107	No
		Reactive blue 21	
		Reactive black 5	
		Reactive blue 238	
		Reactive violet 5	
73, M (2)	Diffuse	Reactive red 132	No
4, F (2)	Diffuse	Reactive violet 5	No
		Reactive blue 122	
69, M (2)	Diffuse	Reactive violet 5	No
44, F (2)	Thigh, forearm, and axillae	Reactive violet 5	Disperse red 1
			Disperse orange 3
			Disperse blue 124
57, F (2)	Hand	Reactive red 238	No
62, M (2)	Wrist	Reactive red 238	No
26, F (2)	Face	Reactive red 244	No
3, M (2)	Diffuse	Reactive red 238	Disperse orange 3
25, F (2)	Hand	Reactive red 238	No
27, M (2)	Face, trunk, and forearm	Reactive red 238	No
20, F (2)	Earlobe and eyelid	Reactive red 238	No
10, M (2)	Diffuse	Reactive red 238	No
30, M (3)	Neck, axilla, and lower back	Reactive orange 107	No
		Reactive black 5	
		Reactive blue 21	
		Reactive red 228	
		Reactive violet 5	
		Reactive blue 238	
52, M (3)	Trunk, axilla, and inner thighs	Reactive black 5	No
13, M (3)	Dorsum foot, trunk, hands, and eyelids	Reactive blue 21	Acid red 118
			Basic red 46
27, F (this report)	Diffuse	Reactive black 5	Disperse blue 106
		Reactive blue 21	Disperse blue 124
		Reactive orange 107	
		Reactive red 228	

F, female; M, male.

We considered these positive results as relevant, although patch tests with her clothing were negative. She was recommended to wear only white, natural clothes such as silk or cotton. Two months later, her skin had improved considerably.

Discussion

Reactive dyes are now used in the textile industry for dyeing natural fabrics such as cotton, silk, wool, and leather, but also for some synthetic fibres such as polyamide. These water-soluble dyes have been considered to have low allergenic potential because they form covalent bonds with the fabric and any excess dye is removed after four rinses (1).

Reactive dyes have been mainly reported as occupational allergens, causing type I and type IV reactions. However, Manzini et al. (2) reported

18 reactive dye-sensitized patients with only one being occupationally exposed. Recently, three patients presenting contact dermatitis associated with reactive dyes in garments have been reported (3). All patients described in the literature are shown in Table 1.

The mechanism involved in acquiring contact allergy to reactive dyes is unclear. Reactive dyes consist of one chromophore and one or two functional (or reactive) groups that bind the dyestuff to the fibre. Some authors maintain that allergy to dyes could be caused by the reactive group of the molecule, because when patients were sensitized to more than one dye, all the dyes seem to have the same reactive group (3). Regarding our patient, reactive black 5 and reactive blue 21 have a vinyl sulfonyl reactive group but reactive orange 107 and reactive red 228 have an unknown reactive group.

Co-sensitivity to reactive and disperse dyes is uncommon. To our knowledge, there are only two non-occupational cases out of a total of 17 reported cases (2).

In these patients, it was difficult to establish the relevance of reactive dye contact allergy because clinical complaints could have been caused by disperse dyes. Nevertheless, we consider that these patients should avoid synthetic fabrics and natural ones should be washed three or four times at least before using them to eliminate any remaining reactive dye.

References

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