

Photopatch tests: any news under the sun?

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Although Israel has a classic Mediterranean climate with abundant sunny days, data on photoallergic dermatitis in the country remain sparse. The aim of the present study was to determine the incidence of photoallergic contact dermatitis in our centre and to identify common photoallergens. These data are important for patient selection and formulation of the appropriate photopatch test series.

Patients and Methods

The study sample consisted of 76 patients with a photo-distributed eruption and clinically suspected photoallergic contact dermatitis who underwent photopatch testing between 1998 and 2004.

The original Scandinavian photopatch test series (Chemotechnique Diagnostics, Malmö, Sweden) comprising 20 photoallergens (Table 1) was used in all cases (1). White petrolatum served as the vehicle. Each test substance was placed in small Finn Chambers® on Scanpor surgical tape (Hermal, Reinbek, Germany). The chambers were fixed to the skin with Fixomull adhesive (Beiersdorf, Hamburg, Germany).

The test materials were applied symmetrically to the patient's upper back in duplicate sets. After 48 hr, a single set was removed, and a

Table 1. Scandinavian photopatch test series (Chemotechnique Diagnostics, Malmö, Sweden)

Substances	Concentration (%)
Trichlorcarbanilide (TCC)	1.0
Promethazine hydrochloride	1.0
4-Aminobenzoic acid (PABA)	5.0
Tribromsalicylanilide (TBS)	1.0
Chlorpromazine hydrochloride	0.1
Musk ambrette	1.0
6-Methylcoumarin (6-MC)	1.0
Bithionol	1.0
Fenticlor	1.0
D-Usnic acid	0.1
Atranorin	0.1
Wood mix (pine, spruce, birch and teak)	20.0
Evernic acid	0.1
Balsam of Peru	25.0
Tetrachlorosalicylanilide (TCS)	0.1
Hexachlorophene	1.0
Chlorhexidine digluconate	0.5
Triclosan (Irgasan DP 300)	2.0
Diphenhydramine hydrochloride	1.0
Perfume mix	6.0

primary reading was obtained. The site was exposed to 5 J/cm² of ultra-violet A (UVA) radiation and covered with opaque material. At 48 hr after irradiation, both sets were removed, and the irradiated and non-irradiated sides were compared.

Test readings were scored according to the criteria of the International Contact Dermatitis Research Group (ICDRG) (2).

Results

The patients included 46 women (60.5%) and 30 men (39.5%) aged 28–70 years. Only 4 patients had jobs that involved excessive sun exposure, i.e. gardener, taxi driver, telephone technician and farmer. All patients used sunscreen on a sporadic basis.

Table 2 summarizes the positive results. Of the 76 patients tested, 17 (22%) had 22 positive reactions to allergens in the photopatch test series. 5 of them (6.6%) had a positive

photoallergic reaction to perfume mix, balsam of Peru, fenticlor, hexachlorophene and 6-methylcoumarin (1 patient each). All the positive photoallergic reactions were considered relevant except the reaction to fenticlor.

Allergic contact dermatitis was diagnosed in the other 12 patients (total 17 reactions). 9 had identical readings on the irradiated and non-irradiated sides, and 3 had positive readings only on the non-irradiated side.

No photoallergic reactions to sunscreen were observed in any of the patients.

Discussion

The main finding of the study was that photoallergic contact dermatitis is an uncommon clinical entity. Additionally, among the low yield of the photopatch tests, fragrances were the predominant photoallergens identified.

Our low (6.6%) rate of positive photopatch tests is in line with previous results of rates between 2.3% and 8.0% (3–5). In Darvay's study (5), the chief offending photoallergens in the latter study were sunscreens (of the benzophenone family). A large study of Neumann et al. (6) compared 2 periods of photopatch testing. In the second test period, the test tray was modified. The rates of photoallergic contact dermatitis were 3.8% in the 1st period and 8.1% in the 2nd. It is noteworthy that the modification of the photoallergens after the first period significantly improved the specificity of the photopatch tests.

Our findings, together with those reported in the literature indicate a need for altering the original 23-year-old Scandinavian photopatch test. The importance of some of the photoallergens comprising the 4 main photosensitizing groups, namely, sunscreens, drugs, fragrances and disinfectants, is well established. However, some should be omitted (as fenticlor) and newer ones introduced. Sunscreen photosensitizers, such as the benzophenones, should be included, as found also by others (5), in addition to certain non-steroidal anti-inflammatory agents currently in popular use (also in Israel). Such an effort was published recently by the European Task Force for Photopatch Testing (7), suggesting alterations in the methodology and test agents. Similar processes may well increase the rate of positive responses.

We believe that photoallergic contact dermatitis is more common than reflected by positive photopatch tests. As practising clinicians, we need to continually review and update the relevant photoallergens for optimal results.

References

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Table 2. Photoallergic and allergic contact reactions in 17 patients

	Photoallergic	Allergic
Musk ambrette		1
6-Methylcoumarin (6-MC)	1	1
Fenticlor	1*	
Atranorin		3
Balsam of Peru	1	6
Hexachlorophene	1	1
Chlorhexidine digluconate		1
Perfume mix	1	4
Total reactions	5	17

*Irrelevant.

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