

Photopatch Tests of recent three years at Kyoto University Hospital

Mayumi Katoh*, Akihiko Kitoh, Eriko Otoshi, Yaeno Arima, Chikako Nishigori and Yoshiki Miyachi
Department of Dermatology, Kyoto University Graduate School of Medicine, Kyoto, 606-8507, Japan

We experienced 29 cases of tentative photo allergic disorders from April 2000 to March 2002. For those 29 patients, photopatch tests have been done to explore possible causative photoallergens. We performed photopatch tests with photo-related allergens and possible causative products that the patients brought to us. After applications for 48hrs, one test site was irradiated with half of MRD or 6.0 J/cm² of UVA. Readings were evaluated according to the reading criteria of the ICDRG. Photoallergens were suggested in 20 cases (69.0%). Among them, we could find out the causative products in 7 cases (24.1%). Photopatch tests, performed by an appropriate method, are useful in some cases not only for diagnosis of photocontact dermatitis but also diagnosis of systemic photoallergic disorders.

Key Words: photopatch test, photosensitivity, photo contactdermatitis, UV irradiation test, minimal response dose (MRD)

INTRODUCTION

We experienced 29 cases of tentative photoallergic

disorders from April 2000 to March 2002. Photopatch tests were performed on those 29 patients to explore possible causative photoallergens. Causative products were found in 7 (24%) of the 29 cases. Photopatch tests, performed by an appropriate method, are useful not only for diagnosis of photo contactdermatitis but also for diagnosis of systemic photoallergic disorders.

*To whom correspondence should be addressed

E-mail: mkat@kuhp.kyoto-u.ac.jp

Present address: Department of Dermatology, Kyoto University Graduate School of Medicine, 54, Shogoin Kawaharatyo, Sakyoku, Kyoto, 606-8507, Japan

PATIENTS

Twenty-nine patients (24 females and 5 males, aged from 20 to 81 years old, mean 50 years old) who visited Kyoto University Hospital during a three-year period from April 2000 to March 2002 complaining of photosensitivity.

METHODS

Light source. We performed UV irradiation tests and photopatch tests with Dermaray type 100 (Toshiba-Eisai Co. LTD., Tokyo). This had Toshiba FL32sBL fluorescent lamps for UVA and FL20SE-30 fluorescent lamps for UVB.

UV irradiation tests. We determined the minimal erythema dose (MED) for UVB and minimal response dose (MRD) for UVA for each patient. Evaluations were performed at 24 and 48 hours after UV irradiation by the presence of erythema, papule and/or itching.

Test materials. We performed patch tests and photopatch tests with photo-related allergens and possible causative products that the patients brought to us.

Patch tests and Photopatch tests procedures. Each test materials were applied to a Finn Chamber® (Epitest Ltd Oy Tsuusula Finland) and placed on the patient's upper back for 48 hours with Scanpor® tape (Norgesplaste A/S,

Norway). The test materials were applied in duplicate. One of the two sets was irradiated with UVA (1/2 dose of MRD or 6.0 J/cm²) after removal of the patch at 48 hours after application. The both sites were covered with cloth until next day for prevention against UV. Readings of non-irradiated site were done at 48 and 72 hours after application according to the reading criteria of the ICDRG. Readings of irradiated site were done before UVA irradiation and at 15 minutes and 24 hours after irradiation according to reading criteria of the ICDRG. Interpretation of the results of photopatch tests were performed as follows: If a positive reaction was greater on the irradiated site than on the non-irradiated site or if a positive reaction was present only on the irradiated site, the results of the photopatch test were regarded as positive.

RESULTS

By photopatch tests, positive reactions to test materials were observed in 20 cases (69.0%) of the 29 patients, and causative products were detected 7 (24.1%) of the 29 patients. UV irradiation tests were able to be performed on 6 of those 7 patients, and positive results were obtained in 5 of those 6 patients (Table 1). This meant that those 6 patients had abnormal reactions to UVA.

A representative case report (case 3) 49-year-old female, consulted our hospital because of erythema and itching on the face after she began to use cosmetics containing

Table 1 Patients we could detect causes of photosensitivity

	Age	Sex	Occupation	Past history	Medication*	UV irradiation test		Possible causative photo allergens
						UVA (MRD) (J/cm ²)	UVB (MED) (mJ/cm ²)	
Case 1	65	M	painter	none	none	N.T.**	N.T.	coal tar pitch
Case 2	42	F	housewife	anxiety neurosis	minor tranquilizer	12.0	100.0	Yuskin lika A [®]
Case 3	49	F	teacher	epilepsy	phenobarbital	6.0	39.2	cosmetic (sunscreen)
Case 4	81	F	housewife	none	none	6.0	N.T.	cosmetic (cream)
Case 5	60	M	none	angina	Warfarin [®] , Lasix [®]	> 12.0	N.T.	Lasix [®]
Case 6	73	F	housewife	hypertension	Nivadil [®]	12.0	N.T.	Nivadil [®]
Case 7	48	F	housewife	none	aloe vera juice	12.0	N.T.	aloe vera juice

* including dietary suppliment

** Not Tested

sunscreen ingredients. Photopatch tests were performed with those cosmetics (as is) with 3.0 J/cm² of UVA irradiation. The results of photopatch tests were positive for those three cosmetics (72 hours after application), all of which contained octylmethoxy cinnamate (Fig. 2). This ingredient was therefore thought to be a causative agent in this case (Figure 1).

We were able to detect the causes of photosensitivity in 7 cases by photopatch tests. Although there might be other causes of the photosensitivity, photopatch tests proved useful for those patients. Some of the 13 patients whose causes of the photosensitivity could not be detected were possibly persistent light reactors to ingredients that showed positive reactions for photopatch tests. Photopatch tests, performed by an appropriate method, are useful in some cases not only for diagnosis of photo contact dermatitis but also diagnosis of systemic photo allergic disorders.

DISCUSSION

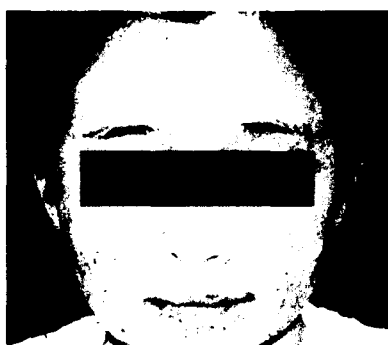


Figure 1. erythema and itching on her face

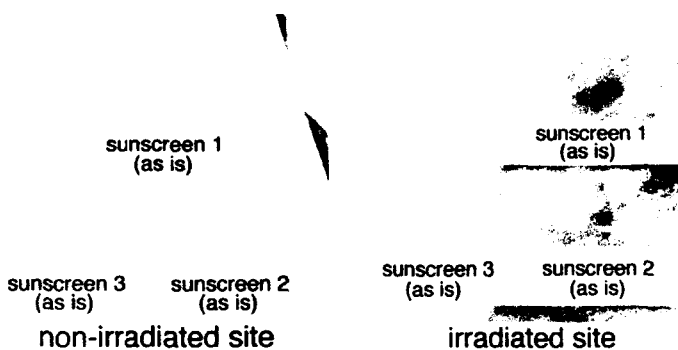


Figure 2. results of photopatch test (72 hours after application): positive reactions for three cosmetics containing sunscreen