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Short Communication

Photodermatitis from non-steroidal anti-inflammatory drugs

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Key words: topical non-steroidal anti-inflammatory drugs; medicaments; photosensitivity; photopatch testing technique; cross-sensitivity; photoallergic contact dermatitis. © Munksgaard, 1998.

Patients and Methods

11 patients (6 men and 5 women; mean age 38 years) with confirmed photocontact dermatitis from topical non-steroidal anti-inflammatory drugs (NSAIDs) have been in our deparment from September 1993 to 1997. Clinical details are given in Table 1. 10 volunteers with no such histories participated as controls.

Photo and photopatch testing were performed, using a light source (Dermolum UM-W Müller Elektronik, Germany) equipped with a 1000 W xenon light and a 1000 W metal halide lamp. UVB and UVA radiation were filtered with a Schott WG 305 and 345 filter, respectively. Irradiance on the skin was 100 mW/cm^2 (Müller Elektronik dosimeter). The minimal erythemal dose (MED) for UVB was evaluated as within normal limits for all subjects. The test substances were the topical gel used, as is, and its individual constituents; ketoprofen 1% pet., ibuprofen 5% pet., oxyphenbutazone 1%, phenylbutazone 1% pet., piroxicam 0.5% pet. and tenoxicam 0.5% pet. (1); ketoprofen 2.5% pet., diclofenac 5% pet., oxyphenbutazone 10% pet., phenylbutazone 10% pet., indomethacin 1% pet., bufexamac 5% pet., fenofibrate pet. (contents of Lipanthyl 200 capsule) and thimerosal 0.1% pet. 3 series of patch tests were placed on the back and arms using the Finn Chamber technique. 1 day after application, 2 series were exposed to UVB (0.75 MED) or UVA (10 J/cm^2). Both irradiated and non-irradiated series were evaluated according to ICDRG guidelines 3 days (D3) and 6 days (D6) after application.

Results

Positive patch and photopatch test results are shown in Tables 2, 3. All control subjects showed negative reactions to all tests.

Discussion

Ketoprofen is confirmed as being the commonest cause of photocontact dermatitis from NSAIDs (1–14), though photosensitivity to systemic ketoprofen is exceptional (13). 3 patients required a patch test concentration of 2.5% rather than 1%. Disrepancy exists between experimental and clinical assessment of ketoprofen as a photoallergen (9, 15–18). Cross-sensitivity with other arylpropionic acid derivatives occurs, as in case no. 4 (1,

Table 1. Clinical details of cases

Case nos.	Sex/age (years)	Season	Onset of eczema after first application (days)	Topical gel used	Site of eczema	Duration eczema (days)
1	M/28	summer	16	Ketum	right knee	13
2	F/29	summer	15	Ketum	left knee	15
3	F/41	summer	19	Ketum	right knee then extension to 4 limbs	21
4	F/47	spring	5	Ketum	dorsum of left foot	15
5	M/18	summer	2	Ketum	left ankle	8
6	M/63	summer	8	Profenid	ankles then extension to 4 limbs	45
7	F/22	summer	5	Ketum	left ankle then extension to legs	21
8	M/41	summer	4	Profenid	left ankle	15
9	M/64	summer	7	Ketum	right ellow	15
10	M/32	summer	8	Ketum	left shoulder	21
11	F/32	spring	3	Voltarene Emulgel	left knee	8

Both Ketum gel and Profenid gel contain ketoprofen 2.5%. Voltarene Emulgel contains diclofenac 1%.
* 3 months later, case no. 4 developed a photodistributed eruption after ingestion of tiaprofenic acid.

Table 2. Patch and photopatch test results (I)

Case nos.		Topical gel used			Ketoprofen pet.		Diclofenac	
		Trade name	as is	Excipients	2.5%	1%	5% pet.	1% alc.
1	PT	Ketum	NT	NT	−	−	−	NT
	UVA		NT	NT	++	++	−	NT
	UVB		NT	NT	+	+	−	NT
2	PT	Ketum	−	−	−	−	−	NT
	UVA		++	−	++	++	−	NT
	UVB		+	−	−	−	−	NT
3	PT	Ketum	−	−	−	−	−	NT
	UVA		++	−	++	+	−	NT
	UVB		++	−	+	+	−	NT
4	PT	Ketum	−	−	−	−	NT	NT
	UVA		++	−	++	++	NT	NT
	UVB		−	−	−	−	NT	NT
5	PT	Ketum	−	−	−	−	−	NT
	UVA		+++	−	++	++*	−	NT
	UVB		++	−	++	++*	−	NT
6	PT	Profenid	NT	NT	++	−	−	NT
	UVA		NT	NT	+++	+++	−	NT
	UVB		NT	NT	+++	++	−	NT
7	PT	Ketum	−	−	−	−	−	NT
	UVA		+++	−	+++	−	−	NT
	UVB		++	−	++	−	−	NT
8	PT	Profenid	NT	NT	−	−	−	NT
	UVA		NT	NT	++	−	−	NT
	UVB		NT	NT	+	−	−	NT
9	PT	Ketum	−	−	−	−	−	NT
	UVA		+++	−	++	−	−	NT
	UVB		+++	−	−	−	−	NT
10	PT	Ketum	+	−	−	−	−	NT
	UVA		+++	−	++	+	−	NT
	UVB		+	−	+	−	−	NT
11	PT	Voltarene	−	−	−	−	−	−
	UVA	Emulgel	++	−	−	−	−	+
	UVB		−	−	−	−	−	−

PT: patch test, NT: not tested. −: negative reaction at D3 and D6. +, ++ or +++: positive reaction at D3.
*Positive reaction at D6.

2, 19–21). A common benzoyl ketone or benzophenone structure explains the cross-sensitivity observed in 5 cases to fenofibrate (1, 14, 22). Reactions to phenylbutazone, oxyphenbutazone and thimerosal are considered due to multiple sensitization (23). Photocontact dermatitis from diclofenac (case no. 11) has not previously been reported, and required its dilution in alcohol, rather than petrolatum, to be demonstrated (2, 15–17, 23–25).

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Table 3. Patch and photopatch test results (II)

Case no.		Fenofibrate pet.	Thimerosal 0.1% pet.	Phenylbutazone		Oxyphenbutazone 10% pet.	Tiaprofenic acid pet.
				1% pet.	10% pet.		
1	PT	−	−	++	++	++	NT
	UVA	+	−	++	++	++	NT
	UVB	−	−	++	++	++	NT
2	PT	−	−	−	−	−	NT
	UVA	+	++	−	−	−	NT
	UVB	−	−	−	−	−	NT
4	PT	NT	NT	−	−	−	−
	UVA	NT	NT	−	−	−	+
	UVB	NT	NT	−	−	−	−
5	PT	+	−	++	++	−	NT
	UVA	+++	−	++	++	−	NT
	UVB	++	−	++	++	−	NT
6	PT	++	−	++	++	−	NT
	UVA	++	−	++	++	−	NT
	UVB	++	−	++	++	−	NT
7	PT	−	++	−	−	−	NT
	UVA	+++	++	−	−	−	NT
	UVB	+	++	−	−	−	NT
3, 8–11	PT	−	−	−	−	−	NT
	UVA	−	−	−	−	−	NT
	UVB	−	−	−	−	−	NT

Negativity of the other tests (tenoxicam 0.5%, piroxicam 0.5%, oxyphenbutezone 1%, indomethacin 1%, ibuprofen 5% and bufexamac 5%) in all patients.
PT: patch test, NT: not tested. −: negative reaction at D3 and D6. +, ++ or +++: positive reaction at D3.

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