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PUVA Therapy for Photosensitive Psoriasis

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The purpose of this study was to assess the prophylactic effect of oral photochemotherapy with psoralens and UVA (PUVA) on patients with light-sensitive psoriasis. Of fifteen patients with photosensitive psoriasis, ten with a history of polymorphous light eruption (PMLE) slowly developing into psoriasis were treated with trimethylpsoralen (TMP) and UVA. Five patients with no preceding PMLE reaction were similarly treated: two with 8-methoxypsoralen (8-MOP), two with TMP and one in whom 8-MOP was later changed to TMP. Good to excellent results were obtained in 9/10 of the first category and in 3/5 of the second, giving an overall efficacy of 80%. Preexisting psoriatic lesions did not, however, heal during TMP therapy but did so when treated with 8-MOP. The results confirm, for light-sensitive psoriatics, the efficacy of PUVA in photosensitive disorders. *Key words: Phototherapy; Psoralens; 8-methoxypsoralen; Trimethylpsoralen; Light sensitivity; Polymorphous light eruption; Phototesting.* (Received February 3, 1987.)

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Photosensitive psoriasis is a clinically well-known condition with worsening of preexisting lesions or the appearance of new ones after sun exposure. Investigation of the condition has not been extensive (1–6). Recently, however, we made a study of 35 patients with photosensitive psoriasis using standardized light test procedures and provocations (7). Two groups of psoriatics were identified. One had a history of polymorphous light eruptions (PMLE), which several weeks later developed into psoriasis lesions. In many of these patients a PMLE reaction was provoked with high doses of UVA and in some cases also with UVB. The other group had no history of a preceding PMLE reaction, nor could such a reaction be provoked with light provocation. Nevertheless, psoriatic lesions appeared in clinically normal skin in this group several weeks after light provocation, most frequently after UVB exposure.

The efficacy of oral photochemotherapy (PUVA) for severe light sensitivity in disorders such as PMLE (8–11), persistent light reaction (12, 13, 17), photosensitive eczema and actinic reticuloid (14, 15), and solar urticaria (16, 17) is now well documented. The aim of the present study was therefore to assess the prophylactic effects of PUVA therapy on known photosensitive psoriatics.

MATERIAL AND METHODS

Patients

Fifteen photosensitive psoriasis patients earlier investigated by us with light test provocation (7) were willing to participate in the present study and gave informed consent. Mean age was 51 years. Eleven were women. One patient had skin type II, eleven had skin type III and three had skin type IV. Their psoriasis had lasted 10–50 years (mean 25 yrs) and their photosensitivity 2–40 years (mean 10 yrs). All patients had long-standing plaque psoriasis with no current or previous history of erythrodermic or pustular posoriasis. No patient took any drug known to induce photosensitization. These 15 patients did not differ from our original group of 35 (7) with respect to mean age, duration of psoriasis or

duration of light sensitivity. However, fewer men were treated (27% compared to 40% in the original group), and skin types I and II were less represented: 1/15 compared to 9/35.

Light test provocation

Light test provocation with UVB and UVA were performed before and after the PUVA treatment. UVB provocation was performed with an Osram high pressure Xenon arc lamp (XBO 150W) equipped with a Schott WG 295 filter. Three and 5×MED were administered on clinically normal skin of the lower back. High-dosage UVA provocation up to 75 J/cm^2 was administered with a UVASUN 3000 lamp (Mutzhas Co., Munich, Federal Republic of Germany). The technique and test results have been reported in detail elsewhere (7). Provocation after treatment was performed exactly as before treatment. Routine biopsies were taken from light-tested areas before and after PUVA therapy and from clinically normal PUVA-treated skin.

Treatment regimen

In 12 patients treatment was commenced with trimethylpsoralen, TMP (Tripsoralen, Elder, USA) 30 mg two hours before UVA exposure. The other three patients were given 8-methoxypsoralen, 8-MOP (Puvamet, Draco Co., Sweden) in a dose of 0.6 mg/kg bodyweight. These three patients had considerable psoriatic lesions at the beginning of therapy, and 8-MOP was considered more effective against these preexisting lesions. The treatments were started in early spring and continued until June.

An initial low UVA dose of 0.15 J/cm^2 was increased by 0.25 J/cm^2 per twice-weekly session up to 3 J/cm^2, then by 0.5 J/cm^2 up to 5 J/cm^2 and thereafter by 1 J/cm^2 up to a maximum varying from 3 to 20 J/cm^2. Where side effects appeared, e.g. pruritus, erythema or exacerbation of preexisting lesions, the dose was lowered to the previous dose a few times before an increment was tried again. Exposure was provided by Sylvania F85 lamps mounted in Waldmann 1000 cabins (Waldmann Werk für Lichttechnik, Schwenningen, Federal Republic of Germany).

Assessment

The patients were thoroughly interviewed before treatment began, and at the end of the summer. Results were classified as excellent, good, no effect and adverse effect. Patients who had remained free or almost free from psoriasis and had been able to be out in the sun without deterioration or appearance of new psoriasis lesions were considered to show an excellent result. In those exhibiting minor new lesions during the summer but still able to be out in the sun the results were considered good. The third category was those showing no effect after PUVA and the fourth was those worsening during PUVA therapy. Light-test provocation with UVA and UVB was performed before and after PUVA therapy, and the results were also included in the judgement of the efficacy of the PUVA treatment.

RESULTS

In total, twelve of our fifteen patients benefited from the PUVA treatment, there was no effect in one patient and two patients became worse. No other side effects were seen. None were irritated on normal skin and no phototoxic reaction could be observed. Biopsies from normal PUVA-treated skin in five patients showed no pathological changes.

Group A

This group comprised ten patients with polymorphous light eruption and secondary psoriasis. Before therapy, PMLE lesions were provoked in 7/10; in 6/7 with high dosage of UVA and in 3/7 with UVB. Two patients reacted to both UVA and UVB (Table I). The PMLE reaction developed into psoriasis in 5/7 patients after 17 to 59 days. All ten patients were treated with TMP and UVA light. The result of PUVA therapy was excellent, as defined under assessment, in five patients and good in four. One became worse, with new lesions during treatment. In the seven patients with positive light tests before PUVA therapy new light test provocation was performed after therapy with doses of UVA and UVB as described above. In only one of these patients, a weak PMLE reaction was observed after UVA provocation with 50 J/cm^2. The reaction subsided and did not develop into psoriasis as the reaction before PUVA therapy had done (Table I). This was confirmed by histological examination on day 17 after provocation.

The number of treatments given varied from 15 to 44 (mean 31) and the cumulative UVA dose from 27 to 451 (mean 172) J/cm^2 (Table I).

Group B

This group comprised five patients with photosensitive psoriasis without PMLE reactions. Two received TMP, two 8-MOP and one first 8-MOP which was changed to TMP. Psoriatic lesions appeared in 2/5 after light provocation before therapy; in one patient after UVB only and in the other after both UVA and UVB (Table I). The result of PUVA therapy was excellent in three of the patients, there was no effect in one and one became worse (Table I). The patient in whom no effect was achieved had widespread psoriasis before PUVA therapy and did not improve during TMP treatment. However, his psoriasis cleared when later on the treatment was switched to 8-MOP and he remained completely healed during the following summer. One patient deteriorated on 8-MOP treatment, and TMP therapy given later had no further effect. In this group, provocation with UVA and UVB were performed after PUVA therapy in the two patients who had reacted before treatment, and no psoriasis lesions appeared (Table I).

8-methoxypsoralen versus trimethylpsoralen

Only three patients, all with photosensitive psoriasis but no preceding PMLE reaction, were treated with 8-MOP. Two of them, both with considerable psoriatic lesions before therapy, experienced an excellent response and they could tolerate the sun during the summer without any exacerbations. Furthermore, their preexisting psoriasis lesions healed completely during therapy. The third patient was initially treated with 8-MOP but deteriorated with new lesions appearing during therapy. A switch to TMP gave the same result, and PUVA was discontinued (Table I).

Table I. *Clinical data of patients with PUVA-treated photosensitive psoriasis (n=15)*

Group A: PMLE and secondary psoriasis. Group B: photosensitive psoriasis with no preceding PMLE reaction. *T = trimethylpsoralen. **M = 8-methoxypsoralen

Patient	Skin type	No. of ments	Cumulative UVA dose (J/cm^2)		Clinical efficacy (patient opinion)	Pos. provocation	
						Before PUVA	After PUVA
Group A							
ÅS	III	29	41.5	T*	Good	UVA	Neg.
AS	III	20	55	T	Good	UVB	Neg.
MLS	III	28	83	T	Good	Neg.	ND
KJ	III	31	231	T	Excellent	Neg.	ND
KS	III	37	156	T	Excellent	UVA, UVB	Neg.
CL	III	41	318	T	Excellent	UVA	Neg.
ML	III	44	451	T	Excellent	UVA, UVB	UVA
MS	III	26	121	T	Worse	Neg	ND
BJ	IV	15	27	T	Good	UVA	Neg.
AH	IV	39	237	T	Excellent	UVA	Neg.
Group B							
AL	II	23	209	M**	Excellent	Neg.	ND
HJ	III	17	154	M	Excellent	Neg.	ND
MB	III	12	19.5	M	Worse	UVB	Neg.
		13	44	T	Worse		
BN	III	32	208	T	None	UVA, UVB	Neg.
JW	IV	18	78	T	Excellent	Neg.	ND

All ten patients with PMLE and secondary psoriasis were treated with TMP. The response was good to excellent in 9/10, e.g. they could tolerate being out in the sun without exacerbations. All had minor psoriatic lesions before therapy but these healed only in two, confirming that TMP given orally has slight or no therapeutic effect for psoriasis.

DISCUSSION

In past years, indications for systemic photochemotherapy with psoralen and UVA have been extended to the treatment of various photosensitive disorders (8–17). The results have been rewarding. The mechanisms may be the induction of epidermal hyperplasia and melanocyte stimulation, but probably also influences on immunocompetent cells and factors, as even dermally located lymphocytic infiltrates may disappear after PUVA treatment.

Patients in the present study were not able to undergo regular phototherapy with sun exposure or UVB without deterioration and flare-ups of psoriasis lesions. As the condition of some of our earlier patients treated with 8-MOP had worsened, we decided to investigate the effect of TMP. For several years we have used oral TMP in PUVA therapy for PMLE with satisfying results (unpublished data). Oral TMP photochemotherapy was chosen as it also has a well documented pigment stimulation capacity, for example in the treatment of vitiligo (18). Oral TMP has less phototoxic effect than 8-MOP, and therefore was expected to give fewer problems of exacerbation and flare-up reactions (19). However, TMP was not expected to heal existing psoriasis lesions (20).

The overall effect of PUVA in this study was good to excellent in 12/15 patients with regard to the prevention of their summer exacerbation of psoriasis after sun exposure. Their tolerance of normal solar exposure lasted throughout the summer, and was confirmed by phototesting in several cases. However, in this group of treated patients, skin type I and II were less represented than in the original group of 35 patients. For this reason it is possible that the result was better than in a population where all skin types were more adequately represented.

Nine of the ten patients with PMLE developing into psoriatic lesions responded well to the TMP treatment. Most of these patients had only minor psoriatic lesions when the therapy was commenced. It is conceivable that this good-to-excellent result may depend to some degree upon the UVA exposures as such. UVB has been used as a therapeutic measure for PMLE with good results (21, 22, 23). However, it has also been shown that UVA exposures followed by a substantial pigmentation do not prevent sunburn effects in the skin (24, 25). Thus, UVA is less likely to protect against PMLE in patients with extreme light sensitivity; but this should be investigated further.

Some patients received numerous treatments, and it is possible that the same beneficial effect could have been achieved in these patients with fewer treatments. The minimum doses to achieve protective effect should be investigated.

Based on our present experience we recommend photochemotherapy with oral TMP and UVA to patients with PMLE reactions followed by psoriasis with minor lesions at the beginning of the treatment. If extensive lesions exist, careful therapy with 8-MOP may be tried, but the effect of 8-MOP in these patients is a problem that warrants further studies.

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