

## CLINICAL REPORT

## Treatment of Chronic Hand Dermatoses with UVB-TL01

Eli J. NORDAL and Ole B. CHRISTENSEN

Department of Dermatology, Ullevål University Hospital, Oslo, Norway

UVB-TL01 is proven to be efficient in whole body treatment for several chronic inflammatory dermatoses. Chronic hand dermatoses of different and often mixed genesis represent a great problem in clinical practice. We have performed a prospective, open study with patients suffering from psoriasis, eczema or pustulosis of the hands treated with hand UVB-TL01. Thirty patients (23 women and 7 men) were included, mean age 43 years (range 25–68 years). The psoriatics were the best responders, as 9 of 11 were improved or much improved after 20–38 treatments, compared to 11 of 16 patients with eczema (11–31 treatments). One of three patients with palmar pustulosis experienced improvement after 23–27 treatments. UVB-TL01 seems to be helpful in the majority of patients with chronic inflammatory diseases of the hands. More extensive studies with regard to proper dosing and length of treatment period ought to be carried out. **Key words:** narrowband UVB; psoriasis; eczema; pustulosis; hands.

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Eli J. Nordal, Hudavdelingen, Ullevål universitetssykehus, N-0407 Oslo, Norway. E-mail: eli.nordal@ullevaal.no

During the last 10–15 years, UVB-TL01 has become the modality of choice in phototherapy of most patients with psoriasis and other inflammatory dermatoses (1). Until recently, only broadband UVB and different modalities of PUVA treatment have been available for treatment of hands and feet, and to our knowledge there is no report on TL01 treatment of these localizations. Chronic inflammatory hand dermatoses may be very recalcitrant and represent a great problem in dermatological practice. It is a great burden for the patients and may cause long-lasting sick leave, change

of occupation, or pre-retirement. When we obtained TL01 treatment units for hands and feet, we started a prospective, open study including patients with psoriasis, different forms of chronic hand eczema, or palmar pustulosis.

## MATERIALS AND METHODS

The TL01 equipment used was a sheet of six tubes, with an irradiance of 3.6 mW/cm<sup>2</sup> (Esshå Elagentur AB, Sweden, www.essha.com).

In total 30 patients (23 women and 7 men) with hand dermatoses were included. The clinical diagnoses, sex, age, skin type, localization and duration of the skin disease are illustrated in Table I. Of the 11 patients diagnosed as having psoriasis, 10 had classical psoriasis elsewhere, and one had hyperkeratotic dermatitis only in the palms and a positive family history for psoriasis.

Among the 16 patients with hand eczema, 12 were classified as atopic dermatitis (AD) and of these 10 also had irritant hand eczema and two pompholyx. One of the patients with AD and irritant hand eczema was found to be allergic to thiuram mix. Another patient with AD and pompholyx was allergic to potassium dichromate and fragrance mix. These reactions were not considered to be of major relevance for the hand eczema. Four other patients were diagnosed as having pompholyx and one of those also had contact allergy to colophony, cobalt chloride and nickel sulfate with uncertain relevance. Twelve of the patients with hand eczema had both palmar and dorsal affection of both hands. Three patients had pustular psoriasis of palms.

All patients had received topical steroid creams. Six of them had received different combinations of treatment including UVB, PUVA, acitretin, methotrexate, cyclosporine and Grenz rays. Eight of the eczema patients had received UVB, PUVA, or Grenz rays. The patients with palmoplantar pustulosis had tried either PUVA, acitretin and PUVA, or Grenz rays. None of the patients used systemic treatment during the study. There was a wash-out period of 8 weeks for Grenz ray treatments. According to the protocol 'active' topical treatment was stopped when entering the study.

Two of the psoriasis patients received additional whole body UVB-TL01 (wearing gloves), as did two eczema patients; furthermore, two eczema patients with extended

Table I. UVB-TL01 for included patients with hand dermatoses

Diagnosis	Number (F/M)	Age, years (mean, range)	Skin type, <i>n</i>			Localization, <i>n</i> (Palmar/dorsal)	Duration, years (median, range)
			I	II	III		
Psoriasis	6/5	48 (30–68)	–	4	7	11/8	3 (0.5–38)
Eczema	14/2	40 (26–66)	2	3	11	16/13	12 (3–60)
Palmar pustulosis	3/0	43 (25–55)	–	1	2	3/0	2 (1–6)
Total	23/7	43 (25–68)	2	8	20	30/21	

Table II. Clinical score system for hand dermatoses\*

Criteria recorded		Grading
A. Erythema	(all)	0–3
B. Either: Infiltration	(psoriasis)	0–3
or: Vesicles	(eczema)	0–3
or: Pustules	(pustulosis)	0–3
C. Desquamation	(all)	0–3
D. Discomfort	(all)	0–3
E. Area	<25%	= 1
	25–50%	= 2
	51–75%	= 3
	>75%	= 4

The values A–D were summarized and multiplied by the value E.

\*Modified after Vocks et al. (2)

affection received whole body UVA/UVB during the study period. As mentioned, the patients were told just to use emollients as topical treatment during the study, but owing to troublesome dermatitis, one with psoriasis, four with eczema and one with pustulosis reported sporadic topical corticosteroid applications during the study too.

We measured dorsal hand minimal erythema dose (MED) in the first 10 patients, but this turned out to be inappropriate, partly because the extension of the skin disease left too little normal skin for testing. An initial attempt to start with 70% of MED as the starting dose proved to be too high a dose for the dorsal aspects of the hands in the most sensitive eczema patients. We therefore adjusted the treatment regimen to a starting dose of 0.1–1 J/cm<sup>2</sup> dorsal dose and 0.2–1.4 J/cm<sup>2</sup> palmar dose, depending on skin type, with dorsal increments of 0.1–0.4 J/cm<sup>2</sup> up to 2 J/cm<sup>2</sup>, and palmar increments of 0.2–1.4 J/cm<sup>2</sup> to a maximum of 4–6 J/cm<sup>2</sup>. The treatment was given two or three times per week, and continued until clearing or maximal 9 weeks until final evaluation. Some psoriasis patients continued even beyond this time limit.

We used a modification of the DASI score system of Vocks et al. (2) (Table II). Erythema, infiltration and desquamation were graded as none=0, slight=1, moderate=2, or severe=3. The most pronounced areas of vesicles and pustules (v/p) were graded as none=0, slight=1 v/p/cm<sup>2</sup>, moderate=2–8 v/p/cm<sup>2</sup>, and severe=>8 v/p/cm<sup>2</sup>. Subjective discomfort such as itching, stinging and burning sensation was graded according to a visual analogue scale (VAS 1–10) as 0=0, slight=VAS 1–3=1, moderate=VAS 4–7=2, severe=VAS 8–10=3. The palmar and dorsal aspects were evaluated separately, as were the right and left hands. The values were summarized and presented as total values.

## RESULTS

The results are presented in Table III. Of the 11 patients with psoriasis, 9 completed the study. One patient (skin type II) stopped after nine treatments due to aggravation of disease, and one dropped out for unknown reason. The remaining 9 patients had 27 treatments on average (range 20–38), and obtained much improvement ( $n=4$ ) or improvement ( $n=5$ ). As for hand eczema, 11 patients accomplished the programme with an average of 23 treatments (range 11–31). Three patients stopped after 4–6 treatments due to need of daily topical steroids, and two patients dropped out; one was improved and one was unchanged on leaving the study. Seven of the patients were classified as much improved, four as improved, two as unchanged and three as worse. The three patients with palmar pustulosis completed the study after an average of 25 treatments (range 23–27). The one who experienced improvement had only a slight degree of disease activity when entering the study, and the other two did not improve. Among all patients, skin type did not seem to separate responders from non-responders (data not shown). Most of the patients tolerated the treatment, as only eight single treatments resulted in light overdosage with temporary redness and soreness.

## DISCUSSION

This is the first publication investigating the effect of narrowband UVB in patients with chronic hand dermatoses. Major conclusions cannot be drawn from this study, as the number of patients in each group is limited and it is an open study. According to our findings, the psoriasis patients seem to respond somewhat better than the eczema patients, but the three patients with pustulosis achieved little improvement.

The effects of broadband UVB in chronic hand eczema have been published in several studies (3–6). The outcome of these studies is difficult to compare with our results due to protocol differences. In an attempt to use a simple, partly objective scoring system,

Table III. Results of UVB-TL01 in treatment of hand dermatoses (including patients who dropped out)

Global evaluation	Psoriasis		Eczema		Palmar pustulosis	
	<i>n</i>	Mean score start/end	<i>n</i>	Mean score start/end	<i>n</i>	Mean score start/end
Cleared	0	–/–	0	–/–	0	–/–
Much improved	4	30/7	7	26/8	0	–/–
Improved	5	37/20	4	37/23	1	12/5
Unchanged	0	–/–	2	17/17	2	35/31
Worse	2 <sup>a</sup>	29/47	3 <sup>b</sup>	32/48	0	–/–

<sup>a</sup>One patient stopped after 9 treatments, one after 29 treatments.

<sup>b</sup>Stopped after 4–6 treatments.

we have used a modification of the DASI scoring system, designed to study the effect of high doses of UVA-1 in patients with chronic dyshidrotic hand eczema (7). In our study, six patients with this type of hand eczema were treated with TL01 UVB; none of them cleared, indicating that TL01 is less effective than UVA-1 for this patient group.

Treatment modalities like Grenz rays (8), topical and especially oral PUVA are often effective in psoriasis located to the hands (6). In the present study, the best results were seemingly obtained in patients with psoriasis even if we did not achieve clearance in any of the patients. It can be argued that the number of treatments and accumulated dose were too low, as dosing recommendations for UVB for the hands in general is lacking. We performed some preliminary MED determinations on the dorsal aspects of the hands, but found this to be of minor practical use.

The therapy was time-consuming as most of the patients had long courses of treatment suggesting that treatment at home (5) could be a practical option, overcoming many of the drawbacks related to institutional treatment.

According to our experience and partly reflected by our results, narrowband UVB is not particularly effective in patients with chronic hand dermatoses. One explanation might be the reduced UV penetration through thick palmar skin, although the effect on the dorsal aspects was not significantly better. However, in psoriasis patients – in spite of the thicker skin – the

effect is relatively good, confirming previous studies. Therefore, a unit emitting high doses of narrowband UVB, should be included in the treatment armamentarium. Optimal dosing and total dose need to be investigated in a larger group of patients.

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