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Comparison of different incremental dose regimens of narrow-band ultraviolet B in skin types III to V: A prospective, randomized, single-blind, parallel study in patients with psoriasis

To the Editor: Psoriasis affects approximately 125 million people globally. One of the preferred treatments for psoriasis is narrow-band ultraviolet B (NB-UVB) phototherapy. Although NB-UVB is widely used, there is no consistency between different guidelines regarding the ideal starting dose and the dosage increments. Whereas the European S3 guidelines recommend dosage increments of 30%, the American Academy of Dermatology (AAD) guidelines recommend increments of 20%.[1,2] Although dosimetry needs to be individualized, most phototherapy centers tend to follow regimens recommended in the literature.[3] We aimed to provide relevant recommendations for clinical practice.

We compared the efficacy and safety of three incremental dosage regimens of NB-UVB—10%, 20%, and 30%—in patients with psoriasis with skin types III to V. Patients with psoriasis who met the inclusion criteria were invited to participate in this clinical trial (Supplemental Table I, available via Mendeley at https://doi.org/10.17632/hhs8nrpr8x.1). There were 111 patients randomized to receive different dose increment regimens: group 1, 10%

Table I. Comparison of the rate of erythema

Erythema response 48 h after the last treatment*	Group 1 (n = 49)	Group 2 (n = 48)	Group 3 (n = 11)
0 = none	37 (75.5)	38 (79.2)	3 (27.3)
1 = mild	5 (10.2)	6 (12.5)	1 (9.1)
2 = moderate	4 (8.2)	4 (8.3)	3 (27.3)
3 = severe	1 (2.0)	0 (0.0)	4 (36.3)
Total	10 (20.4)	10 (20.8)	8 (72.7)

Group 1, 10% dose increment; *group 2*, 20% dose increment; *group 3*, 30% dose increment.
Patients who withdrew before first treatment were excluded.
*Data are presented as number (%).

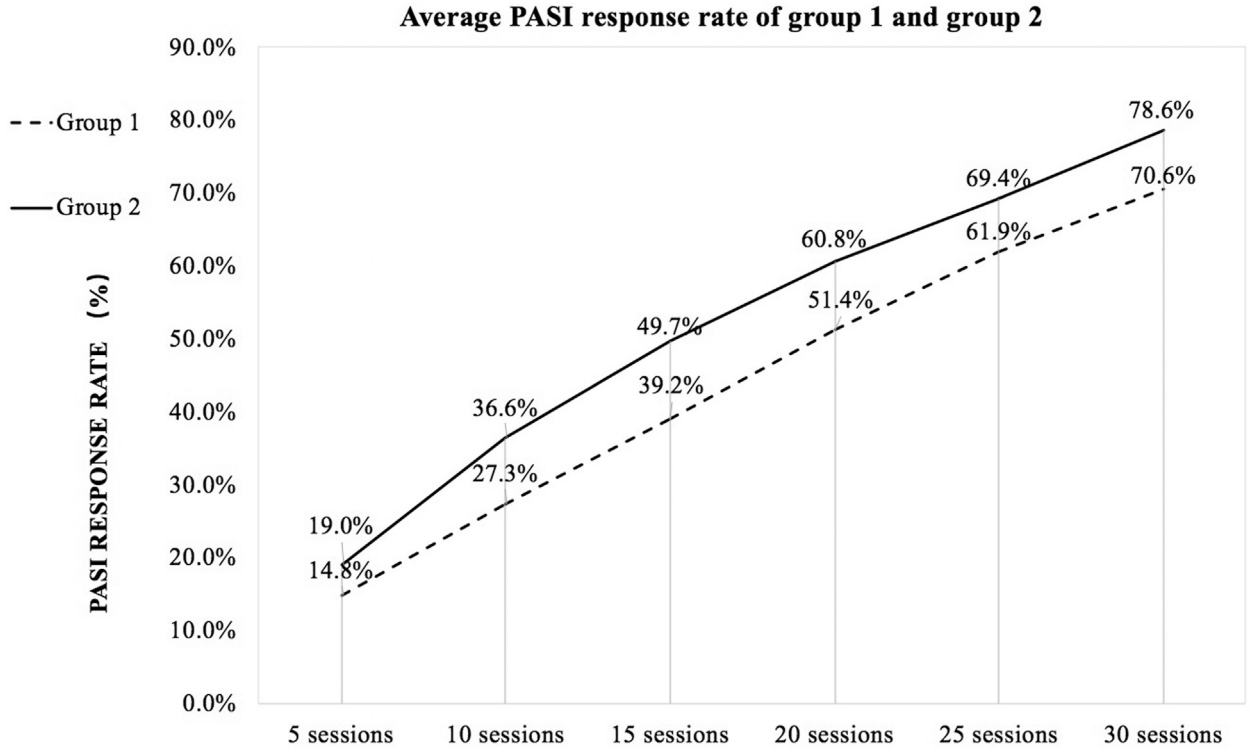

Fig 1. Average Psoriasis Area and Severity Index (*PASI*) response rate of group 1 (10% dose increment) and group 2 (20% dose increment). Nonresponders and patients who withdrew due to adverse effects (n = 5) were included. Determined by repeated-measurement analysis of variance. The degrees of freedom were adjusted by the Greenhouse-Geisser method. $P = .026$.

dose increment (n = 50); group 2, 20% dose increment (n = 50); or group 3, 30% dose increment (n = 11). Patient disposition is shown in Supplemental Fig 1. Patients received NB-UVB treatment 3 times weekly. Supplemental Table II details the protocol and dosage adjustments. Psoriasis Area and Severity Index (PASI) and static Physician's Global Assessment were measured at baseline and after every 5 sessions. Safety was monitored throughout the study.

Differences in baseline characteristics between groups (Supplemental Table III) were not statistically significant. No significant difference was found in the incidence of erythema between group 1 and group 2; however, the proportion of patients developing erythema in group 3 (72.7%) was much higher than in group 1 (20.4%) and group 2 (20.8%) (Table I). Although the S3 guidelines recommend an increment of 30%, we do not consider it advisable in skin types III to V.[2]

Our findings support previous data suggesting that NB-UVB is highly effective for treatment of plaque psoriasis. The proportion of patients achieving PASI 75 and PASI 90 treatment responses at the completion of session 30 were similar in group 1 and group 2 (PASI 75: 59.2% vs 70.8%, respectively, $P = .23$; and PASI 90: 24.5% vs. 29.2%, respectively, $P = .60$; Supplemental Table IV). However, treatment response was significantly faster in group 2 than in group 1 ($P = .026$; Fig 1).

One interesting finding was that satisfactory treatment response was more likely in those with a history of psoriasis remission in summer than in those without such a history (PASI 75 rate: 70.4% vs 58.1%, respectively, $P = .21$; and PASI 90 rate: 35.2% vs 16.3%, respectively, $P = .04$; Supplemental Table V). Previous studies have reported that sunbathing at the Dead Sea is effective.[4] Thus, we speculate that patients who tend to improve in the summer may be more sensitive to UVB therapy; thus, such a history could be used as a predictor of response.

In conclusion, this small single-center study shows that a 20% incremental dose regimen results in a faster response for psoriasis, without increasing the risk of adverse events in III to V skin types.

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Emergency department use by patients with prurigo nodularis in the United States

To the Editor: Prurigo nodularis is a debilitating condition characterized by intensely pruritic nodules. Although it is often managed in the outpatient setting, patients may experience acute flares that result in presentation to the emergency department.[1] Despite prurigo nodularis's toll on patients' physical and emotional well-being, limited information exists on its economic burden.[2,3] The goal of the present study was to quantify the use and cost of emergency care for prurigo nodularis.

We used data from the 2016 National Emergency Department Sample from the Healthcare Cost and Utilization Project. The National Emergency Department Sample is a cross-sectional sample of 20% of hospital-owned emergency departments in the United States, with greater than 32 million visits captured. The prurigo nodularis cohort was identified according to *International Classification of Diseases, 10th Revision, Clinical Modification* code

Table I. Demographic information of prurigo nodularis patients compared with general patient population presenting to the emergency department

	General population		Prurigo nodularis		
Variable	Weighted freq	Percentage (95% confidence interval)	Weighted freq	Percentage (95% confidence interval)	*P* value
Age, y					
0—19	32,721,926	22.6 (21.1-24.2)	<50	0.7 (0.2-2.4)	<.001
20—39	42,784,061	29.6 (28.9-30.3)	207	12.1 (8.3-17.4)	<.001
40—59	34,783,167	24.0 (23.5-24.6)	860	50.3 (42.9-57.7)	<.001
60—79	24,360,292	16.8 (16.4-17.2)	532	31.1 (25.6-37.3)	<.001
>80	10,051,363	6.9 (6.7-7.2)	98	5.7 (3.6-8.9)	.048
Discharge month					
Jan—Mar	36,677,219	25.4 (25.3-25.5)	383	23.0 (18.8-27.8)	.005
Apr—Jun	36,174,747	25.0 (24.9-25.1)	266	28.0 (23.5-33.0)	<.001
Jul—Sep	36,405,047	25.2 (25.1-25.3)	383	23.0 (18.9-27.8)	.009
Oct—Dec	35,348,144	24.4 (24.3-24.6)	433	26.0 (21.2-31.5)	.39
Male sex	64,380,409	44.5 (44.2-44.8)	793	46.4 (39.5-53.5)	.12
Female sex	80,298,693	55.5 (55.2-55.8)	916	53.6 (46.5-60.5)	.12
Income quartile					
First	50,267,605	35.4 (33.4-37.3)	594	36.4 (29.2-44.2)	>.99
Second	38,744,510	27.3 (25.7-28.8)	324	19.8 (15.0-25.7)	<.001
Third	29,776,303	20.9 (19.8-22.2)	392	24.0 (17.8-31.6)	.02
Fourth	23,361,705	16.4 (14.9-18.1)	323	19.7 (14.5-26.4)	.002
Insurance					
Medicare	33,339,465	23.1 (22.4-23.7)	760	44.9 (38.7-51.2)	<.001
Medicaid	46,702,902	32.3 (31.2-33.5)	503	29.7 (23.4-36.8)	.011
Private	41,340,631	28.6 (27.7-29.5)	251	14.8 (10.7-20.2)	<.001
Self-pay	16,478,447	11.4 (10.8-12.0)	131	7.7 (5.0-11.8)	<.001
No charge	587,299	0.4 (0.3-0.6)	<50	1.1 (0.3-4.1)	<.001
Other	6,082,695	4.3 (4.0-4.6)	<50	1.9 (0.8-4.1)	<.001
Region					
Northeast	26,446,888	18.3 (16.4-20.4)	348	20.4 (13.3-29.8)	.03
Midwest	32,902,943	22.7 (20.8-24.8)	519	30.4 (21.6-40.8)	<.001
South	58,050,749	40.1 (37.5-42.8)	572	33.4 (25.2-42.9)	<.001
West	27,300,230	18.9 (17.3-20.5)	271	15.8 (10.1-23.9)	.001
Teaching status					
Metropolitan nonteaching	41,566,281	28.7 (26.7-30.9)	256	15.0 (9.9-22.1)	<.001
Metropolitan teaching	80,813,216	55.8 (53.4-58.3)	1353	79.2 (71.6-85.2)	<.001
Nonmetropolitan	22,321,313	15.4 (14.2-16.7)	99	5.8 (3.3-10.0)	<.001

Apr, April; *Dec*, December; *Freq*, frequency; *Jan*, January; *Jul*, July; *Jun*, June; *Mar*, March; *Oct*, October; *Sept*, September.