

A Randomized Comparative Study Between Three Times And Five Times Weekly Phototherapy With NB-UVB For Treating Chronic Plaque Type Psoriasis

Zahra Hallaji, MD
Amir Houshang Ehsani, MD
Pedram Noormohammadpoor, MD
Parham Mansouri, MD

Department of Dermatology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Corresponding author:
Amir Houshang Ehsani, MD
Department of Dermatology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
Email: ehsanih@sina.tums.ac.ir

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Abstract

Background: Psoriasis is a chronic inflammatory skin disease that is estimated to affect 0.6% to 4.8% of the general population. The optimum number of NB-UVB phototherapy sessions is yet to be determined. The aim of this study was to compare therapeutic effects of NB-UVB in treating chronic plaque type psoriasis three times weekly vs. five times weekly.

Materials and Methods: This study was designed as a single-blinded randomized controlled trial. Patients with chronic plaque type psoriasis who were candidates for phototherapy were randomized in two groups, one group received NB-UVB three times a week (group A) while the other group received the same treatment five times a week (group B). Patients' PASI score was determined before commencing the study and after 12 weeks of treatment. At the end of the study, response rate, PASI score of patients and total dose of UVB per patient were determined.

Results: A total of 47 patients were enrolled. Thirty two patients (19 in group A, 13 in group B) completed the study. Total response rate was 71.9% after 12 weeks of treatment (23 out of 32 patients) while nine patients (28.1%) had no response. Response rate was 78.9 % (15 out of 19) in group A Vs. 61.5% (8 out of 13 patients) in group B ($p > 0.05$). Total UVB dose received, treatment sessions, erythema and final PASI score was lower in group A ($p > 0.05$).

Conclusion: With similar therapeutic effects, it seems that three times a week regimen may be superior to five times a week for its lower total UVB dose received and higher safety profile. (*Iran J Dermatol* 2009;12: 60-63)

Keywords: narrow band UVB, psoriasis, numbers of sessions

Introduction

Psoriasis is a chronic inflammatory disorder of the skin that affects 0.6% to 4.8% of the general population¹. Characteristic lesions of this disease are erythematous plaques with ivory scales and sharp margins². Both genetic and environmental factors are involved in its etiology³. There are several clinical variants including chronic plaque type psoriasis (psoriasis vulgaris). According to the chronic nature of disease, the main goal of treatment is induction and maintaining remission with the lowest possible treatment side effects. Three main treatments against psoriasis are topical treatments, systemic therapy and phototherapy⁴.

Phototherapy is regularly used in treating widespread disease (at least involving 20% of TBSA) not controllable with topical therapies⁵. FDA approved PUVA for the treatment of severe psoriasis in 1982⁶. Later, it was discovered that NB-UVB (311 ± 2 nm) and Broad Band UVB (290-320 nm) were also effective in treating psoriasis^{7,8}. Until now, it has been postulated that phototherapy with NB-UVB has lower side effects than other phototherapy methods although this remains to be confirmed by more long-term studies. Required dose of NB-UVB and treatment sessions per week are different among studies according to patients' race, Fitzpatrick skin type and constitution⁸. The exact number of phototherapy treatment sessions

for psoriasis is yet to be determined⁹. Dave et al. showed that there was no significant difference between three times and five times a week phototherapy sessions in the treatment of psoriasis¹⁰. This study was designed to compare the outcomes of the two different methods in Iranian psoriatic patients.

Patients and Methods

This was a randomized single blinded study done in phototherapy clinic of Razi hospital in Tehran. All patients were selected from the phototherapy clinic of Razi hospital. A consent form was filled by each patient. Patients were excluded from the study if they had positive ANA test, history of liver or kidney diseases, abnormal LFT, abnormal kidney profile and history of any type of skin cancer as well as pregnancy or lactation.

All patients were visited before commencing the study and during the study at the intervals of every 10 sessions of phototherapy by an academic dermatologist capable in the field of phototherapy. All patients were followed to the end of the phototherapy period. Included patients were randomized in two groups receiving phototherapy three or five times a week using randomized numbers tables. All patients had to use protecting shields for eyes in both sexes and for their genital area in males during phototherapy sessions. Patients were informed about possible adverse reactions to phototherapy including burns, photosensitivity dermatitis, erythema, bulla formation, pruritus and post treatment hyperpigmentation and were asked to report them. Included patients were randomized in two groups called A and B. group A received phototherapy three times a week while group B received the same treatment five times a week. Before commencing the therapy, the skin type of the patients was determined to choose correct initial dose of NB-UVB. Patients' lesions were scored based on PASI scoring system before starting the treatment and at the 12th session of therapy as well as at end of the study. Clinical response was defined as at least 90% reduction in PASI score according to the base score or resolution of 90% of skin lesions. The average initial dose was 100mj/cm² which was increased by 20% per session if there was no erythema and by 10% if there was mild erythema. If there was moderate erythema, treatment was suspended for one session and then the dose was increased by 10%. If complications including severe erythema happened, the decision to continue therapy, stop it or changing

the treatment modality was based on the opinion of the dermatologist. All data such as the PASI score and dose of UV were documented in designed questionnaires.

Statistical Analysis

Student T-test was used for comparing means while chi-square test was used for comparing differences in proportions when necessary.

Results

A total of 47 patients were included in the study in a period of 1.5 years. Of them, 15 patients did not complete the study for different reasons. Thirty two patients, 14 females (43.8%) and 18 males (56.2%), completed the study.

Characteristics of two groups

Table 1 shows baseline specifications of the enrolled patients. As we can see, there were no significant differences between two groups before the commencement of the study. Also, mean treatment sessions and the cumulative UVB dose was the same in the two groups.

Treatment results

Table 2 shows the results of the therapy with UVB. From 32 enrolled patients, 23 showed clinical response (71.9%) but nine patients (28.1%) failed to experience any resolution. Mean PASI score was determined before the commencement of the study (table 1), after 12 weeks of treatment and at the end of the treatment period (table 3).

Mean treatment sessions were 36.6 in patients with a clinical response and 44.1 in patients without a clinical response ($p > 0.05$). Mean PASI score at the beginning of the study was 14.1 in group A and 18.3 in group B. Calculated PASI score at the 12th session of therapy was 10.9 in group A and 13.8 in group B. Mean final PASI score in group A was 1.65 while this parameter was 6 in group B which was not statistically significant ($p > 0.05$).

From 14 female patients, nine (64.3%) had a clinical response while of 18 male patients, 14 (77.8%) had a clinical response (not significant).

Finally, a look at adverse reactions: 11 patients out of 19 had erythema in group A while in group B, 10 patients out of 13 (76.9%) experienced this side effect ($p > 0.05$). No other important side effects were seen in the two groups. (Table 4)

There was no statistically significant difference between mean age of the patients, family history and Fitzpatrick skin type in the two groups. Gender of the patients had no significant effect on clinical response rate.

Table 1. Baseline specifications of the patients

	Group A (three times a week)	Group B (five times a week)	
Mean age	30.6 (\pm 15.3)	37.8 (\pm 14.8)	Not significant
Mean cumulative dosage (milli Joules)	43975 (\pm 21153)	51112 (\pm 28885)	"
Mean treatment sessions	38 (\pm 11.5)	39.7 (\pm 9.7)	"
Mean pre-treatment PASI score	14.1 (\pm 5.6)	18.3 (\pm 6.8)	"

Table 2. Treatment results

	Group A (three times a week)	Group B (five times a week)	Mean cumulative UVB (mJ)	Sex	Treatment sessions
Patients with Clinical response	15 (78.9%)	8 (61.5%)	40084(\pm 19438)	M (14, 77.8%) F (9, 64.3%)	36.6 (\pm 10)
Patients without Clinical response	4 (21.1%)	5 (38.5%)	64226 (\pm 28234)	M (4, 22.2%) F (5, 35.7%)	44.1 (\pm 11)

Discussion

The clearance of psoriasis with NB-UVB is faster, requires fewer treatment sessions, and is preferred by more patients ¹¹. It is important to keep in mind that combining NB-UVB with other modalities, such as tazarotene gel, anthralin, and calcipotriol, or even day treatment, can provide faster, more effective clearance and reduces the mean number of treatment sessions and cumulative irradiation doses. Using lower doses of light and additional treatments with complementary modes of action may also minimize side-effects, such as unpredictable erythema and lesion blistering ^{12,13,14,15}.

The main advantage of NB-UVB therapy over PUVA is convenience. No topical or oral medications are needed. Phototoxic reactions are not a concern, and it is thought to be safer for children and pregnant and lactating mothers. Thus, NB-UVB may be a better first-line treatment, but moving to PUVA for more severe or resistant psoriasis is a logical next step ¹⁶.

The value of NB-UVB in treating psoriasis has been proved according to its high safety profile and good clinical response. We found no differences between clinical response rates induced by NB-UVB phototherapy three times a week vs. five times a week. This is in agreement with other trials ^{10, 17, 18}. In a study by Dawe et al, two different NB-UVB regimens (three times a week vs. five times a week) were compared. This study showed that there was no significant difference between the two methods ¹⁰. Cameron et al. found that NB-UVB three times a week was superior to two times weekly for psoriatic patients ¹⁷. From a different point of view, Leenutaphoney et al. showed that NB-UVB three times a week was equal

to four times weekly in producing clinical response ¹⁸. Also it has been shown that phototherapy with NB-UVB three times a week is preferable to daily regimen ¹⁹. In our study, total response rate was about 72% which matches with other studies ⁸. Although clinical response rate was 78.9% in group A in comparison with 61.5% in group B, this difference was not significant as well as differences found between the mean cumulative dose and number of treatment sessions in the two groups.

For its lower total UVB dose received and higher safety profile, as well as the equal response rate, it seems that treatment with NB-UVB three times a week may be superior to five times a week although it remains to be confirmed in other studies with larger sample sizes.

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