ARTICLE

Narrow Band UVB Monotherapy versus Topical Calcipotriol Ointment Combined with Narrow Band UVB Phototherapy for Treatment of Psoriasis Vulgaris

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Abstract

Introduction: Calcipotriol and narrow-band ultraviolet B (NBUVB) phototherapy are widely used to effectively treat psoriasis. To reduce the cumulative NBUVB doses and to enhance clearance of psoriatic plaques, combination therapies have been established. **Objectives:** To compare the clinical efficacy of NBUVB alone and in combination with topical calcipotriol ointment in psoriasis. **Patients and Methods:** Fifty five patients with psoriasis vulgaris were included in the study. Patients were randomized into two treatment groups. Group I consisted of 30 patients who received NBUVB phototherapy as monotherapy and group II consisted of 25 patients who were treated with topical calcipotriol ointment combined with NBUVB. The treatment was continued till the patients achieved PASI-75. **Results:** Twenty patients, in each group, completed the study. At baseline, the mean PASI scores were 15±4 and 16.4±3 in group I and group II respectively, and at the end of treatment, the mean PASI scores were 6.5±3 in group I and 3.4±2 in group II (P=0.000). The total cumulative NBUVB dose and the number of sessions were significantly higher in group I compare to group II. **Conclusion:** Topical calcipotriol combined with NBUVB reduces the cumulative dose of NBUVB and improves the response of psoriasis vulgaris to phototherapy.

Key words: Psoriasis, NBUVB, calcipotriol, PASI

Introduction

Psoriasis is a common, chronic, inflammatory and hyperproliferative skin disease in which both genetic and environmental influences have a critical role (1). Its prevalence in different populations varies from 0.1% to 11.8% (1). The disease can be effectively controlled by various therapeutic options, used alone or in combination (2). In limited disease, the most commonly used therapy is topical with the addition of phototherapy in refractory cases. In moderate to severe psoriasis, phototherapy alone,

combined with systemic therapy or systemic therapy alone is recommended (2).

Narrow-band ultraviolet B (NBUVB) phototherapy is one of the most effective treatment modalities for patients with psoriasis. However, its long-term adverse effects have not been thoroughly assessed. Therefore, photocombination therapies that combine UVB therapy with other treatment modalities are important and of high interest (2,3). In particular, a combination of UVB with topical vitamin D analogues is considered as beneficial treatment regimen for psoriasis (4). However, the superiority of this combination therapy to NBUVB monotherapy has not been fully established; some reports have shown increased therapeutic efficacy (4-6), while another report has shown no significant difference in effectiveness (7).

Patients and Methods

The aim of the study is to compare the clinical efficacy of NBUVB alone and in combination with topical calcipotriol ointment in patients with psoriasis vulgaris. A randomized controlled trial was conducted on 55 patients with psoriasis vulgaris attending the phototherapy unit at Department of Dermatology at El-Jumhuriya hospital in Benghazi, Libya. The study was approved by the professional committee of El-Jumhuriya Hospital, which is a teaching hospital of Benghazi University, Faculty of Medicine, and a verbal consent was obtained after explaining the nature and possible consequences of the study to all patients involved. Patients with guttate, erythrodermic, pustular or isolated palmoplantar psoriasis were excluded, as well as women who were pregnant or breastfeeding, and persons with a history of malignancies. Furthermore, persons currently on photosensitizing agents or on medications negatively affecting psoriasis were also excluded. Each patient was subjected to a detailed history and underwent a dermatological examination including psoriatic plaque PASI scoring. Patients were randomized into two treatment groups. Group I consisted of 30 patients received NBUVB phototherapy twice per week as monotherapy and group II consisted of 25 patients treated with topical calcipotriol ointment twice daily combined with NBUVB twice weekly. The initial dose of NBUVB ranged between 0.2-0.5 J/cm^2 according to skin photo-type. Doses were adjusted on each session according to erythema response 48 h after irradiation (11). The treatment continued until achievement of PASI-75 after which therapy was discontinued. Each patient was followed up every 2 weeks and PASI scores recorded. The cumulative UVB dose and the number of treatment sessions received were determined for each patient. Serum calcium estimation was done before and after therapy for all the patients. Any adverse effects like erythema, perilesional irritation, perilesional tenderness, lesional irritation, burning sensation and itching were recorded at each visit.

Statistical analyses were performed using SPSS software for Windows (Version 11.5). Results are presented as mean and standard deviations for continuous variables and as a number (%) for categorical variables.

Results

Fifty five patients with psoriasis vulgaris were enrolled in the study and 40 completed the study, 20 patients in each treatment group. No statistically significant difference was observed regarding their age, gender, duration of the disease and PASI score between the two groups (Table 1). Achievement of PASI 75 was observed in 16 of the 20

Table 1. The demographics data and baseline characteristics of the patients.

	Group I	Group II	P value
Age [mean±SD]	34.9 ± 11.6	36.9 ± 11.6	0.497
Gender [Number (%)]	F 9 (45%) M 11(55%)	F 10 (50%) M 10 (50%)	0.577
Duration of the disease [mean± SD] Years	7.1 ± 4.9	8.2 ± 7.0	0.122
PASI at baseline ± SD	15 ± 4.1	16 ± 3.4	0.381

Table 2. The response to treatments, number of NBUVB sessions and the cumulative NBUVB dose required to achieve PASI 75.

	Group I	Group II	P value
achievement of PASI 75	16/20 (80%)	18/20 (90%)	0.176
No. treatments required for attaining PASI 75 (mean ± SD)	34.7±11.2	17.5±3.6	0.020*
No. weeks required for attaining PASI 75 (mean ± SD)	17±9.5	10±3.2	0.040*
Total NBUVB dose required for attaining PASI 75 (mean ± SD) J/cm^2	42±20.8	18.8±6.5	0.00*
*Significant P-value <0.05.			

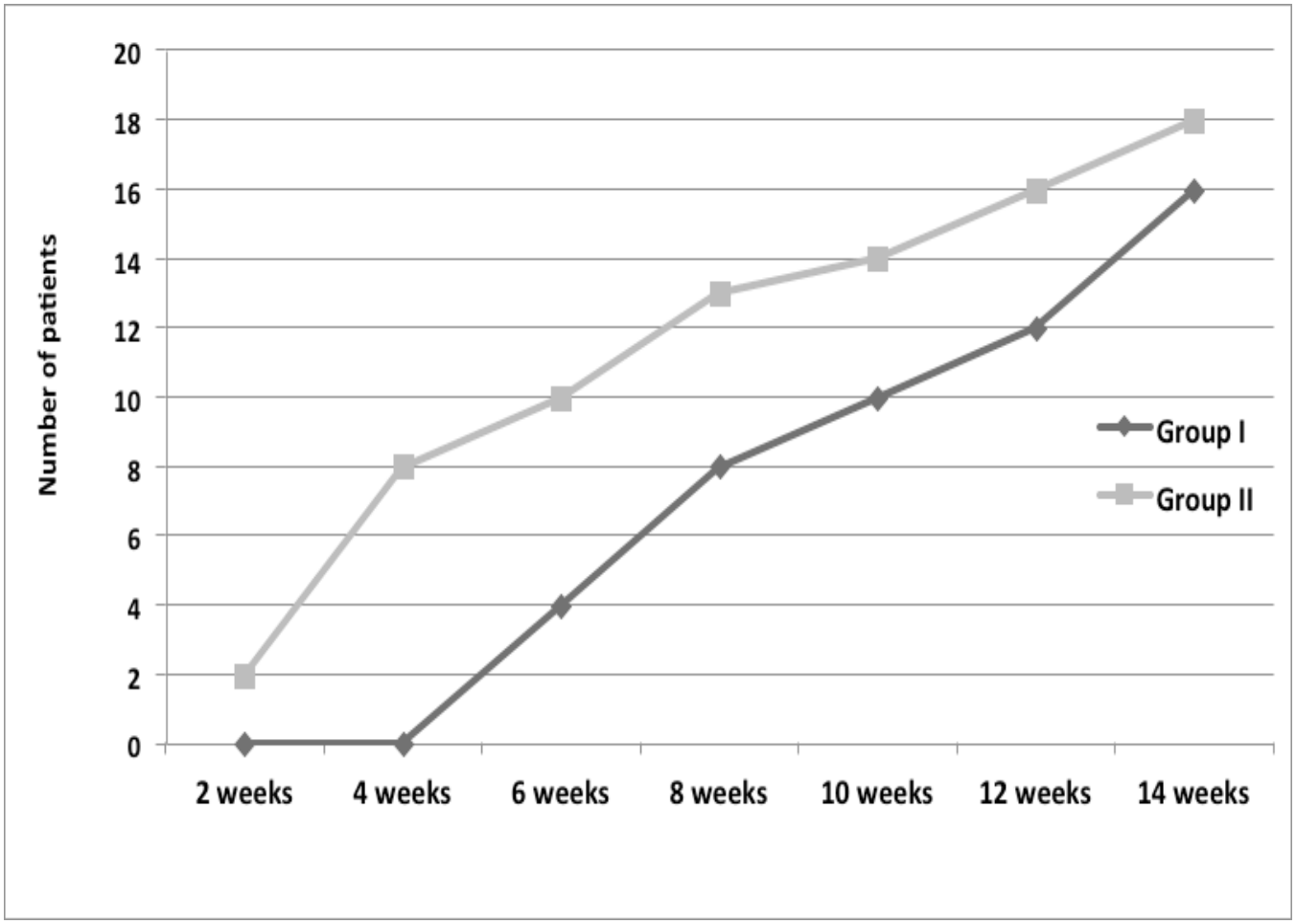

Figure 1. The number of patients who were achieving PASI 75 in both groups

patients in group I and 18 of the 20 patients in group II (P>0.05). When the mean decrease in PASI was analysed between the two groups every two weeks, there was a statistically significant difference in reduction in PASI scores after 8 weeks of treatments in favour of group II (P<0.05). PASI 75 was achieved in about 50% patients in group II at 6 weeks of treatment compared with 10 weeks of treatment in group I and this was statistically significant (Figure1).

Mean number of NBUVB sessions to which the patients were exposed was 34.7±11.2 in group I and 17.5±4.0 in group II (P < 0.05). Mean cumulative NBUVB dose for achieving PASI 75 was 42±21 J/cm^2 in group I compared with 19±6.4 J/cm^2 in group II (P < 0.05) (Table 2).

Both groups tolerated treatments well. Erythema and itching after phototherapy were observed more often in group I than in group II but the difference was not statistically significant. However, none of the patients discontinued the therapy because of adverse events. No alteration in serum calcium was observed during the study period.

Discussion

Narrow band UVB phototherapy appears to be an effective and safe treatment of psoriasis (2). NBUVB rapidly depletes infiltrating T cells from psoriatic plaques and result in faster clearance with less side effects (9). In order to reduce cumulative UV doses and to enhance clearance of psoriasis lesions, combination therapies with topical as well as systemic agents have been established (2).

In 1953, Ingram initiated the combination of UVB radiation, dithranol and tar-bathing for psoriasis (2). Thereafter, several studies reported the efficacy of the use of topical therapies, such as calcipotriene, tazarotene and anthralin combined with NBUVB (2).

Vitamin D3 analogues inhibit proliferation, induce terminal differentiation of human keratinocytes and exhibit immunomodulating properties (10). Many studies showed that calcipotriol as well as calcitriol and tacalcitol are efficacious, safe and can be used on long-term basis for psoriasis (10,11). Calcipotriol has been used in combination with PUVA, UVA1 and broad-band UVB in the treatment of psoriasis with promising results (10). However NBUVB phototherapy gained the superiority to the formers for its safety profile and effectiveness (2). Our result is in agreement with the results of recent studies (4-6) which showed a faster reduction in the PASI score in the group treated with NBUVB plus topical calcipotriol than in the group treated with NBUVB alone, with significantly lower median cumulative UV exposure than UVB alone. However Brands et al, have shown no significant difference in effectiveness with such combination (7) In the present study, the patients were informed to apply calcipotriol after the phototherapy. It is well known that vitamin D3 derivatives may be used up to 2 hours before phototherapy or after ultraviolet application (12), as they are unstable under UV irradiation (13). The acute dose-dependent side effects of NB-UVB are erythema, burning, pigmentation and rare transient lesional blistering (14).

In conclusion, effective management of psoriasis frequently necessitates combining therapies in order to achieve optimum response while minimizing any side-effects. Both treatment modalities notably reduced the PASI score and improve psoriasis, however, the combination of topical calcipotriol with NBUVB appears to have synergistic effects and clearly reduces the cumulative dose of UVB and improves the response of psoriasis vulgaris to phototherapy.

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