



Correlation of Disease Activity and Quality of Life of Patients with Psoriasis after Narrow-band Ultraviolet B Therapy

Lyubomir A. Dourmishev¹, Karolina Lyubomirova²

¹ Department of Dermatology and Venereology, Medical University of Sofia, Sofia, Bulgaria

² Faculty of Public Health, Medical University of Sofia, Sofia, Bulgaria

Corresponding author: Lyubomir A. Dourmishev, Department of Dermatology and Venereology, Medical University of Sofia, 1 St Georgi Sofijski St., 1431 Sofia, Bulgaria; E-mail: l_dourmishev@yahoo.com; Tel.: +359 2 9230 438

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Abstract

Introduction: Treatment with ultraviolet light is a well-established and effective treatment option for mild to moderate psoriasis. The aims of the study were to measure the psoriasis area and severity index (PASI) reduction after narrow-band ultraviolet B (NB UVB) therapy, to evaluate the quality of life before and after treatment using the dermatology life quality index (DLQI), and to compare the clinical effectiveness with quality of life improvement.

Material and methods: Twenty two patients (13 male and 9 female patients), aged between 21 to 70 years (mean age 40±14.65 years) were enrolled in the study. NB UVB treatment was performed with 10 to 25 (mean 18.5; SD 3.39) procedures with cumulative doses of 5 to 19.4 J/cm². The baseline median PASI score was 20.027 which decreased after therapy to 11.11. More than PASI 50% reduction was achieved in 40.91% of the patients after at least 6 weeks of treatment and the results are highly statistically significant. Quality of life (QoL) assessed using DLQI was found moderately affected by disease pretreatment. NB UVB therapy significantly increased DLQI score in spectrum of 'symptoms and feelings' and 'treatment'.

Discussion: The PASI score reduction that we observed after NB-UVB therapy is consistent with the results reported by other authors. Baseline DLQI scores were indicative of moderate QoL impairments associated with disease. At the same time, the reduction of the DLQI index corresponding to improved QoL correlated with the objective clinical symptom assessment.

Conclusion: Our data suggest that DLQI and PASI indexes are important complementary methods for comprehensive health assessment of patients with psoriasis.

Keywords

DLQI, NB UVB therapy, PASI, psoriasis, quality of life

INTRODUCTION

Psoriasis is a chronic systemic disorder affecting 1% to 4% of the worldwide population.¹ Patients with mild disease are not systemically treated and usually improve with only

local treatment or phototherapy. In moderate or severe cases, in which the psoriasis area and severity index (PASI) exceeded 10, the disease may not only affect the skin and joints but also increase the risk of cardiovascular and metabolic diseases.¹ Such patients require phototherapy or sys-

temic agents (e.g., cytostatics, oral retinoids, fumaric esters, or biologicals) to maintain adequate control over their disease.²

The treatment with ultraviolet light is a well-established and effective treatment option for mild to moderate psoriasis. Current phototherapy includes: broadband UVB (290–320 nm), narrow band UVB (NB-UVB) with 311–313 nm light, 308-nm excimer laser, UVA (340–400 nm), psoralen plus UVA (PUVA) photo-chemotherapy, but the majority of psoriasis patients are treated with NB-UVB procedures.³

Most of the patients with psoriasis experience frequent relapses, which significantly impacts the social and relational ways of living. Often, they are fearful of the long-term consequences of the disease, frustrated by the long process toward diagnosis, and concerned by the side effects associated with some medications. Dermatologists usually focus on the degree of skin inflammation and assessing the physical extent of psoriasis, they frequently neglect the psychosocial disability. Moreover, the extent of skin affection does not always correlate with the quality of life of patients.⁴

The aims of this study were to measure clinical improvement after NB UVB therapy by PASI score reduction; to evaluate the QoL of patients with psoriasis before and after treatment using the DLQI index, and finally to compare the clinical effectiveness by PASI score reduction with quality of life improvement objectified with DLQI index.

PATIENTS AND METHODS

Twenty-two (13 male and 9 female) patients, aged between 21 to 70 years (mean age 40 ± 14.65 years) were enrolled in the study. Seventeen patients were diagnosed as plaque type psoriasis and 5 had eruptive type. All patients in the cohort had moderate to severe psoriasis with pre-treatment PASI score more than 10 and the diagnosis in all of them was clinically and histologically confirmed.

Phototherapy

NB UVB treatment was performed using TL-01 lamps device (UV 5002 Therapy System, Waldmann GmbH & Co, Germany). The initial dose was 70% of the minimal erythema dose (MED). Procedures were performed four times weekly for 6 to 9 weeks, according to the therapeutic regimens in the Department of Dermatology, Medical University of Sofia. Five patients had skin phototype II, 13

had phototype III and 4 had phototype IV. The maximum dose was achieved according to skin type up to 2.4 J/cm² for Fitzpatrick skin type IV. Patients received no other systemic treatment and the topical medications include emollients, keratolytics, local corticosteroids and calcipotriol for scalp and folds.

Psoriasis severity assessment

The severity of psoriasis was objectified by Psoriasis Area and Severity Index⁵ according the following formula:

$$\text{PASI} = 0.1 \times (\text{Eh} + \text{Ih} + \text{Dh}) \times \text{Ah} + 0.3 \times (\text{Et} + \text{It} + \text{Dt}) \times \text{At} + 0.2 \times (\text{Ea} + \text{Ia} + \text{Da}) \times \text{Aa} + 0.4 \times (\text{El} + \text{Il} + \text{Dl}) \times \text{Al}$$

where E stands for erythema, I - for infiltrate, D - for desquamation, A - for area, h - for head, t - for trunk; a - for upper extremities, and l - for lower extremities. PASI scores were assessed before and after phototherapy.

QoL was assessed with dermatology-specific instrument Dermatology Life Quality Index questionnaires, available online free of charge for academic use.⁶ Patients answered six groups of questions: i) symptoms and feelings; ii) daily activities; iii) leisure; iv) work and school; v) personal relationships; and vi) treatment; choosing 4 possible grades: 0 - no affection, 1 - mild affection, 2 - moderate affection, 4 - severe/very severe affection. The overall summary score aggregates the score of each item and ranges between 0 (the best) and 30 (the worst) score.

Statistical analysis

Mean of variables was analysed with the paired t-test using GNU PSPP 1.0.1 software. P value of < 0.05 at a CI of 95% was taken as statistically significant.

RESULTS

Forty-one patients were initially screened. However, only 22 gave consent to undergo treatment or DLQI questioning and completed the study, hence the analysis was done on 22 patients. All patients were treated with NB UVB, 10 to 25 (mean 18.5; SD 3.39) procedures and received cumulative doses of 5 to 19.4 J/cm².

PASI scores: The mean PASI scores before and after treatment are presented in **Table 1**. The baseline median PASI score was 20.027, dropping down to 11.11 after thera-

Table 1. The mean of PASI scores before and after NB UVB treatment

	PASI (n=22)				
	Mean	SD	lower CI 95%	upper CI 95%	p
Pretreatment (baseline)	20.03	5.51	7.40	10.43	< 0.0001
Post treatment	11.11	3.88			



Figure 1. A. A patient before treatment. B. The same patient after 18 procedures of NB UVB treatment showing PASI 75% reduction.

py. 40.91% of patients reduced the PASI score by more than 50% (**Fig. 1**) after 6 to 9 weeks and 19 procedures of NB UVB on average. PASI score reduction after treatment was found statistically significant. Moreover, all patients tolerated treatment well without any serious adverse events and only 3 patients complained of transitional erythema, 2 patients reported burning sensation and one patient felt pain.

DLQI scores: QoL assessed with the DLQI questionnaire was found moderately affected by disease pre-treatment. NB UVB therapy led to a significant decrease of DLQI score. The tendency was more prominent in 'symptoms and feelings' and 'treatment' aspects (**Table 2**).

DISCUSSION

UVB phototherapy is found favourable first-line treatment

for moderate or severe psoriasis.⁷ The method has shown excellent results in the medical literature, reporting a reduction of skin lesions without adverse effects from immune suppressors, retinoids or biological medications.^{2,8} Most studies indicate that NB-UVB is more effective than sunlight or broadband UVB as a monotherapy of psoriasis⁹ since it is efficient in higher MED doses¹⁰. NB-UVB has the same or better therapeutic effectiveness¹¹ reaching clearance in 65% to 80% of patients¹² with better safety profile compared with PUVA¹³.

The PASI score reduction that we observed in our patients after NB-UVB treatment is compatible with the results reported by other authors.¹⁴⁻¹⁶ Some studies, however, showed even higher PASI index reduction.^{11,17} According to Hönigsmann et al. phototherapy can achieve a PASI score reduction by 75% on average in 75% of patients after 6 weeks.¹⁸

Table 2. Dermatology Life Quality Index in patients with psoriasis vulgaris before and after NB UVB therapy

DLQI	Pretreatment (baseline)		Post treatment		p
	n	SD	n	SD	
Symptoms and feelings (0 - 6)	3.55	± 0.86	1.50	±0.74	<0.0001
Daily activities (0 - 6)	1.77	± 0.97	1.55	± 0.67	N.S.*
Leisure (0 - 6)	0.86	± 0.64	0.77	± 0.61	N.S.*
Work and school (0 - 3)	0.77	± 0.75	0.73	± 0.55	N.S.*
Personal relationships (0 - 6)	0.86	± 1.08	0.64	± 0.85	N.S.*
Treatment (0 - 3)	1.05	± 0.65	0.68	± 0.48	<0.05
Total	8.86	± 2.3	5.86	± 1.52	<0.0001

*N.S. – non significant difference

The diversity of published results could be explained with the heterogeneity of the treated patients (sex, age, phototype, clinical variants of psoriasis, pre-treatment disease severity) and the differences in treatment protocol (number and frequency of exposures, dose enhancement). Hence the effectiveness of phototherapy mentioned in literature is compatible or even more favourable than the results of treatment with other systemic medications.⁸

As a dermatology-specific measure of quality of life, the Dermatology Life Quality Index has been widely used not only in psoriasis but in various skin diseases as well.⁶ Baseline DLQI scores are indicative of moderate QoL impairments associated with the disease, similar to those reported by other researchers.^{5,16,19-21} Phototherapy led to a significant decrease of DLQI score for 'symptoms and feelings' and 'treatment' subgroup that corresponds to results reported by other authors.²¹ The QoL affection in the 'treatment' domain is expected since psoriasis is a chronic course skin disease that requires long-term management.

The reduction in the DLQI index corresponding to an improved QoL correlates with the objective clinical symptom assessment. The significant positive changes in the quality of life observed in psoriasis (pain, burning, itching) and emotions (disturbance and anxiety) observed by us have been reported by other authors as well.^{16,21} In other areas, such as 'daily activities', 'work and school', and 'personal relationships' the changes were statistically not significant.

CONCLUSIONS

Our data suggest that DLQI in combination with PASI index are important, mutually complementary methods for comprehensive health assessment of patients with psoriasis. Modern medicine must consider the potential of the therapy not only for restoring physical health or controlling episodes of exacerbation in chronic illness but also for improving emotions and overall quality of life of patients.

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Корреляция между активностью заболевания и качеством жизни у пациентов с псориазом после узкоспектральной (селективной) UVB -фототерапии

Любомир А. Дурмишев¹, Каролина Любомирова²

¹Кафедра дерматологии и венерологии, Медицинский университет - София, София, Болгария

²Факультет общественного здравоохранения, Медицинский университет - София, София, Болгария

Адрес для корреспонденции: Любомир А. Дурмишев, Кафедра дерматологии и венерологии, Медицинский университет - София, ул. „Георги Софийски” №1, 1431 София, Болгария; E-mail: l_dourmishev@yahoo.com; Тел.: +359 2 9230 438

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Абстракт

Введение: Лечение ультрафиолетовым светом является признанным и эффективным методом лечения псориаза от лёгкой до умеренной степени тяжести. Цель исследования состояла в том, чтобы измерить площадь, покрытую псориазом и снижение в индексе тяжести заболевания (PASI) после узкоспектральной фототерапии UVB (NB UVB), чтобы оценить качество жизни до и после лечения с помощью дерматологического индекса для качества жизни (DLQI) и сравнить клиническую эффективность с улучшением качества жизни.

Материалы и методы: В исследовании приняло участие 22 пациента (13 мужчин и 9 женщин) в возрасте от 21 до 70 лет (средний возраст составлял $40 \pm 14,65$ лет). Лечение NB UVB проводилось в течение 10-25 процедур (в среднем 18,5; SD 3,39) с кумулятивной дозой от 5 до 19,4 Дж / см². Средний начальный результат PASI составил 20,027, который снизился до 11,11 после терапии. 40,91% пациентов достигли снижения PASI более чем на 50% по меньшей мере через 8 недель, и результаты являются высоко статистически значимыми. Было установлено, что повторное лечение заболевания умеренно влияет на качество жизни, измеряемое с помощью DLQI. NB UVB терапия значительно повысила результат DLQI в областях «симптомы и чувства» и «лечение».

Обсуждение: Снижение показателя PASI, наблюдаемое после NB-UVB, соответствует результатам, обнаруженным другими авторами. Первоначальные результаты DLQI свидетельствовали об умеренном ухудшении качества жизни, связанного с заболеванием. В то же время снижение индекса DLQ, соответствующего улучшению качества жизни, коррелировало с объективной оценкой клинических симптомов.

Заключение: Наши данные показывают, что индексы DLQI и PASI являются важными дополнительными методами для общей оценки состояния здоровья пациентов с псориазом.

Ключевые слова:

NB UVB терапия, качество жизни, псориазис, PASI, DLQI