

Narrow Band Versus Broad Band Ultraviolet B Radiation in the Treatment of Patients with Generalized Lichen Planus

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ABSTRACT

Objective: To compare the efficacy of Narrow Band versus Broad Band Ultraviolet B Radiation in the treatment of generalized Lichen Planus.

Subjects: Forty patients suffering from Generalized Lichen Planus. Patients were assigned randomly into 2 groups; Group (A) was exposed to narrow band ultraviolet B (311-313nm), three session weekly for 10 weeks with a total of 30 sessions, and Group (B) was exposed to broad band ultraviolet B (290-325nm), three session weekly for 10 weeks with a total of 30 sessions also. Intensity of pruritus was recorded before and after therapy using Visual Analogue Scale. The thickness of skin was assessed by ultrasonography and the psychosocial impact of disease and treatment was evaluated using the Dermatology Life Quality Index. **Results:** The results of study showed that there were significant differences between narrow band and broad band as regard to pruritus intensity, quality of life score, epidermal thickness as P value < 0.005, 0.001, 0.043 respectively). **Conclusion:** The results of present study provides evidence that narrow band ultraviolet B is superior to broad band ultraviolet B as regard to the efficacy of the treatment of generalizd lichen Planus patients.

Key words: Narrow Band Ultraviolet B Radiation, Broad Band Ultraviolet B Radiation, Generalized Lichen planus, Pruritus, Skin thickness, Ultrasonography. Visual analogue Scale, Dermatology Life Quality Index.

INTRODUCTION

Lichen planus (LP) is a chronic, inflammatory, autoimmune disease that affects the skin, oral mucosa, genital mucosa, scalp, and nails. LP lesions are described using the six P's (planar [flat-topped], purple, polygonal, pruritic, papules, plaques). Onset is usually acute, affecting the flexor surfaces of the wrists, forearms, and legs⁵. The lesions are often covered by lacy, reticular, white lines known as Wickham striae. On the skin, the disease presents as multiple papules, which can be localized or

generalized, that are often extremely itchy. Skin lesions may be disfiguring, and involvement of the oral mucosa or genital mucosa in severe cases may be debilitating and affecting quality of life²⁸.

Lichen planus (LP) most commonly affects middle-aged adults of both sexes, with a slight predominance in women. Lichen planus in children is rare. While some patients may be asymptomatic, most experience intense pruritus, a hallmark of lichen planus. The cause of lichen planus is not known; however, there are cases of lichen planus-type rashes (known as lichenoid reactions) occurring as allergic reactions to medications for high blood pressure, heart disease and arthritis. These lichenoid reactions are referred to as lichenoid mucositis (of the mucosa) or dermatitis (of the skin)¹³. Lichen planus has been reported as a complication of chronic hepatitis C virus infection and can be a sign of chronic graft-versus-host disease of the skin⁴.

The pathogenesis of LP includes cell mediated immune mechanisms and neuroendocrine dysregulations mainly involving glucocorticoids. Although there conflicting results regarding immunopathogenesis of LP, the major concept is that lichen planus is a T cell mediated autoimmune disorder with a lymphotoxic processes against epidermal basal layer as an apoptotic mechanism^{16,20}.

Lichen planus (LP) is one of the psychodermatological disorders affecting 1-2% of the general population,. It is an obstinate disorder baffling not only the patients but also the practitioner. LP is classified as an autoimmune disorder which may be precipitated or exacerbated by psychosocial stressors. Patients with LP experience stressful events before the onset of the disease^{22,23}.

Lichen planus (LP) manifested as itchy, reddish purple bumps affecting any part of the skin with predilection for inner sides of wrists, forearms, lower legs, genitalia, and to a lesser

extent scalp, lower back or nails. Hypertrophic lichen planus is a variant of the disease appearing as thick, reddish– brown lesions covered with scales, mainly appearing on the shin³⁸.

Currently there is no cure for lichen planus but there are certain types of medicines used to reduce the effects of the inflammation. Topical corticosteroids are first-line therapy for mucosal erosive lichen planus. Systemic corticosteroids should be considered for severe, widespread lichen planus involving oral, cutaneous, or genital sites. Referral to a dermatologist for systemic therapy with acitretin (an expensive and toxic oral retinoid) or an oral immunosuppressant should be considered for patients with severe lichen planus that does not respond to topical treatment^{9,11}.

Ultraviolet (UV) light is widely used by dermatologists for skin conditions such as lichen planus. The choice of UV over other forms of treatment depends on things such as a patient's age, disease, skin type, previous treatments and current medication. Phototherapy or light therapy involves regular, but brief exposure to UV light with specially designed light emitting equipment. UV light suppresses the immune system and reduces inflammatory responses by the body. The UV light therapies include standard broad-band UVB phototherapy, narrow-band UVB and photochemotherapy^{6,26}.

Narrowband UVB is the most common form of light therapy used to treat skin diseases. Narrow-band UVB light therapy uses a specific wavelength of 311 to 313 nm. This range of UV light is most beneficial for treatment of psoriasis and other skin conditions including eczema, vitiligo, and lichen planus. UVB phototherapy was formerly provided as a broadband source (290 to 320 nm). Broad band UVB radiation has been found to be effective in treating skin conditions that are caused by overactive immune cells in the skin, as it reduces their activity^{1,3,14}. The purpose of the study was to determine which band of UVB was more effective in the treatment of generalized lichen planus; narrow band or broad band?

PATIENTS AND METHODS

Subjects

Fifty patients (38 female & 12 male) with generalized lichen planus were recruited from the outpatient Clinic of Dermatology, EL-Matria Teaching Hospital, Cairo, Egypt, from October 2009 to September 2011. Subjects who fulfilled the following criteria were eligible for enrollment in the study; (1) The patient's age was ranged from 19-60 years. (2) Elapsed time since the beginning of the LP disease was less than 2 years. (3) Skin type III & IV included in the study. (4) Areas included are wrist, forearm, leg. (5) The history & clinical examination were done for all patients. (6) All subjects were participated in single blind, randomized, controlled trial.

Reasons for exclusion were; patients had a history of photosensitivity, Cataract, skin malignancy. Pregnant or lactating woman. Patients receiving immunosuppressive or immunomodulatory treatments or any kind of glucocorticoids, phototoxic drug were either eliminated or asked to discontinue their treatment for a minimum of 1 month before entering the study. Other Types of Lichen planus, Participation in another clinical research study within the last 30 days.

Intensity of pruritus was recorded before and after therapy using visual analogue scale (VAS). The thickness of skin was assessed by ultrasonography (US). and the psychosocial impact of disease and treatment was evaluated using the Dermatology Life Quality Index (DLQI). The patients in both groups were assessed for their skin phototype.

After initial assessment; the patients were assigned randomly into 2 groups; Group (A) was exposed to narrow band ultraviolet B 311-313nm (NB-UVB) therapy, three session weekly for 10 weeks with a total of 30 sessions, and Group (B) was exposed to broad band ultraviolet B 290-325nm (BB-UVB) therapy, three session weekly for 10 weeks with a total of 30 sessions.

The experimental protocol was explained in details for each patient before the initial assessment and signed informed consent was obtained before enrollment in the study. At the time of this study, Human Research Ethics Committee had not been established in

the faculty of physical therapy, but the study was approved by the departmental council of physical therapy for surgery, faculty of physical therapy, Cairo University.

Primary Outcome Measures

Assessment of pruritus

a 100-mm visual analog scale was used to assess the severity of pruritus pre and post treatment. This scale has been extensively used and has been demonstrated to be a valid instrument for the measurement of intensity of pruritus. A sheet of paper, a horizontal line on it with the left end marked as no symptoms and the right end marked as worst imaginable symptoms as well as the mark indicating the midpoint was presented to the patient. The patient was asked to draw a vertical line to indicate the intensity of the symptoms scale with respect to a composite of burning, pain over the time period since last measurement. The length from the left end to the vertical mark made by the patient was measured in millimeters. At the baseline assessment, symptom intensity over the previous one week was recorded. On follow-up assessment use the previous markings as the reference^{30,32}.

Assessment of impact of disease on the quality of life

Dermatology Life Quality Index (DLQI) was originally developed as a brief questionnaire for routine clinical use to assess the limitations related to the impact of skin disease and has been shown to be responsive to clinical changes in a study of dermatology. Subjects were asked to complete the DLQI pre and post treatment. It consists of ten items and covers six domains including symptoms and feelings, daily activities, leisure, work and school, personal relationships, and treatment. Response categories include "not at all," "a little," "a lot," and "very much," with corresponding scores of 0, 1, 2, and 3 respectively; the response "not relevant" (and unanswered items) are scored as "0". A total score is calculated by summing the score of all items, resulting in a maximum score of 30 and a minimum score of 0. Scale scores are calculated for each domain. Higher scores indicate poorer health related quality of life HRQL (i.e., more impairment)^{8,21,25}.

Secondary Outcome Measures

Assessment the thickness & echogenicity of skin

Ultrasound seems to be a very promising tool for diagnosis and follow up of treatment of different of skin diseases. Dermatosonography or the use of high frequency ultrasound for the examination of human skin is now a fully developed matured technique offering a wide range of possibilities in clinical dermatology. The major advantages of this technique are its non invasive, non-ionizing nature, provides important diagnostic information and its relatively low cost when compared to x-ray, CT and scintigraphic scanning techniques. Dermatological ultrasonography is primarily carried out with high frequency scanners of 20-50 MHz^{17,24,35}.

Ultrasound imaging is based on the different acoustic properties of different tissues. A Derma Scan C Ver. 3 (Cortex Technology ApS, Hadsund, Denmark) was used to assess the thickness of skin as well as the echogenicity in this study. During measurement; the patient was usually in a supine position. It was necessary to remove any air bubble prior to examination by immersing the tip of the probe in saline and massaging the tip very gently with a bent swab. When imaging, the transducer was positioned perpendicular to the skin to avoid obliquity and to prevent errors during determination of skin thickness. A thick layer of ultrasound gel is applied to improve near field visibility and avoid tissue compression, which would alter measurements of tissue thickness. Measurements were done pre and post treatment. An improvement occur after treatment if the thickness of skin decrease and echogenicity increase^{31,36}.

Treatment protocol

The irradiation source used in this study, DualLight™ (TheraLight, Inc. Carlsbad, CA 92008, USA), was a high-pressure mercury lamp capable of emitting either BB-UVB or NB-UVB via a switch on the hand-piece. The BB-UVB spectral output of this light source includes peaks at 302 nm and 312 nm, with an average weighted erythral wavelength of 304 nm, while that of NB-UVB has only one major peak at 313 nm and an average weighted erythema of 311 nm. The high output of this

device allows irradiation of 100 mJ/cm² of UVB to occur within approximately 0.7 sec. UV radiation is delivered through a square aperture, measuring 1.9 × 1.9 cm.

Skin type was determined by using Fitzpatrick's classification Table (1). The minimal Erythema Dose (MED) was determined according to the skin type. Minimal erythema doses (MEDs) of both NB-UVB and BB-UVB were determined prior to start of irradiation. The DuaLight™ system is equipped with an MED determination function, with set increasing doses of light for each skin type. This allows one to deliver 6 different doses of light within a period of 1–2 min. UV doses were increased by 10% if no

erythema or discomfort developed from the prior irradiation, 5% with minor erythema not lasting longer than 24 h, and no increments if the erythema lasted more than 24 h. Ask patient to wear protective goggles. At the day of session, ask the patient to not put perfumes, deodorants, aftershave lotions or other cosmetic products. Some of these contain additives, which make the skin more sensitive to light as this may cause burn. Treatments were to be skipped if significant erythema or blistering developed. Therapy was administered 3 times a week, on nonconsecutive days. Treatment was terminated upon attaining clinical resolution of lesions, or after 10 wk of daily treatment^{12,39}.

Table (1): Fitzpatrick Classification Scale.

Skin Type	Skin Color	Characteristics
I	White; very fair; red or blond hair; blue eyes; freckles	Always burns, never tans
II	White; fair; red or blond hair; blue, hazel, or green eyes	Usually burns, tans with difficulty
III	Cream white; fair with any eye or hair color; very common	Sometimes mild burn, gradually tans
IV	Brown; typical Mediterranean caucasian skin	Rarely burns, tans with ease
V	Dark Brown; mid-eastern skin types	very rarely burns, tans very easily
VI	Black	Never burns, tans very easily

Statistical Analysis

Student t test was used to assess the difference between the studied parameters (Age, duration of disease, thickness of skin) between both groups while paired t test was used to analyze these parameters within the group. Skin type, affected areas, previous therapy, pruritus intensity and quality of life score between the two groups were compared using the Mann-Whitney U test, and compared in time within each of the two groups using the Wilcoxon test. Data were coded and entered to a statistical package of social science (SPSS, version 16)²⁷. All P values less than 0.05 were considered to be statistically significant.

RESULTS

Figure 1, presents the flow chart for patients throughout each stage of the study. A

total of 50 patients was screened for eligibility, and 46 subjects fulfilled the inclusion criteria and were initially randomized into two groups of equal number. A total of 40 subjects completed the study. Six patients reported marked erythema, pruritus and poor adherence to the treatment (3 in the NBUVB group and 3 in the BBUVB group). A participant with poor adherence to the program (defined as missing more than three consecutive sessions or more than 20% of all sessions) were excluded from the study, and their data were not used in the statistical analysis. Though data are available for 40 subjects; NBUVB group (n=20), and BBUVB group (n=20) to the final analysis. Table 2 presents the characteristics of the patients completing the study. Both groups were comparable at the baseline regarding to the demographic and clinical characteristics.

Table (2): Characteristics of the patients.

Variables	NBUVB group		BBUVB group		P values
Age (years) (mean \pm SD)	44.00 \pm 10.27		44.55 \pm 8.47		0.854*
Duration of disease (month) (mean \pm SD)	15.10 \pm 4.37		15.65 \pm 5.28		0.722*
Skin Type (III /IV)	Type III	11(55%)	Type III	8(40%)	0.348*
	Type IV	9(45%)	Type IV	12(60%)	
Previous therapy (systemic corticosteroid-PUVA)	SC	16(80%)	SC	17(85%)	0.681*
	PUVA	4(20%)	PUVA	3(15%)	
Sex (Female –Male)	Female	13(65%)	Female	15(75%)	0.496*
	Male	7(35%)	Male	5(25%)	
Affected Areas (hand-wrist-leg)	hand	12(60%)	Hand	10(50%)	0.567*
	wrist	3(15%)	Wrist	4(20%)	
	leg	5(25%)	Hand	6(30%)	
Initial pruritus intensity (median \pm SD)	8.70 \pm 0.564		8.80 \pm 0.529		0.745*
Initial QOL score (median \pm SD)	25.50 \pm 3.63		25.00 \pm 3.34		0.634*
Intial epidermal thickness (mean \pm SD)	1.34 \pm 0.101		1.32 \pm 0.112		0.616*

* No significant differences between groups pre treatment. SD; standard deviation

50 patients with generalized lichen planus were recruited

Eligible (n=46)

Allocation

NBUVB Group

Allocated to intervention (n=23)

BBUVB Group

Allocated to control (n=23)

NBUVB Group

Continue up to analysis (n=20)

3 excluded due to (marked Erythema and pruritus= 1, poor adherence =2)

BBUVB Group

Continue up to analysis (n=20)

3 excluded due to (poor adherence= 3)

Analysis

BBUVB Group

Complete Analyzed (n=20)

NBUVB Group

Complete Analyzed (n=20)

Fig. (1): Flow of participants through the study.

Pruritus Intensity Measurement:

Pruritus intensity measurements were summarized in Table 3, as determined by Visual Analogue Scale (VAS). The reductions of pruritus intensity were observed in NBUVB group and BBUVB group from initial (W0), to

subsequent measurement at 10 weeks (W10). Significant reductions were found between two groups (2.30 \pm 1.101 versus 3.15 \pm 1.37, P<0.05) and percentage of reduction was 73%, 64%, for NBUVB group and BBUVB group respectively.

Table (3): Pruritus Intensity Measurement.

	Within groups		Between groups post
	NBUVB Group	BBUVB Group	
Initial evaluation W0	8.70 ±0.564	8.80 ±0.529	P value 0.007*
Post-treatment evaluation W10	2.30±1.101	3.15±1.37,	
P value pre and post within each group	0.000*	0.000*	
% of Reduction	73%	64%	

*highly significant difference

Quality of life score Measurement:

Quality of life score measurements were summarized in Table 4, as determined by Dermatology Quality of life Index (DLQI). In DLQI, higher scores indicate more impairment and the reduction of scores indicate improvement. The reductions of quality of life score measurement were observed in NBUVB

group and BBUVB group from initial (W0), to subsequent measurement at 10 weeks (W10). Significant reductions were found between two groups (2.30±1.101 versus 3.15±1.37, P<0.05) and percentage of reduction was 92%, 76%, for NBUVB group and BBUVB group respectively.

Table (4): Quality of life score Measurement.

	Within groups		Between groups post treatment
	NBUVB group	BBUVB Group	
Initial evaluation(W0)	25.50 ±3.63	25.00 ±3.34	P value 0.001*
Post-treatment evaluation (W10)	2.00±1.82	6.00±3.55	
P value pre and post within each group	0.000*	0.000*	
% of Reduction	92%	76%	

*highly significant difference

Measurement of skin thickness and echogenicity:

Mean epidermal thickness was assessed and summarized in Table 5, as determined by ultrasonography but the mean dermal thickness of the lesional skin could not be detected in all cases because of sound shadowing. In both groups the epidermal thickness was increased before the treatment however decreased after the treatment in both groups. The decrease in epidermal thickness indicate an improvement. The reductions of epidermal thickness measurement

were observed in NBUVB group and BBUVB group from initial (W0), to subsequent measurement at 10 weeks (W10). Significant difference was found between two groups (0.49±0.22 versus 0.52±0.55, P<0.05) and percentage of reduction was 63% , 60%, for NBUVB group and BBUVB group respectively. As regard to echogenicity, before the treatment in both group the echogenicity was decreased but after the treatment the echogenicity increased in both groups Figure (5).

Table (5): Epidermal Thickness Measurement.

	Within groups		Between groups post treatment
	NBUVB group	BBUVB Group	
Initial evaluation(W0)	1.34 ±0.101	1.32 ±0.112	P value 0.043**
Post-treatment evaluation (W10)	0.49±0.22	0.52±0.55,	
P value pre & post within each group	0.000*	0.000*	
% of Reduction	63%	60%	

* Highly Significant difference

** Significant difference

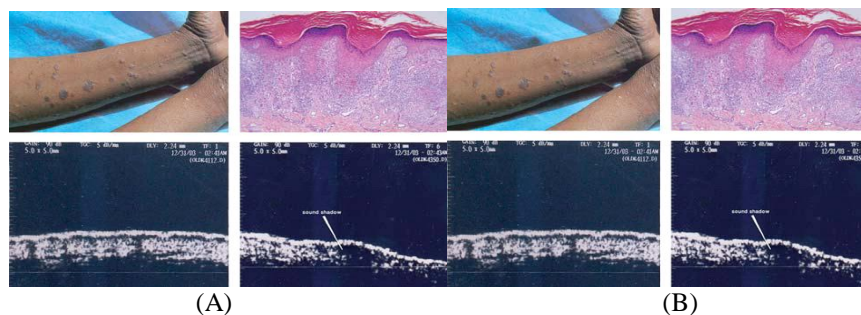


Fig. (5): A- Showed thick epidermis and a dermal sound shadow before treatment. B- Showed normalized epidermis and dermis after treatment.

DISCUSSION

Management of lichen planus has been less than satisfactory. Conventional therapy has not been particularly successful, and prolonged use of topical corticosteroids and systemic immunosuppressant drugs (eg, corticosteroids, cyclosporine, azathioprine) can result in severe cutaneous and systemic effects¹⁰.

Phototherapy has been used in the treatment of LP for many years. Although most patients who are treated with phototherapy receive narrow-band UVB therapy. No controlled randomized trials have been performed with UVB therapy, Only several case series have suggested improvement and even remission of disease in up to 85% of patients in a recent series with therapy three to four times per week, with a total of approximately 30–40 treatments.

The aim of this randomized controlled study was to test and compare the efficacy of NBUVB versus BBUVB in the treatment of generalized LP. Forty patients with generalized LP are randomized into two groups; Group (A) was exposed to NBUVB (311-313nm), three session weekly for 10 weeks with a total of 30 sessions, while Group (B) was exposed to BBUVB (290-325nm), also three session weekly for 10 weeks with a total of 30 sessions.

The results of study showed that there were significant differences pre and post treatment within each group; NBUVB and BBUVB As regard to pruritus intensity, Quality of life score and epidermal thickness as P value <0.001 and this confirm the efficacy of UVB regardless the wave length used in the treatment of generalized LP. Early remission of pruritus in this work with decreased VAS score could be attributed to mast cell induced

apoptosis by UVB. Reduced itching severity also resulted in improved DLQI scores. The mechanisms leading to improvement of LP with UVB remains hypothetical. It could be related to photo-induced apoptosis of T cells or to anti-inflammatory and immunosuppressive effects of UVB.

The results of study showed that there were significant differences between NBUVB and BBUVB as regard to pruritus intensity, QOL score, epidermal thickness as P value < 0.007, 0.001, 0.043 respectively).

In assessment of skin thickness before the treatment, epidermal thickness was high and decreased after the treatment in both groups while the dermal thickness couldn't be assessed before the treatment because of sound shadow appear which explain the dense inflammatory infiltrate that occur in LP. As regard to the echogenicity; before the treatment the echogenicity reduced in upper dermis and increased after the treatment in both groups. These results supported by Jemec et al.,¹⁷ who explained the reduced echogenicity of the upper dermis in lichen planus by infiltration with inflammatory cells. Upon sonographic follow-up, Korting et al.,¹⁹ observed increased echogenicity of the dermis after treatment of lichen planus by locally with corticosteroid.

Table 6: represent the clinical response in both groups after 15 session and after 30 session. After 15 sessions, the clinical response in NBUVB, CR was recorded in 25% (5 patients), PR in 35% (7 patients), QR in 30% (6 patients) and NR in 10% (2 patients) while in BBUVB, the clinical response; CR was recorded in 20% (4 patients), PR in 20% (4 patients), QR in 30% (6 patients) and NR in 30% (6 patient).

After 30 sessions, the clinical response in NBUVB, CR was recorded in 60% (12 patients), PR in 25% (5 patients), QR in 10% (2 patients) and NR in 5% (1 patient) while in

BBUVB, the clinical response; CR was recorded in 40% (8 patients), PR in 30% (6 patients), QR in 20% (4 patients) and NR in 10% (2 patients).

Table (6): The clinical response in both groups.

Clinical response	After 15 sessions				After 30 session			
	NBUVB		BBUVB		NBUVB		BBUVB	
	n	%	n	%	n	%	n	%
CR	5	25%	4	20%	12	60%	8	40%
PR	7	35%	4	20%	5	25%	6	30%
QR	6	30%	6	30%	2	10%	4	20%
NR	2	10%	6	30%	1	5%	2	10%

CR complete response, PR partial response, QR poor response, NR non response

These results coincided with that reported by Habib et al.,¹² of 55% CR reported after 30 settings, and Saricaoğlu et al.,³⁴ of 50% CR reported after 30 sessions, raised to 80% at 51 settings with total cumulative dose of 17.7 J/cm² and confirms presence of significant correlation between sessions number and improvement of response.

Also the results of the study supported by Hayriye Saricaoğlu et al.,¹⁵ who concluded that clinical improvements observed in their study as well as the potential advantages of NBUVB imply that it is an inevitable treatment alternative for resistant cases of LP.

A computerized data bank search and chart review was done by Alexandra Wackernagel et al.,² to compare Psoralen plus UVA vs. UVB-311 nm for the treatment of lichen planus and they concluded that Even though oral PUVA produces a better initial clinical response rate, both oral PUVA and UVB-311 nm are effective treatments for lichen planus that produce similar long-term outcomes.

In a retrospective study¹²; Twenty patients suffering from disseminated cutaneous lichen planus, treated with narrow band phototherapy. UVB were applied three times weekly using a Philips TL01 cubicle (311-313 nm). The results of that study showed that complete response was obtained in 11 out of the 20 patients (55%) and partial response in 4 (20%). Response was obtained with a median delay of 3 months, ranging from 2 to 6 months, following a median of 30 sessions (12 to 50) and accumulated dose of UVB of 36 +/- 4.8 joules/cm².

A retrospective analysis²⁹ of 50 patients with generalized cutaneous lichen planus, treated by broad or narrow band UVB. Seven and 43 patients were treated by broad and narrow band UVB, respectively. Complete response was achieved in 70% and 85% of those patients respectively. The limitation of this study is that study is a retrospective non-randomized analysis.

Thilo et al.,³⁷ concluded that; in the treatment of most of nonpsoriatic conditions, NB UVB appears to be effective. Because NB UVB may have a wider indication spectrum, including AD, vitiligo, and early-stage T-cell lymphoma, and appears to be equally effective or even more effective than broadband UVB, a switch from broadband UVB to NB UVB seems to be justified.

A retrospective review³³ of 117 consecutive patients with vitiligo, pruritus, and other inflammatory dermatoses, excluding those with psoriasis who were treated with NB-UVB. The results showed that Approximately 80% of all patients showed improvement in their condition. NB-UVB phototherapy was well tolerated, with no serious adverse effects.

Diederer et al.,⁷ stated that narrowband UVB therapy for patients with early-stage mycosis fungoides is an effective treatment modality. It has several advantages over treatment with broadband UVB and PUVA. When treating patients with early-stage mycosis fungoides it may be beneficial to start with narrowband UVB therapy and, if there is progression or no response, switch to PUVA therapy.

Khurshid et al.,¹⁸ stated that NB-UVB has been shown to be superior for clearing

psoriasis and other inflammatory disorders compared with BB-UVB sources that emit over most of the UVB spectrum. Although BB-UVB produces a wide variety of cellular and immunosuppressive effects in skin. It has been suggested that the therapeutic effectiveness in inflammatory skin disorders could be mediated by the cytotoxic effects of UVB on infiltrating lymphocytes.

Conclusion

The results of present study and the results of previous studies provides evidence that the NBUVB is superior to BBUVB as regard to the efficacy of treatment of generalizd lichen Planus.

REFERENCES

- 1- Akar, A., and Tunca, M.: Broadband targeted UVB phototherapy for localized vitiligo: a retrospective study. *Photodermatol Photoimmunol Photomed* 25(3): 161-163, 2009.
- 2- Alexandra Wackernagel, Franz J. Legat, Angelika Hofer, Franz Quehenberger, Helmut Kerl and Peter Wolf: Psoralen plus UVA vs. UVB-311 nm for the treatment of lichen planus; *Photodermatology, Photoimmunology & Photomedicine Journal*, 23(1): 15-19, 2007.
- 3- Asawanonda, P. and Kijluakiat, J.: Targeted broadband ultraviolet b phototherapy produces similar responses to targeted narrowband ultraviolet B phototherapy for vitiligo: a randomized, double-blind study. *Acta Derm Venereol* 88(4): 376-381, 2008.
- 4- Black, M.M., Champion, R.H., edBurton, J.L. and edEbling, F.J.G.: Lichen planus and lichenoid disorders. *Textbook of Dermatology*. 5th ed. Oxford, England Blackwell Scientific Publications; 1689-1690, 1992.
- 5- Boyd, A.S. and Neldner, K.H.: Lichen planus. *J Am Acad Dermatol.*; 25: 593-619, 1991.
- 6- Calzavara-Pinton, P.: Narrow band UVB (311 nm) phototherapy and PUVA photochemotherapy: a combination. *J Am Acad Dermatol*; 38: 687-690, 1998.
- 7- Diederer, P.V., van Weelden, H., Sanders, C.J., Toonstra, J. and van Vloten, W.A.: Narrowband UVB and psoralen-UVA in the treatment of early-stage mycosis fungoides: a retrospective study. *J Am Acad Dermatol.*; 48(2): 215-219, 2003.
- 8- Finlay, A.Y. and Khan, G.K.: Dermatology Life Quality Index (DLQI); a simple practical measure for routine clinical use. *Clin Exp Dermatol*; 19: 210-216, 1994.
- 9- Frieling, U., Bonsmann, G., Schwartz, T., Luger, T.A. and Beissert, S.: Treatment of severe LP with mycophenolate mofetil. *J Am Acad Derm*; 49: 1063-1066, 2003.
- 10- Griffiths, C.E.M., Camp, R.D.R. and Barker, J.N.W.N.: Psoriasis. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. *Rook's Textbook of Dermatology*. 7th ed. UK: Blackwell Publishing; 35: 1, 2004.
- 11- Gurbuz, Y., Abaydn, R., Muezzinoglu, B., Bilen, N. and Ozkara, S.K.: Altered cytokeratin expression in lichen planus. *J Eur Acad Dermatol Venereol*; 17: 235-236, 2003.
- 12- Habib, F., Stoebner, P.E., Picot, E., Peyron, J.L., Meynadier, J. and Meunier, L.: Narrow band UVB phototherapy in the treatment of widespread lichen planus]. *Ann Dermatol Venereol.*; 132(1): 17-20, 2005.
- 13- Halevy, S. and Shai, A.: Lichenoid drug eruptions. *J Am Acad Dermatol.*; 29: 249-255, 1993.
- 14- Hartmann, A. and Lurz, C.: Narrow-band UVB311 nm vs. broad-band UVB therapy in combination with topical calcipotriol vs. placebo in vitiligo. *Int J Dermatol*, 44(9): 736-742, 2005.
- 15- Hayriye Saricaoğlu, Serap Köran Karadogan, Emel Bülbül Başkan and Şükran Tunali: Narrowband UVB therapy in the treatment of lichen planus *Photodermatology, Photoimmunology & Photomedicine Journal*; 19(5): 265-267, 2003.
- 16- Irvine, C., Irvine, F. and Champion, R.H.: Long-term follow-up of lichen planus. *Acta Derm Venereol.*; 71: 242-244, 1991.
- 17- Jemec, G.B.E., Gniadecka, M. and Ulrich, J.: *Ultrasound in Dermatology. Part I: High frequency ultrasound*. *Eur J Dermatol*; 10: 492-497, 2000.
- 18- Khurshid, K.,1 Ullah I,2 Rani Z,3 Asad F,4 Aslam S,5 Pal S.S. Efficacy and Safety of Narrow Band UVB in the Treatment of Chronic Plaque Psoriasis; *Special Edition Annals*, 13-33, 2010.
- 19- Korting, H.C., Vieluf, D. and Kersch, M.: 0.25% prednicarbat cream and the corresponding vehicle induce less skin atrophy than 0.1% betamethasone 17-valerate cream and 0.05% clobetasol-17 propionate cream. *Eur J Clin Pharmacol*; 42: 159-161, 1992.
- 20- Lautenschlager, S., Eichmann, A., Fufli, T. and Itin, P.: Lichen ruber planus: epidemiology, course and therapy in 580 patients. *Dermatology.*; 193: 161, 1996.

- 21- Lewis, V. and Finlay, A.Y.: 10 years experience of the Dermatology Life Quality Index (DLQI). J Invest Dermatol Symp Proc; 9: 169-180, 2004.
- 22- Manolache, I., Seceleanu-Petrescu, D. and Benea, V.: Lichen planus patients and stressful events. J Eur Acad Dermatol Venereol; 22(4): 437-441, 2007.
- 23- Mansur, A.T., Kilic, Z. and Atalay, F.: Psychological evaluation of patients with lichen planus; Dermatol Psychosom; 5: 132-136, 2004.
- 24- McDicken, W.N.: Diagnostic ultrasonics: principles and use of instrumentation. New York: Churchill Livingstone, (10), 1991.
- 25- Morgan, M., McCreedy, R., Simpson, J. and Hay, R.: Dermatology quality of life scales—a measure of the impact of skin diseases. Br J Dermatol; 136: 202-206, 1997.
- 26- Morison, W.L.: Phototherapy and photochemotherapy: an update [review]. Semin Cutan Med Surg; 18: 297-306, 1999.
- 27- Noursis, M.J.: Statistical Package for Social Science (SPSS) Base 8.0 for Windows User's guide, Chicago, IL-SPSS, 1997.
- 28- Oliver, G.F. and Winkelmann, R.K.: Treatment of lichen planus. Drugs.; 45(1): 56-65, 1993.
- 29- Pavlotsky, F., Nathansohn, N., Kriger, G., Shpiro, D. and Trau, H.: Ultraviolet-B treatment for cutaneous lichen planus: our experience with 50 patients. Photodermatol Photoimmunol Photomed.; 24(2): 83-86, 2008.
- 30- Phan, N.Q., Reich, A., Blome, C., Augustin, M., Szepietowski, J.C. and Ständer, S.: Assessment of pruritus intensity: correlation between visual analogue scale (VAS), numeric rating scale (NRS) and verbal rating scale (VRS) in patients with chronic pruritus. Exp Dermatol; 19: 220, 2010.
- 31- Rallan, D. and Harland, C.C.: Ultrasound in dermatology-basic principles and applications. Clin Exp Dermatol; 28(6): 632-638, 2003.
- 32- Reich, A., Heisig, M. and Szepietowski, J.C.: Visual analogue scale as a validated assessment of pruritus intensity. Acta Derm Venereol; 89: 688, 2009.
- 33- Samson Yashar, S., Gielczyk, R., Scherschun, L. and Lim, H.W.: Narrow-band ultraviolet B treatment for vitiligo, pruritus, and inflammatory dermatoses. Photodermatology, Photoimmunology & Photomedicine, 19: 164-168, 2003.
- 34- Saricaoglu, H.D., Karadogan, S.K. and Baskan, E.B.: Narrow-band UVB therapy in treatment of lichen planus. Photodermatol Photoimmunol Photomed; 19: 265-267, 2003.
- 35- Schmid-Wendtner, M.H. and Burgdorf, W.: Ultrasound Scanning in dermatology. Arch Dermatol; 141(2): 217-224, 2005.
- 36- Serup, J., Keiding, J. and Fullerton, A.: High frequency ultrasound examination of skin; introduction and guide. In: Serup J, Jemec GBE, eds. Handbook of non-invasive methods and the skin. Boca Raton: CRC press, 239-256, 1995.
- 37- Thilo Gambichler, Frank Breuckmann, Stefanie Boms, Peter Altmeyer and Alexander Kreuter: Narrowband UVB phototherapy in skin conditions beyond psoriasis; Journal of the American Academy of Dermatology, 52(4): 660-670, 2005.
- 38- Usatine, R.P. and Tinitigan, M.: Diagnosis and treatment of lichen planus. Am Fam Physician.; 84(1): 53-60, 2011.
- 39- Weichenthal, M. and Schwarz, T.: Phototherapy: How does UV work? Photodermatol Photoimmunol Photomed; 21: 260-275, 2005.

الملخص العربي

المدى الضيق مقابل المدى الواسع من الأشعة فوق البنفسجية ب في علاج مرضى الحزام المسطح المعمم

يهدف هذا البحث إلى دراسة كفاءة المدى الضيق مقابل المدى الواسع من الأشعة فوق البنفسجية ب في علاج مرضى الحزام المسطح المعمم . وقد أجريت هذه الدراسة على أربعين مريضاً ممن يعانون من مرض الحزام المسطح المعمم . وقد تم تقسيمهم عشوائياً إلى مجموعتين متساويتين في العدد . المجموعة الأولى (أ) : تلقت الأشعة فوق البنفسجية ذات المدى الضيق (nm313-311) بواقع 3 جلسات أسبوعياً وذلك لمدة 10 أسابيع بينما المجموعة الثانية (ب) : تلقت الأشعة فوق البنفسجية ذات المدى الواسع (nm320-290) بواقع 3 جلسات أسبوعياً وذلك لمدة 10 أسابيع أيضاً . وقد تم قياس شدة الحكمة الجلدية ومعدل تأثير المرض علي الأعمال الحياتية وأيضاً قياس سمك الطبقة الخارجية للجلد قبل وبعد 10 أسابيع للمجموعتين . وقد أظهرت النتائج فروق ذات دلالة إحصائية بين المجموعتين بعد العلاج بالنسبة لشدة الحكمة ومعدل تأثير المرض علي الأعمال الحياتية وسمك الطبقة الخارجية للجلد ويمكن أن نستخلص أن كفاءة المدى الضيق من الأشعة فوق البنفسجية ب أكبر مقارنة بالمدى الواسع من الأشعة فوق البنفسجية ب في علاج مرضى الحزام المسطح المعمم .

الكلمات الدالة : الأشعة فوق البنفسجية ب ذات المدى الضيق ، الأشعة فوق البنفسجية ب ذات المدى الواسع ، الحزام المسطح المعمم ، شدة الحكمة الجلدية ، سمك الجلد ، دوبلر الموجات فوق الصوتية .