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IMPACT ON QUALITY OF LIFE IN VITILIGO PATIENTS TREATED BY NARROW BAND UVB PHOTOTHERAPY.

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ABSTRACT

Context: Vitiligo is a psychosocial problem which significantly affects quality of life in Indian scenario.
Aims: The purpose of this study is to estimate the efficacy of narrow band UVB as a treatment modality, assess the stability of disease after treatment as well as to compare the change in quality of life in patients having vitiligo, before and after treatment with narrow band UVB.
Settings and Design: A prospective, open and non-randomised study.
Methods and Material: Total 0f 54 patients have completed study aged 16-70 years with a mean age of 26.77±14.2 years. The initial dose was 300 mJ/cm^2 in adults and 150 mJ/cm^2 in children, twice weekly with NBUVB along with 20% dose increment on subsequent visits given for a maximum period of 6 months and were followed upto 6 months to determine stability of repigmentation.
Results: Mean of average no. of exposure given to the patients was 45.63±12.74 while the mean irradiation cumulative dose was 39.8 J/cm^2. Mean DLQI of the vitiligo patients was 8.64±4.32 while those patients with acrofacial vitiligo had a mean DLQI of 11.78±5.61. After treatment with NBUVB, mean DLQI of all vitiligo patients was reduced to 5.86±2.15 with $p<0.01$, which was highly significant.
Conclusions: This study shows that phototherapy has a positive therapeutic outcome in vitiligo, especially in younger patients. Even a small, depigmented lesion in a child can be psychosocially devastating.

KEYWORDS : Quality of life, vitiligo, NBUVB.

Introduction:
Vitiligo is caused by selective destruction of epidermal melanocytes resulting in the formation of well-defined depigmented macules. It has a global prevalence of 0.1%-8%[1].

Jaenicke and Parrish in 1981 first found that a wavelength of 311-nm UVB radiation was most effective for treating psoriasis[2].

Westerhof and Nieuweboer-Krobotova first compared the effect of NBUVB and PUVA therapy in vitiligo patients in 1997[3]. NBUVB therapy has been reported to be effective and a safe tool in vitiligo during childhood and pregnancy[4].

Quality of life is an index of different behavioural, social and cultural factors. Dermatology life quality index (DLQI), developed in 1994 was the first dermatology specific quality of life instrument[5].

Earlier, vitiligo was referred as Sweta Kustha which meant "White leprosy" and thus severely impaired the quality of life of patient in Indian scenario[6].

Earlier, many studies have been done to assess the Quality of life but there are few studies that compare the change in quality of life after treatment in vitiligo patients in Indian patients[7]. The purpose of this study to determine the impact of NBUVB phototherapy on vitiligo patients from psychological aspect.

Subjects and Methods:
A prospective, open and non-randomised study in which patients were selected from the dermatology out patient department of this institute over a period of 6 months from February 2016. We followed all patients with consent and protocols.

Sixty three patients (24 males, 39 females) of vitiligo, with age ranging from 16 to 70 years, were included. Patients with history of photosensitizing disorders or cancer and suffering from claustrophobia were not included. Patient with segmental vitiligo or a history of spontaneous repigmentation were excluded. All these patients were advised to stop any previous treatment for at least 4 months before NBUVB monotherapy.

A complete general, systemic examination and dermatological examination was carried out, taking into account the number of depigmented macules, site of involvement and the approximate percentage of body surface area involved was calculated using Wallace rule of nine or palmar surface area equivalent to 1% body surface area. Routine haematological investigations were carried out in all the patients.

Dermatology Life Quality Index questionnaire (DLQI) designed by Finlay and Khan[8] was used to determine the Quality of life impairment in vitiligo patients. The DLQI consists of 10 different questions, each one with four possible answers scored from 0 to 3, giving a maximum score of 30. The greater the score, the more the patient's Quality of life is impaired.

Equipment used were:
- Whole body NB unit with 12 tubes (TL-01) - 100 W, 6 ft.
- UV Blocking Glasses as an eye shield.
- Black apron to protect other parts while treatment and opening for the affected part to be exposed.
- Treatment protocols of our centre.
- In Fitzpatrick skin type IV and V, the minimal erythema dose (MED) was not calculated and in that cases an initial dose of 300 mJ/cm^2 in adult cases treatment was started and it was administered two days/week on non-consecutive days. The irradiation dose was increased by 20% on each subsequent visit until the optimal dose was obtained to have a minimal erythema in the lesions. In case of children, an initial dose of 150 mJ/cm^2 with 20% increments was given.
- In case of any symptomatic complaints such as erythema, burning, pain or blistering, treatment was withheld until its resolution and the irradiation dose was decreased by 20% for further treatment. All the patients were asked to use sunscreens during daytime and emollients at night.
- The maximum period of treatment was 6 months or earlier if 75% or greater repigmentation was achieved. Maintenance therapy once in a week for 4 weeks and once in 2 weeks for another 4 weeks

was given. If there was no repigmentation even after 6 months of therapy, NBUVB was discontinued. All the patients were examined by the two independent dermatologist at 4-week intervals and lesional photographs were taken at baseline and thereafter to document the pattern and extent of repigmentation. All the patients were followed-up for further 6 months after termination of therapy to observe the stability of repigmentation. Computerized phototherapy data of all the patients was maintained.

- Response to treatment was assessed by comparing the photographs of before and after therapy. Statistical methods were employed using SPSS software.

Results:

A total of 63 patients were selected for the study out of which there were 9 (14%) dropouts [4 (6%) males and 5 (8%) females]. There were 54 patients left whose demographic features and disease characteristics have been depicted in Table 1.

Table 1: Demographic profile of patients

Age of patients (in years)	
Range	7-70
Mean	26.77±14.2
Mean age at onset of disease (in years)	20±12.19
Gender, n (%)	
Male	20 (37%)
Female	34 (63%)
Classification of vitiligo, n (%)	
Generalised	44 (82%)
Focal	6 (11%)
Acrofacial	4 (7%)
Mean body surface area (%)	23.7±11.2
Duration of disease (in years)	
Range	0.3-26
Mean	8.1±6.8
Family history of vitiligo, n (%)	9 (17%)
Associated comorbidity, n (%)	
Hypothyroidism	6 (11%)
Diabetes Mellitus	5 (9.25%)

Of the 54 patients, 12 (22.22%) patients showed <25% repigmentation, 27 (50%) patients showed 25-75% repigmentation and 11 (20.34%) patients showed >75% repigmentation. Only 4 (7.4%) cases showed complete repigmentation. Mean of average no. of treatment sessions given to the patients was 45.63±12.74 while the mean irradiation cumulative dose was 39.8 J/cm^2.

Various anatomic sites responded in a different pattern compared as shown in Table 2. The lesions on posterior aspect of trunk responded better as compared to anterior aspect of trunk. Spotty repigmentation was seen on palms of 3 (5%) patients.

Table 2: Anatomic sites and percentage of repigmentation

<25% Repigmentation	**>75% Repigmentation**
Feet	Face
Hands	Neck
Lips	Trunk
Palms and soles	Buttocks
Bony Prominences (malleoli, elbow and knuckles)	Extremities

The disease activity significantly decreased after NBUVB therapy. Before therapy, about 39 (72%), had active disease, whereas after therapy, the disease had stabilized in 48 (89%) of the cases and the remaining 4 (7%) continued to develop new lesions on a previously uninvolved skin during the follow up period while 2 (4%) patients developed depigmentation on previously repigmented site.

Mean DLQI of the vitiligo patients was 9.64±4.32 while those patients with acrofacial vitiligo had a mean DLQI of 13.78±5.61. After treatment with NBUVB, mean DLQI of all vitiligo patients was reduced to 4.86±2.15 with p<0.001, which was highly significant.

The response to therapy was better in children as well as in those with a short duration of the disease and in those adult patients who developed vitiligo in their childhood.

Adverse effects of NBUVB therapy were minimal and neither of the patients required termination of therapy[8]. (15%) patients reported mild erythema with telangiectasia or burning, 4 (7%) patients complained of xerosis and 1 (2%) patient complained of blister formation. All these side effects resolved on tapering the irradiation dose or with topical application of an emollient and were mainly self-limiting.

Discussion:

Although PUVA therapy is an established first-line therapy for vitiligo, various studies have shown that NBUVB therapy is far more effective, superior and less dangerous when compared to PUVA therapy[5,9].

NB-UVB may exert its pigmentary effects in vitiligo via a two-step process. Both the steps occur simultaneously, the first step is stabilization of the depigmenting process and second step is the stimulation of residual follicular melanocytes in the outer root sheath of a hair follicle, which are activated to proliferate and produce melanin[10,11].

Westerhof et al [3] compared twice-weekly narrow-band UVB phototherapy to twice-weekly topical PUVA and found that after 4 months of therapy, 67% of patients undergoing narrow-band UVB phototherapy showed repigmentation compared with 46% of patients receiving topical PUVA. Even more than 75% repigmentation of lesional skin was found in 32 patients (63%) after 12 months of NBUVB therapy while in our study >75% repigmentation was found in 15 (27.74%) patients after 6 months of therapy. Scherschun et al [12] reported that 5 out of 7 patients attained more than 75% repigmentation with a mean of 19 treatments while mean duration of the disease was 13 months.

In this study, although MED was not calculated, the NBUVB therapy was initiated with a dose of 300 mJ/cm^2 and gradually increased by 20% till MED similar to Nicolaidou et al [13] where phototherapy was initiated at 300 mJ/cm^2 for phototypes III-V but he increased with a dose of 50 mJ/cm^2 till MED but we have increased the dose by 20% on subsequent visit till MED similar to Kumar et al [14]. Serish and Srinivas[15] reported that mean MED for NBUVB was 300 mJ/cm^2 for the Indian skin.

In this particular study, mean number of exposures (45.63±12.74) were required to achieve a mean repigmentation of 38.65% and the mean cumulative dose was (39.8 J/cm^2) whereas Njoo et al [16] reported similar repigmentation with more number of exposures (76.3 ± 16.7). Similar observations were reported in other study by Yoness et al also[17].

In this study also certain anatomical sites like face, neck, back and trunk responded faster with better repigmentation to NBUVB therapy and a poorer response was observed over the acral areas, this is comparable to various studies[14,18].

It has been observed that younger the age better is the response with good repigmentation (> 75%), with lesser number of exposures and cumulative dose of NBUVB. Similar observations were reported by Kumar et al[14].

Our repigmentation result in skin phototype III and IV patients is similar to Sitek et al[19]. Nearly, thirty percent of our patients achieved more than 75% repigmentation. There are various studies which have stated no relation between response and skin type[18].

Hamzavi et al reported that the extent of repigmentation after 6 months on the treated side was 3.3% (95% confidence interval -19.3% to 30.0%) on the untreated side vs.42.9% (95% confidence interval, 26.7%-59.0%) (P<.001)[20].

The mean DLQI score in this study was 8.64±4.32 that is higher than that obtained by Finlay and Khan (mean 7.3)[21] and Kent and Al-Abadie's [22] study (mean 4.82) but lower than Parsad et al [23] (mean 10.67) and Sangma et al [24] (mean 9.08 ± 4.46). This differences may be due to literacy level regarding disease as well as due to vitiligo causing greater quality of life impairment in darker skin due to contrast.

In our study, patients with acrofacial vitiligo had a mean DLQI of 11.78±5.61 which is similar to Sangma et al [24] where those with

lesions on exposed parts had a DLQI of (10.25 ± 4.02). This is because exposed parts specially face which is considered as identity of a person if become spotted clinches everyone.

In our study after NBUVB phototherapy DLQI reduced from 8.64±4.32 to 5.86±2.15 similarly in a Chinese study by Mou et al [25] found that before NBUVB therapy DLQI was 6.3±4.8 and after NBUVB phototherapy it was 3.1±2.4 which is statistically significant.

Relapse of depigmented macules on repigmented skin is a common sequale after NBUVB therapy. This finding similar to our study has also been reported by Natta et al [26] who reported a relapse of 25% and 43% at 1 and 1.5 years respectively in 9 patients while Nicolaidou et al [13] found a relapse rate of 44% within 1 year of stopping the treatment.

The adverse effects in this study were of short term and got easily resolved and none of the patients discontinued the therapy on developing the side effects. The adverse effects noticed in our study were similar to that reported in various other studies [13,20].

References:

1. Krüger C, Schallreuter KU. A review of the worldwide prevalence of vitiligo in children/adolescents and adults. Int J Dermatol. 2012;51:1206-12.
2. Parrish JA, Jaenicke KF. Action spectrum for phototherapy of psoriasis.J Invest Dermatol 1981;76:359-62.
3. Westerhof W, Nieuweboer-Krobotova L. Treatment of vitiligo with UV-B radiation vs. psoralen plus UV-A. Arch Dermatol 1997;133:1525-8.
4. Dogra S, Kanwar AJ. Narrow band UVB phototherapy in dermatology. Indian J Dermatol Venereol Leprol 2004;70:205-9.
5. Mishra N, Rastogi MK, Gahalaut P, Agrawal S. Dermatology Specific Quality of Life in Vitiligo Patients and Its Relation with Var-ious Variables: A Hospital Based Cross-sectional Study. J Clin Diagn Res. 2014;8:YC01-YC03.
6. Mattoo SK, Handa S, Kaur I, Gupta N, Malhotra R: Psychiatric morbidity in vitiligo: prevalence and correlates in India. J Eur Acad Dermatol Venereol. 2002;16:573-8.
7. Pahwa P, Mehta M, Khaitan BK, Sharma VK, Ramam M. The psychosocial impact of vitiligo in Indian patients. Indian J Dermatol Venereol Leprol. 2013;79:679–85.
8. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI) - A simple practical measure for routine clinical use. Clin Exp Der-matol 1994;19:210-6
9. Hercogova J, Buggiani G, Prignano F, Lotti T. A rational approach to the treatment of vitiligo and other hypomelanoses: Pigmentary disorders. Dermatol Clin 2007;25:383-92.
10. Norris DA, Horikawa T, Morelli JG. Melanocyte destruction and repopulation in vitiligo. Pigment Cell Res 1994;7:193-203.
11. Cui J, Shen LY, Wang GC. Role of hair follicles in the repigmentation of vitiligo. J Invest Dermatol 1991;97:410-6.
12. Scherschun L, Kim JJ, Lim HW. Narrow-band ultraviolet B is a useful and well-tolerated treatment for vitiligo. J Am Acad Derma-tol 2001;44:999-1003.
13. Nicolaidou E, Antoniou C, Stratigos A, Katsambas AD. Narrowband ultraviolet B phototherapy and 308-nm excimer laser in the treatment of vitiligo: a review. J Am Acad Dermatol. 2009;60:470-7.
14. Kumar Y H, Rao G R, Gopal K, Shanti G, Rao K V. Evaluation of narrow-band UVB phototherapy in 150 patients with vitiligo. Indian J Dermatol Venereol Leprol 2009;75:162-6.
15. Serish, Srinivas CR. Minimal erythema dose (Med) to narrow band ultraviolet - B (NB-UVB) and broad band ultraviolet-B (BB-UVB): A pilot study. Indian J Dermatol Venereol Leprol 2002;68:63-4.
16. Njoo MD, Bos JD, Westerhof W. Treatment of generalized vitiligo in children with narrow-band (TL-01) UVB radiation therapy. J Am Acad Dermatol 2000;42:245-53.
17. Yones SS, Palmer RA, Garibaldinos TM, Hawk JLM. Randomized Double-blind trial of Treatment of Vitiligo: Efficacy of pso-ralen-UVA therapy vs narrowband-UV-B therapy. Arch Dermatol 2007;143:578-83.
18. Adauwiyah J, Suraiya HH. A retrospective study of narrowband-UVB phototherapy for treatment of vitiligo in Malaysian patients. Med J Malaysia. 2010;65:297-9.
19. Sitek JC, Loeb M, Ronnevig. Narrowband UVB therapy for vitiligo: does the repigmentation last? JEADV 2007;21:891-6.
20. Hamzavi I, Jain H, McLean D, Shapiro J, Zeng H, Lui H. Parametric modeling of narrowband UV-B phototherapy for vitiligo us-ing a novel quantitative tool: the Vitiligo Area Scoring Index. Arch Dermatol. 2004 ;140:677-83.
21. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI): A simple practical measure for routine clinical use. Clin Exp Der-matol. 1994;19:210-6.
22. Kent G, al-Abadie M. Factors affecting responses on Dermatology Life Quality Index among vitiligo sufferers. Clin Exp Dermatol. 1996;21:330-3.
23. Parsad D, Pandhi R, Dogra S, Kanwar AJ, Kumar B. Dermatology life quality index score in vitiligo and its impact on the treatment outcome. Br J Dermatol. 2003;148:373–4
24. Sangma LN, Nath J, Bhagabati D. Quality of life and psychological morbidity in vitiligo patients: A study in a teaching hospital from north-east India. Indian J Dermatol 2015;60:142-6
25. Mou KH, Han D, Liu WL, Li P. Combination therapy of orally administered glycyrrhizin and UVB improved active-stage generalized vitiligo. Braz J Med Biol Res. 2016;49:e5354.
26. Natta R, Somsak T, Wisuttida T, Laor L. Narrowband ultraviolet B radiation therapy for recalcitrant vitiligo in Asians. J Am Acad Dermatol. 2003;49:473-6.