



ANALYSIS OF RESPONSE OF VITILIGO TO TREATMENT WITH NBUVB

Dermatology

Dr Swosti Mohanty Associate professor, Dept. of Dermatology, Dr. KNS Memorial Institute of Medical Sciences, Barabanki, U.P

Dr. Abhi Goyal* Junior Resident, Dept. of Dermatology, Dr. KNS Memorial Institute of Medical Sciences, Barabanki, U.P*Corresponding Author

Dr Shashwat Bharadwaj Junior Resident, Dept. of Dermatology, Dr. KNS Memorial Institute of Medical Sciences, Barabanki, U.P

ABSTRACT

Background Vitiligo is an acquired skin disorder marked by depigmented patches due to melanocyte dysfunction, presenting as ivory or chalky white macules with various morphological patterns. It is classified clinically into segmental and non-segmental types. The condition negatively impacts self-esteem and interpersonal relationships, especially with onset before age 18. Its chronic nature, unpredictable course, and prolonged treatment contribute to psychological distress. Vitiligo results from a complex interplay of genetic, environmental, and autoimmune factors. Long-term phototherapy has shown promising results. **Objective:** This study evaluates the effectiveness of phototherapy in improving pigmentation and quality of life in vitiligo patients. **Methods:** This prospective cohort study was conducted at KNS Institute of Medical Sciences Barabanki, from Jan 2023 to Jan 2024, involving 30 vitiligo patients aged 18–70 years without significant comorbidities. Participants received NBUVB phototherapy thrice weekly, starting at 300 mJ/cm² with a 10% dose increase after every third session. Treatment was adjusted in case of adverse effects. Disease severity was assessed using the Vitiligo Area Scoring Index (VASI), with evaluations at baseline, 3, 6, and 9 months. Responses were categorized as mild ($\geq 25\%$), moderate ($\geq 50\%$), or marked ($\geq 75\%$) improvement. Data were analyzed using IBM SPSS software. **Results** A total of 30 vitiligo patients aged 18–48 years (mean age: 32.5 years) were enrolled, comprising 17 males and 13 females. The mean height and weight were 5'3" and 55.3 kg, respectively. Treatment response to NBUVB phototherapy was assessed at 3, 6, and 9 months. At 3 months, 80% showed improvement: 66.67% mild, 6.67% moderate, and 6.67% marked. At 6 months, 86.67% responded: 63.33% mild, 10% moderate, and 13.33% marked. At 9 months, 93.33% showed response: 53.33% mild, 13.33% moderate, and 26.66% marked, indicating progressive improvement with continued therapy. **Conclusion** Our study has revealed the standard and significant role the phototherapy plays in the treatment of vitiligo as a monotherapy or as an adjuvant with other treatment modalities. With good treatment response and minimal side effect incidence, phototherapy is an important treatment modality in the management of vitiligo.

KEYWORDS

Vitiligo, Phototherapy (NBUVB), VASI

INTRODUCTION

Vitiligo is an acquired skin disorder characterised by depigmented patches in the skin due to inadequate functioning of melanocytes. It is characterized by asymptomatic ivory / chalky white macules or patches. It has morphological variations in the form of: trichrome, quadri-chrome, penta-chrome, blue and inflammatory vitiligo. It is currently classified topographically into segmental, zosteriform and nonsegmental, areata, vulgaris, acrofacialis and mucosal based on its clinical presentations [2].

The disease has negative consequences on an interpersonal relationships of vitiligo patients and damaging effects on self-worth. Fifty percent of vitiligo patients experience disease onset before the age of 18 when they are most concerned about their appearance and self-image. [3] The chronic nature of disease, long term treatment, lack of uniform effective therapy and unpredictable course of disease is demoralizing.

Many such factors need to be considered to provide appropriate treatment and improve their quality of life and to obtain a better treatment response. [4] Vitiligo is caused by a dynamic interplay between genetic and environmental risks that initiates an autoimmune attack on melanocytes in the skin. Genetics, oxidative stress, environment, innate immunity and adaptive immunity all have a role to play in the evolution of vitiligo. [5] Long term phototherapy has shown good response in the management of vitiligo. [6] In this study we explore the efficacy of phototherapy in management of our vitiligo patients.

MATERIALS AND METHODS

This is a prospective cohort study and was conducted from Jan 2023 to Jan 2024 in KNS Institute of Medical Sciences. 30 Subjects with vitiligo and no significant medical co-morbidities who gave consent were included in the study. Subjects who are receiving other treatment modalities, pregnant or beyond the age group 18-70 were excluded from the study. Subjects were started on NBUVB at 300 mJ/cm². Weekly 3 doses were given.

Doses were increased after every 3rd sitting by 10%. In case of adverse effects treatment is withheld till resolution of symptoms following

which NBUVB is given at 50% of the last dose and patient managed based on the response. Severity of vitiligo is assessed with vitiligo Area Scoring Index (VASI). Where the VASI = Sum of Hand units x residual depigmentation. One hand unit encompasses the palm plus the volar surface of all the digits.

The extent of residual depigmentation is expressed by the following percentages: 0, 10%, 25%, 50%, 75%, 90%, or 100%. At 100% depigmentation, no pigment is present; at 90%, specks of pigment are present; at 75%, the depigmented area exceeds the pigmented area; at 50%, the depigmented and pigmented areas are equal; at 25%, the pigmented area exceeds the depigmented area; at 10%, only specks of depigmentation are present. [7]

Subjects showing 25% improvement of VASI scores were categorised as mild response, 50% as moderate response and 75% as marked response. Subjects were evaluated clinically prior to initiation of treatment, their VASI scores were calculated for baseline values. They were again assessed at 3, 6 and 9 month intervals following treatment according to the aforementioned protocol.

VASI scores were compared with the baseline at each interval and patients classified into the appropriate categories based on improvement shown. Data analysis was carried out with 'IBM SPSS' software.

RESULTS

In our study subjects in the age group 18-70 were included by criteria and 30 subjects with ages ranging from 18-48 were enrolled with a mean age of 32.5 years. 17 men and 13 women were enrolled.

Characteristics of study group	
Mean age	32
Male	17
Female	13
Mean height	5'3"
Mean weight	55.3

Treatment response to NBUVB at 3 months

	No response N(%)	Any Response		
		Mild	Moderate	Marked
Number and percentage of subjects in the treatment response category	6(20.0%)	20(66.67%)	2(6.67%)	2(6.67%)
Total	24(80.00%)			

Treatment response to NBUVB at 6 months				
	No response N(%)	Any Response		
		Mild	Moderate	Marked
Number and percentage of subjects in the treatment response category	4(13.33%)	19(63.33%)	3(10%)	4(13.33%)
Total	26(86.67%)			

Treatment response to NBUVB at 9 months				
	No response N(%)	Any Response		
		Mild	Moderate	Marked
Number and percentage of subjects in the treatment response category	2(6.67%)	16(53.33%)	4(13.33%)	8(26.67%)
Total	28(93.33%)			

DISCUSSION

Our subjects had similar demographics to study subjects in other related studies. A meta-analysis by Bae et al showed mild response in ~70% of the study subjects in a year and ~30% marked response in study subjects in a year 6 . This was poorer than the results seen at the end of the study period of 9 months in our study. Racial and skin type differences in the studies might play a role in these variations.

The study of Majid et al showed similar results in their study.⁸ Trial variants like durations, skin type and demographics were also comparable in this study. NBUVB has a proliferative as well as a stimulatory effect on the melanocytes and can be used to achieve a rapid repigmentation. It has the benefit of not being invasive and minimal side effects compared to other phototherapy option of PUVA

CONCLUSION

Our study has revealed the standard and significant role the phototherapy plays in the treatment of vitiligo as a monotherapy or as an adjuvant with other treatment modalities. With good treatment response and minimal side effect incidence, phototherapy is a important treatment modality in the management of vitiligo.

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