

Pattern of Repigmentation in the Treatment of Vitiligo Vulgaris with NB-UVB Therapy

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ABSTRACT

Introduction: Vitiligo Vulgaris is a depigmenting disorder for which there is no definitive management modality. The response varies with various treatment modalities. Various repigmentation patterns such as perifollicular, marginal, diffuse, and mixed configuration can occur in vitiligo. Study aimed to clinically assess the types of repigmentation patterns obtained with narrow-band ultraviolet B (NB-UVB) phototherapy to reveal the repigmentation patterns.

Material and Methods: This was a prospective study conducted in government Thoothukudi Medical College Dermatology department from January 2015 to December 2015, and we enrolled 86 patients who had effective responses when treated with biweekly NB-UVB. We evaluated the repigmentation patterns after 24 treatment sessions.

Results: The most frequent repigmentation pattern was the perifollicular type followed by marginal, diffuse, and combined.

Conclusion: The most common repigmentation patterns observed in our study was the perifollicular pattern followed by the marginal pattern with NB-UVB therapy.

Keywords: Vitiligo, Repigmentation, NB-UVB, Perifollicular

INTRODUCTION

Vitiligo is an 'idiopathic' acquired depigmenting disorder characterized by the loss of functional melanocytes from the epidermis. It is the most common pigmentary disorder, and it involves the complex interaction of environmental and genetic factors that ultimately contribute to melanocytes destruction, resulting in the characteristic depigmented lesions.¹ Vitiligo can be extremely disfiguring, leading to significant patient morbidity and poor quality of life. Low self-esteem, poor body image and poor quality of life have been found in patients with vitiligo, including significant psychiatric morbidity. This is of particular concern for children and adolescents, as they are in their formative years and developing their sense of self.²

Vitiligo is perhaps the most frequent depigmenting disorder, occurring with a prevalence varying across populations. Its pathogenesis has been associated with genetic predisposition, autoimmune phenomenon and neural and growth factor dysregulation as well as inherent cellular metabolic defects leading to melanocyte apoptosis. The phenotypical expression of vitiligo is polymorphic, and several types of vitiligo are distinguished on clinical presentation. The natural course of vitiligo is gradual, unpredictable and difficult to control. However, sometimes the disease persists in a stable status for a long time.^{3,4}

Vitiligo poses a treatment challenge and will remain so

until we find treatments that give consistent and long-term cure by repigmentation. Several treatment modalities have been advocated including topical therapy with potent topical corticosteroids, calcipotriol, tacrolimus, pseudocatalase therapy and other modalities like melanocyte transplantation, skin grafting, cosmetic camouflage or self-tanning preparations and psychological therapy.

But these are often unsatisfactory for generalized Vitiligo, for which NB-UVB and PUVA are the most important therapies.⁵ The combination treatment of Psoralen with ultraviolet A (PUVA) therapy is a standardized therapy for vitiligo. Narrow-band ultraviolet B (NB-UVB) is an emerging, effective and safe therapy for vitiligo. Recent reports have shown that NB-UVB can induce significant repigmentation in either generalized or segmental vitiligo. The mechanism of action of NB-UVB is it inhibits the induction and secretion of cytokines and stimulates inactive melanocytes in the outer root sheath of hair follicles to proliferate and migrate into vitiligo lesions. However, narrowband UVB therapy is not readily available and implies significant start-up expenses.^{6,7} The clinical studies with NB-UVB in vitiligo are few. Earlier reported studies were mostly done in the western population and the studies in the darker race, including Indians, is limited.

Study aimed to clinically assess the types of repigmentation patterns obtained with narrow-band ultraviolet B (NB-UVB) phototherapy to reveal the repigmentation patterns.

MATERIAL AND METHODS

This randomized open prospective clinical study was conducted on Eighty six Vitiligo vulgaris patients who attended outpatient clinic of Dermatology department at Government Thoothukudi Medical College hospital, Thoothukudi over a period of 12 months from January 2015 to December 2015. The patients were included in the study

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based on the following inclusion and exclusion criteria. Inclusion criteria: age 6 to 60 years, body surface area involvement greater than 10%, stable Vitiligo (Stable for more than one year). Exclusion criteria: age less than 6 years and more than 60 years, body surface area involvement lesser than 10%, photosensitivity and Photo mediated disorders, patients drugs causing photosensitization, skin malignancy, renal and hepatic diseases, pregnancy and Lactation, active Vitiligo developing new lesions, patient on any treatment for Vitiligo within previous 6 months. The patients were administered biweekly minimum erythema doses of NB-UVB for 24 sessions. NB-UVB was delivered with full body phototherapy chamber containing 6 feet, 100W fluorescent UVA and NB-UVB lamps total of 36 bulbs. This chamber has integrated dosimetry and the time to deliver the correct dose is automatically calculated. Treatment schedule, precaution to be taken during and after treatment, expected response, total duration of treatment and common side effects were explained to the patient. Informed consent was obtained from the patients before starting treatment. Fortnightly repigmentation assessment including follicular pigmentation, shrinkage of the lesion and color of the lesion (diffuse pigmentation) was noted and recorded. The affected area Photographs were taken on completion 24 sessions. Comparison was made with the base line photograph to determine the pattern of pigmentation of Vitiligo.

Statistical analysis

The results were tabulated and analyzed descriptively using mean and SD.

RESULTS

Out of the 86 patients enrolled for study in each group, only 72 patients completed the study. Fourteen patients discontinued due to various reasons within 12 treatment sessions and so were excluded from the study. Out of the 72 patients, 41 (56.9%) were males. Among the study population 4 were in the pediatric age group (6 to 12 years), 12 in adolescent and young adults (13 to 21 Years), 33 were adults (22 to 45 years) and 23 in the 45 to 60 years age group. On analyzing the involvement of body surface area by vitiligo, 19 patients had 10 – 30% BSA involvement, 36 with 30 – 50% BSA involvement and 10 with 50- 70% BSA involvement. Only 7 patients had more than 70% BSA involvement.

Among the 72 patients studied, 68(94.4%) patients

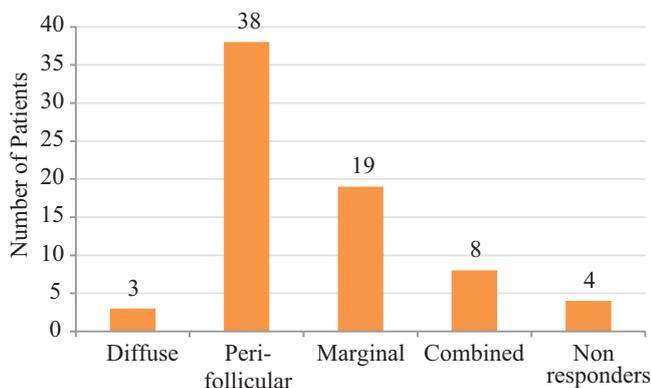


Figure-1: Repigmentation pattern

responded with repigmentation after 24 sessions of Narrow Band UVB. The repigmentation patterns observed after the stipulated sessions of NBUVB were perifollicular type in 38 patients (55%), marginal pigmentation in 19 patients (27.9%), diffuse pigmentation in 3(4.4%) and combined type of pigmentation in 8 patients (11.7%). In four patients, the disease was resistant and did not show any signs of repigmentation. Among the responders, perifollicular repigmentation was dominating in all the age groups but for the 45 to 60 years age group in which marginal pigmentation was more appreciated.

Analysis of pattern of repigmentation with respect to BSA involvement, perifollicular repigmentation was more prominent irrespective of the extent of the vitiligo. Non responders were more when there was larger area of involvement (Figure-1).

DISCUSSION

Vitiligo is a disfiguring condition that may lead to severe psychological trauma. Among the many treatment modalities available for treating vitiligo, those using light therapy especially ultraviolet (UV) light is one of the most effective and widely used treatment. UV-based therapy includes phototherapy (narrowband UVB), Photochemotherapy (psoralens with UVA) and targeted phototherapy (excimer laser and excimer lamp). NB-UVB lamps have a sharp emission peak at 311 nm to 313 nm. Therefore, NB-UVB is easier to administer than PUVA and lacks many of the adverse effects of the latter. The efficacy of NB-UVB has been shown in several studies.⁸

In our study 94.4% of patients showed a positive response by repigmentation in any one of the patterns studied. This endorses the effectiveness of NB-UVB therapy revealed by most studies. In our study, perifollicular repigmentation was a prominent pattern of pigmentation. In a study by Yun-Seok Yang et al in Korean vitiligo patients, the most frequent repigmentation pattern was the perifollicular type in both the groups treated with NB-UVB or excimer laser, followed by marginal, diffuse and combined in that order. There was no significant difference in the repigmentation patterns according to the location of lesions, patient's age, or duration of lesions. The marginal pattern was predominant in both NBUVB and excimer laser-treated groups. An excellent response with more than 75% repigmentation was observed at 12 weeks of NB-UVB treatment. Similarly, in our study also perifollicular repigmentation was predominating in all the age groups but for the 45 to 60 years age group in which marginal pigmentation was more appreciated.⁹

With regard to repigmentation in respect of body surface area involvement perifollicular repigmentation was the main pattern of pigmentary response observed. This was in accordance with the results of the previous studies. The majority of the nonresponder (28.5%) were patients with body surface area involvement more than 70%. The larger the body surface area involvement the poorer was the response. The study of pattern of repigmentation is important as it may determine the rapidity and retention of pigmentation

after completion or stopping the vitiligo therapy. Many studies reveal marginal repigmentation as the most stable pattern, followed by perifollicular and combined type. Diffuse repigmentation was the least stable. The speed of repigmentation is much faster when initial repigmentation is of the diffuse type as compared with follicular repigmentation.^{10,11}

CONCLUSION

NB-UVB phototherapy is a very effective mode of treatment for Vitiligo with low or no adverse effects when administered appropriately. Perifollicular pigmentation was the most common pattern of pigmentation observed with NBUVB phototherapy. The stability and speed of repigmentation in various patterns have to be analyzed with the larger study population and the longer period of follow up.

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