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## **TREATMENT OF VITILIGO WITH HAND HELD NBUVB PHOTOTHERAPY UNIT - STUDY OF 50 PATIENTS**

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### **ABSTRACT**

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Vitiligo or Leucoderma is a common skin disease which has traditionally been associated with lot of stigma in society. Narrow band Ultraviolet B therapy (NBUVB) is now widely and effectively used therapy for treatment of Vitiligo. It is effective and safe, although cost of a multiutility panel or a NBUVB chamber is a limiting factor for a resource poor setting. Hand held NBUVB lamp is a much cheaper option available for patients use at their home. We treated 50 patients of Vitiligo with Hand held NBUVB lamp. Age group 4-56 yrs were included in the study. Patients were treated with NBUVB lamp at twice weekly interval for 6 months or earlier depending upon the response. Of the 50 patients, 12 (24%) showed less than 25% repigmentation, 15 (30%) achieved 25-50% repigmentation and 23 (46%) had 50-75% repigmentation. None of the patients encountered any significant side effects. Hence NBUVB hand held lamp is an attractive option for treatment of Vitiligo in a setup where cost and availability of NBUVB chamber is a limiting factor.

## INTRODUCTION

Vitiligo or Leukoderma is an autoimmune chronic skin disease characterized by white depigmented patches over skin. Disease is caused by destruction or dysfunction of melanocytes leading to inability to produce melanin. Disease affects less than 1% population worldwide and has significant psychological impact over patient's life. <sup>[1]</sup> There are various topical and systemic therapies available, out of which phototherapy with Ultraviolet A (UVA) and Ultraviolet B (UVB) has been preferred recently. <sup>[2]</sup> Westerhof and Nieuweboer-Krobotova were the first to study the effect of NBUVB in vitiligo. <sup>[3]</sup> Narrow band Ultraviolet B therapy (NBUVB), using selective 311-313nm portion of UVB spectrum, is an emerging, effective and safe therapy for vitiligo. <sup>[4][5][6][7]</sup> It is as effective as PUVA, without side effects. <sup>[8]</sup> Various western as well Indian studies have proven the effectiveness of NBUVB in treatment of Vitiligo. <sup>[3][5][6][7]</sup>

NBUVB is administered using either closed full body chambers/multi panel units. Small units are also available for treatment of limited areas. Though effective, availability and cost of the treatment is a major hindering factor in its use especially in patients residing in rural areas. Hand held NBUVB phototherapy lamp is a much cheaper option available for patients use at their home. Though popular in western countries, in India it is used sparingly in Vitiligo treatment. Though available for patient's treatment, no study has been done in Indian patients regarding efficacy of Hand held NBUVB lamp. Hence we conducted this study to evaluate response of Hand held NBUVB in treatment of vitiligo.

## MATERIAL AND METHODS

The study group included 50 cases of generalized and localized vitiligo. The study was prospective, open and non-randomized. Fifty patients (21 males, 29 females) of vitiligo, with ages ranging from 4 to 56 years, were included. All these patients were advised to stop any previous treatment for at least 8 weeks before NBUVB monotherapy. Medical history was taken in detail, general and systemic examination was carried out to know the associated systemic diseases. A thorough dermatological examination was carried out taking note of the number of depigmented macules and the approximate percentage of body surface area involved using "Rule of Nine." Cases of vitiligo were classified as generalized and localized vitiligo. Before starting NBUVB therapy, all the patients were explained towards importance of compliance and adherence to treatment protocol.

Equipment used was Narrowband UV spot phototherapy unit- 311 nm (PLS 9W/ 01) with mirror reflectors and adjustable spot size. (DermaIndia Spot Phototherapy Unit, Chennai).



Figure 1- Hand held NBUVB Phototherapy Lamp

Spot phototherapy unit doesn't come with any dosimeter. Hence Minimal erythema dose (MED) was not calculated and the treatment area was exposed to NBUVB lamp for 2 minutes in the first sitting and the treatment was administered two times/week on non-consecutive days. The irradiation time was increased by 20% for each subsequent visit till the optimal dose was achieved to obtain minimal erythema in the lesions. If symptomatic erythema, burning pain or blistering developed, the irradiation dose was decreased by 20%. During treatment, the affected parts were only exposed and the genitalia and other uninvolved areas were protected. Similarly the eyes were protected by UV-blocking goggles. All the patients were asked to use sunscreens during daytime.

The maximum period of treatment was 6 months or earlier if 75% or greater repigmentation was achieved. If there was no repigmentation even after 3 months of therapy, NBUVB was discontinued. All the patients were examined at 4-week intervals and serial photographs were taken at baseline and thereafter to document the pattern and extent of repigmentation.

The patients who responded to NBUVB therapy were grouped as

Group A (poor response)- <25% repigmentation

Group B (average response)- 25-50% repigmentation

Group C (good response)- 50-75% repigmentation

Group D (excellent response)- >75% repigmentation

Response to treatment was assessed by comparing the before and after therapy photographs. Statistical methods were employed to establish the relation between the response and the number of exposures, duration of treatment, and the compliance.

## RESULTS

Of the 50 patients, 21 (42%) were males and 29 (58%) were females and their ages ranged from 4 to 56 years. The duration of disease ranged from 2 month to 18 years, with a mean duration of 12 years. Twelve (24%) patients had a family history of vitiligo, 5(10%) patients had hypothyroidism and four (8%) were with diabetes mellitus. 32 (64%) patients selected were of localized or segmental vitiligo while only 18 (36%) had generalized vitiligo. In patients of generalized vitiligo only a small part was selected for treatment with NBUVB lamp.

Of the 50 patients, 12 (24%) had less than 25% repigmentation, 15 (30%) achieved 25-50% repigmentation and 23 (46%) had 50-75% repigmentation. None of the patients showed >75% repigmentation.



Figure 2- patient at start of treatment



Figure 3- Good Response after 4 months

Visible repigmentation started after as early as 4 sittings. 30 (60%) patients started to develop repigmentation after 12 sittings. 5(10%) patients who didn't show any repigmentation after 3 months were discontinued from the treatment. All patients in this group had vitiligo over fingers or toes, which are traditionally treatment resistant sites.



Figure 4- patient at the start of treatment



Figure 5- poor response after 3 months

Eventual response was found to be proportional to earlier start of repigmentation. Good response (i.e. >50% repigmentation) was achieved with lesions located on the face and trunk, followed by arms and legs. Lesions over the knees, elbows, lips, hands, feet showed average of poor response. Good response was observed especially in patients of childhood segmental vitiligo. Five out of six (>80%) patients showed good response with 6 month of therapy in this group. No major side effects were observed during the study warranting cessation of therapy. Five (10%) patients reported mild erythema or pruritus. None of the patients showed any ulceration/ blistering of treatment site. The side effects were mild and resolved on tapering the irradiation dose and with application of topical emollient.

## DISCUSSION

NBUVB therapy is nowadays more or less established and preferred therapy for vitiligo especially generalized vitiligo, pregnant women and children because of the high safety profile.<sup>[5][6]</sup> In our study, 76% of patients showed satisfactory repigmentation (25-75%) with six months of treatment. Only 24% patients showed either no repigmentation or <25% repigmentation. Our study and other Indian studies showed that dark skin (Fitzpatrick type IV and V) requires lesser number of exposures and cumulative dose to achieve 25-75% repigmentation when compared with white skin (Fitzpatrick I and II).<sup>[4][6][8]</sup> We observed that earlier response eventually led to more repigmentation as compared to late responders. As with other studies, sites such as face, trunk showed better response while acral areas responded poorly. Good results were especially found in patients of childhood segmental vitiligo. The repigmentation achieved in all the cases was cosmetically acceptable and matched with the surrounding normal skin.

In our study panel, NBUVB equipment was used in children and in patients with localized vitiligo. This particular NBUVB equipment was found to be useful and handy, particularly in the pediatric age group and similar results were obtained. It has been observed that children responded faster with good repigmentation (> 75%), with lesser number of exposures and cumulative dose of NBUVB. Similar observations were reported in other studies also. The adverse effects in our study were minimal and none of the patients required discontinuation of therapy. The adverse effect profile observed in our study was similar to that reported in the literature.<sup>[4][5][7][8]</sup> All these studies, including ours, clearly establish the safety profile of NBUVB therapy.

## CONCLUSION

Our study concludes effectiveness of Hand held Phototherapy unit in patients of Vitiligo affecting limiting body areas. It is especially very good option for patients residing in inaccessible areas who can afford the instrument. Besides being handy patient can take the treatment at their convenient time leading to better compliance and adherence, hence increased response. Treatment can be combined with other medical therapies and more studies can be undertaken towards benefits of spot NBUVB along with other medical therapies. Only limitation is treatment of generalized vitiligo.

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