DOI: https://doi.org/10.53350/pjmhs211561195

ORIGINAL ARTICLE

To Determine the Efficacy and Safety of Narrow Band UVB (NB-UVB) in Chronic Hand Eczema (CHE)

SHAHBAZ ALI[1], SAIRA MOHSIN[2], ZEB[3], BURHAN ASHRAF[4], MUHAMMAD NADEEM[5]
[1]*Consultant Dermatologist, Alkhidmat Teaching Mansoorah Hospital, Lahore.*
[2]*Consultant Dermatologist, Zahida Welfare Hospital Lahore*
[3]*Assisstant Professor of Dermatology, DHQ Teaching Hospital/ Sargodha Medical College, Sargodha*
[4]*Consultant Dermatologist Mayo Hospital Lahore*
[5]*Professor of Dermatology, Sir Ganga Ram Hospital, Lahore*
Correspondence to Dr. Shahbaz Ali, Email: shahbazshamshad@gmail.com, Phone: +923334643363

ABSTRACT

Aim: To determine the safety and efficacy of narrow band ultravoilet-B radiations in chronic hand eczema.
Methods: 62 patients were enrolled from OPD of Dermatology Unit-II, KEMU/ Mayo Hospital, Lahore. They were given phototherapy treatment through NB-UVB local chamber, thrice weekly (on fixed days) for a total of 12-weeks or until clearance. Patients were followed up fortnightly for further 1 month and final assessment was done at the end of one month. Physician's Global Assessment (PGA) Score was used to assess the severity of eczema affecting the hands.
Results: The data was collected from 62 patients with 0% dropout. There was only one patient who had improvement <25%, 4(6.45%) had improvement 25-50%, 8(12.90%) had 51-75% improvement and 49(79.03%) cases had improvement >75%. Minimal side effects were seen which included erythema, photosensitivity, itching and pain.
Conclusion: NB-UBV is a safe as well as effective treatment option for chronic eczema of hands.
Keywords: Chronic Hand Eczema, Narrow Band UVB, Physician's Global Assessment Score.

INTRODUCTIION

The word eczema and dermatitis are used interchangeably. Dermatitis has originated from two Greek words "derma" (the skin) and "itis" (inflammation). Eczema is also taken from a Greek word that means eruption or to boil[1].

Acute phase of hand eczema (HE), is clinically diagnosed by oedema, redness and occasionally blisters, while the chronic stage is diagnosed by scaling, painful fissures and lichenified skin.[1] The chronic phase of hand eczema (CHE) may be defined as "eczema involving the hands that persists for more than three months, or recurs for 2 or more times within one year"[2]. The course of chronic hand eczema is indolent and shows phases of acute dermatitis off and on.

Hands are essential parts of body that are used for expression, communication and performing daily activities. When the form or function of hands is impaired as it happens due to hand eczema, it can cause intense emotional as well as psychological distress which in turn leads to a poor quality of one's life.

Dermatological diseases are almost 35-40% of the occupational disorders and hands get affected in nearly 80%.[3] Different studies have shown that the incidence of eczema involving the hands is 10.9-15.8%.[4] In Indian patients of allergic type of contact eczema, hands were involved in 2/3rd of cases[4]. Five to seven percent of patients of eczema of hands get a severe form of chronic hand eczema (CHE) and 2-4% of the cases do not show any improvement with topical steroids, even the most potent ones[5].

The most commonly used tool for measuring the severity and treatment response of hand eczema is PGA score (Physician's Global Assessment score). PGA divides the severity of hand eczema into five states (clear, almost clear, mild, moderate and severe)[6,7].

The treatment options for hand eczema are; steroids (oral and topical), pimecrolimus, tacrolimus, immunosuppressants (like cyclosporin, methotrexate, azathioprine, mycofenolate mofetil), retinoids (topical or oral), physical modalities (e.g; gloves, barrier creams and emollients) and phototherapy (Narrowband Ultraviolet-B [NB-UVB], Broadband Ultraviolet-B [BB-UVB] and Psoralen-Ultraviolet-A i.e. PUVA)[8].

Narrowband Ultraviolet-B (311+2nm) is far better than Broadband Ultraviolet-B because it imparts more energy to epidermis.[9] NB-UVB is superior to both BB-UVB and PUVA as shown by some studies done on atopic dermatitis.[10] The side effects of NB-UVB are much less as compared to other phototherapies.[10] In Pakistani patients of atopic eczema, psoriasis and vitiligo, NB-UVB has also been used and its results are excellent while adverse effects are minimal or negligible[11,12].

A study comparing local Psoralen-Ultraviolet-A i.e. PUVA (administered as a paint) and NB-UVB in patients suffering from chronic hand dermatoses showed that both treatments were equally effective[10]. Similarly, a study involving the use of a NB-UVB home unit in patients of hand eczema has shown excellent results[13].

METHODOLOGY

This interventional longitudinal study was done in Department of Dermatology Unit-II, Mayo Hospital/KEMU Lahore including 62 patients. Non-probability purposive sampling was used. Sample size of 62 patients was taken in the study. We used a margin of error 9% and a

Received on 17-02-2021
Accepted on 27-05-2021

confidence level of 90%. We used the expected percentage of reduction in the clinical score with the use of NB-UVB as 75.43%.[6]

$$n = \frac{Z^2 \times P \times q}{d^2}$$

n= Sample Size, Z= Confidence level, P= Prevalence, q= 1-P, d= margin of error

Inclusion criteria included subjects of both genders, aged >8 years of any skin type and having bilateral or unilateral chronic hand eczema, with a PGA score >3. Patients having tinea manuum, psoriasis involving hands or underlying photodermatoses were excluded. Patients who were pregnant or taking photosensitizing or immunosuppressive drugs or ionizing radiation were also excluded

Data collection: Sixty two subjects of any skin type were registered. An informed consent was taken. Before and after treatment, eczema severity was assessed using PGA score. Hand eczema (HE) was graded as clear, almost clear, mild, moderate and severe. Treatment was done using local chamber NB-UVB, 3 times a week (on fixed days) for a total of 12-weeks or until clearance (whichever was achieved first). Starting dose was given according to the dosage table (table-1). Treatment response and side effects were noted on each visit. Clinical assessment was done by an independent observer (examiner) fortnightly during the treatment. After the completion of therapy, follow up visits were scheduled after every 14 days for next 1 month. On every visit digital images were taken and compared with the baseline. Efficacy was measured and noted. Any adverse reaction was noted to gauge safety of NB-UVB.

The outcome was defined as the difference in mean PGA score at the end of treatment (four weeks after end of treatment) as compared to that at the baseline. The data was entered into SPSS version 18 for analysis

Table 1: Dosage guidelines for narrow band uvb[14,15]

Skin type	Initial UVB dose	UVB increase after each treatment	Maximum dose
Type I	130 mJ/cm2	15 mJ/cm2	2000 mJ/cm2
Type II	220 mJ/cm2	25 mJ/cm2	2000mJ/cm2
Type III	260 mJ/cm2	40 mJ/cm2	3000 mJ/cm2
Type IV	330 mJ/cm2	45 mJ/cm2	3000 mJ/cm2
Type V	350 mJ/cm2	60 mJ/cm2	5000 mJ/cm2
Type VI	400 mJ/cm2	65 mJ/cm2	5000 mJ/cm2

(administered 3-5 times a week)

If subsequent treatments are missed

4-7 days	Keep dosage same
1-2 weeks	Decrease the dose by 25%
2-3 weeks	Decrease the dose by 50% or start over
3-4 weeks	Start from baseline

Maintenance therapy for NB-UVB after >95% clearance

1×/week	NB-UVB for 4 weeks	Keep the dose same
1×/2week	NB-UVB for 4 weeks	Decrease the dose by 25%
1×/4week	NB-UVB	50% of highest dose

RESULTS

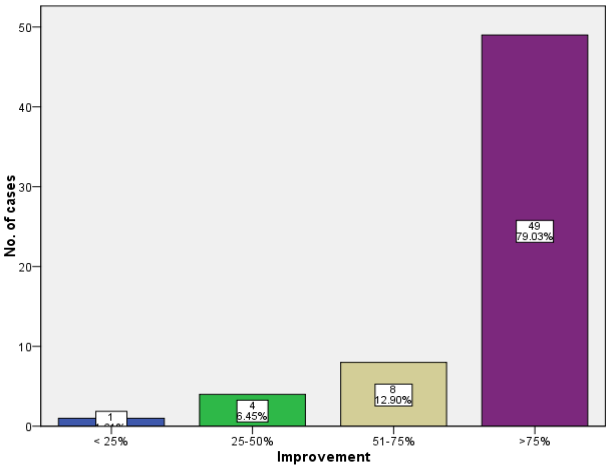
The mean age of all cases was 42.77±16.01 with minimum and maximum age of 14 and 80 years. There were 47 (75.81%) male and 15 (24.19%) female cases with male to female ratio as 3:1:1. There were 50 (80.65%) married and 12 (19.35%) unmarried cases.

At baseline the mean PGA score was 3.40±0.495. At 2nd week the PGA score was 3.24±0.56 while at 4th to 16th week the mean PGA scores showed decreasing trends (Table-2). After final up the mean change in PGA score was 90.59±21.52% with minimum and maximum change as 0 and 100% (Table-2). There was only one patient who had improvement <25%, 4(6.45%) cases had improvement 25-50%, 8(12.90%) cases had 51-75% improvement and 49(79.03%) cases had improvement >75% (Fig.1).

Table 2: Comparison of pga score from baseline till 16th week

PGA score	Mean	SD	Range	Min.	Max.
Baseline	3.4	0.495	1	3	4
2nd week	3.24	0.56	2	2	4
4th week	2.40	0.78	3	1	4
6th week	1.61	0.93	4	0	4
8th week	1.02	0.80	3	0	3
10th week	0.73	0.85	3	0	3
12th week	0.39	0.71	3	0	3
14th week	0.29	0.66	3	0	3
16th week	0.31	0.67	3	0	3
Mean change (%) from baseline till 16th week	90.59	21.52	100	0	100

Fig 1: Improvement in PGA score at last follow up



DISCUSSION

Our study was done to determine the safety and efficacy of NB-UBV in CHE. There is no local study available in Pakistan on NBUVB and hand eczema.

Globally used Physicians global assessment (PGA) score was employed because it is relatively comprehensive & self-explanatory, and it has been widely employed in other national & international studies as well[6,7]. We found significant reduction in PGA score of hand eczema after treatment with NB-UVB. The mean PGA score at baseline was 3.40±0.495. While the mean change in PGA score at the end of this study was almost 90%. The results of our study can be compared to the results of other studies done by Sjoval et al and Sezer et al in which NB-UVB showed

excellent results as a treatment modality for hand eczema[10,13].

The adverse reactions were found to be minimal. No subject required discontinuation of treatment. We noted erythema, photosensitivity, itching, and pain. All these reactions were very mild and they improved on decreasing the dose of NB-UVB or after applying emollients. These reactions were similar to that given in the literature[16,17,18]. Limitations of this study were the smaller sample size and short follow up. Further studies using bigger sample size and long follow up should be done.

CONCLUSION

It is concluded from this study that NB-UVB is a very safe and effective modality for treating chronic hand eczema. Minimal side effects were seen which included erythema, photosensitivity, itching and pain.

REFERENCES

1. "Definition of ECZEMA" www.merriam-webster.com. Archived from the original on 22 February 2016. Retrieved 15 February 2016.
2. Mollerup A, Veien NK, Johansen JD. Chronic hand eczema - self-management and prognosis: a study protocol for randomized clinical trial. BMC Dermatol 2012; 12: 6.
3. Lakshmi C, Srinivas C R. Hand eczema: An update. Indian J Dermatol Venereol Leprol 2012; 78: 569-82.
4. Agarwal US, Besarwal RK, Gupta R, Agarwal P, Napalia S. Hand eczema. Indian J Dermatol 2014; 59: 213-24.
5. Diepgen TL, Agner T, Aberer W, Berth-Jones J, Cambazard F, Elsner P, et al. Management of chronic hand eczema. Contact Dermatitis 2007; 57: 203-10.
6. Bissonnette R, Worm M, Gerlach B, Guenther L, Cambazard F, Ruzicka T, et al. Successful retreatment with alitretinoin in patients with relapsed chronic hand eczema. Br J Dermatol 2010; 162: 420-6.
7. Diepgen TL, Pfarr E, Zimmermann T. Efficacy and tolerability of alitretinoin for chronic hand eczema under daily practice conditions: results of TOCCATA open study comprising 680 patients. Acta Derm Venereol 2012; 92: 251-5.
8. van Coevorden AM, Coenraads PJ, Svensson A. Overview of studies of treatments for hand eczema, the EDEN hand eczema survey. Br J Dermatol 2004; 151: 446.
9. Lynde C, Guenther L, Diepgen T, Sasseville D, Poulin Y, Gulliver W, et al. Canadian hand dermatitis management guidelines. J Cutan Med Surg 2010; 14: 267-84.
10. Sezer E, Etikan I. Local narrowband UVB phototherapy vs. local PUVA in the treatment of chronic hand eczema. Photodermatol Photoimmunol Photomed 2007; 23: 10-4. 61
11. Nabi H, Din SU, Asad F, Nadeem M. Efficacy and safety of narrowband ultraviolet-B therapy in moderate to severe atopic dermatitis. J Pak Assoc Dermatol 2011; 21: 106-8.
12. Asad F, Nabi H, Nadeem M. Narrowband ultraviolet B radiation therapy for vitiligo in Asians. J Pak Assoc Dermatol 2005; 15: 146-50.
13. Sjovall P, Christensen OB. Treatment of chronic hand eczema with UV-B Handylux in the clinic and at home. Contact Dermatitis 1994; 31: 5-8.
14. Adapted with permission from Do A, Koo J. Initiating narrow-band UVB for the treatment of psoriasis: how to do MED skin testing. Psoriasis Forum 2004; 10: 7-11.
15. Menter A, Korman NJ, Elmets CA, et al. Guidelines of care for the management of psoriasis and psoriatic arthritis: Section 5. Guidelines of care for the treatment of psoriasis with phototherapy and photochemotherapy. J Am Acad Dermatol 2010 Jan; 62 (1): 114-35.
16. 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.
17. Kist JM, Van Voorhees AS. Narrowband ultraviolet B therapy for psoriasis and other skin disorders. Adv Dermatol 2005; 21: 244-5.
18. 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.