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Original Research Article

Narrow band UVB therapy versus tazarotene and narrow band UVB combination therapy in psoriasis: a comparative study

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ABSTRACT

Background: Narrow band UVB phototherapy (NBUVB) is considered one of the most effective therapeutic modalities for patients with psoriasis. The long term side effects of narrowband UVB therapy have not been fully documented. There has been a great deal of interest in photo combination therapies that are capable of both reducing cumulative UVB doses and accelerating resolution of skin lesions. The aim of our study was to compare the efficacy and tolerability of NBUVB plus tazarotene combination therapy with NBUVB mono therapy.
Methods: Forty patients with chronic plaque type psoriasis were taken up for the study and were randomly divided into two groups of 20 each. One group was treated with thrice-weekly NBUVB phototherapy and the other group received NBUVB phototherapy thrice weekly in addition to topical tazarotene once daily at bed time.
Results: In the tazarotene combination group, the reduction in PASI score was more rapid. The duration of treatment and the mean cumulative dose of NBUVB was lesser in the tazarotene combination group. Irritation due to tazarotene was mild and combination of tazarotene with NBUVB was well tolerated.
Conclusions: We concluded that combination of tazarotene with NBUVB was well tolerated and was significantly more effective than NBUVB phototherapy alone.

Keywords: Narrow band UVB, Psoriasis, Tazarotene

INTRODUCTION

Psoriasis continues to be a therapeutic challenge in spite of our growing knowledge of its pathogenesis. Various forms of treatment have been developed in the past several decades and new regimens are constantly being tried. Narrowband ultraviolet B phototherapy has become an increasingly popular modality in the treatment of psoriasis. At the present time, phototherapy with narrow band UVB (NBUVB) is considered one of the most effective therapeutic modalities for patients with psoriasis.[1] Many studies have documented improved efficacy and therapeutic index for NBUVB.[2,3] However, the long term side effects of NBUVB therapy have not been fully documented. As a result, there has been a great deal of interest in photo combination therapies that are capable of both reducing cumulative UVB doses and accelerating resolution of skin lesions. Retinoids exert anti psoriatic effects and act synergistically with phototherapy. Retinoids have anti carcinogenic effects and lowers risk due to UVB. Tazarotene exerts anti psoriatic effects without side effects related to systemic retinoid therapy.[4,5] This study was designed to compare the efficacy and tolerability of NBUVB plus tazarotene combination therapy with NBUVB mono therapy.

METHODS

Forty patients with chronic plaque type of psoriasis involving less than 20% of the body surface area were

taken up for the study. The study was conducted in the Department of Dermatology, Government General Hospital, Chennai from September 2007 to September 2009. Patients who had taken any specific anti psoriatic treatment within the last 4 weeks, patients with photosensitive disorders or history of taking photosensitising drugs, any history suggestive of malignant melanoma or squamous cell carcinoma, pregnant and lactating women and women contemplating conception were excluded. Detailed dermatological examination and PASI scoring was done in all the patients. The patients were then randomly divided into two groups of 20 each. One group was treated with thrice-weekly NBUVB phototherapy and the other group received NBUVB phototherapy thrice weekly in addition to topical application of 0.1% tazarotene cream in a thin layer over the plaques once daily at bed time. Informed written consent was obtained prior to therapy.

As all patients were of skin types IV and V, initial UVB dose of 250 mJ/cm^2 was started in all patients. If the initial dose was tolerated, subsequent 20% incremental dose was given at each subsequent visit depending on the patient's erythema response. Treatment was given thrice weekly on non-consecutive days.

All patients were asked to wear UV goggles when inside the phototherapy unit. Men were advised to protect their genitalia. Patients were advised to expose only the affected parts during treatment and protect other uninvolved areas. Patients were instructed to come out of the chamber when the light switches off or if they became uncomfortable during the treatment either due to burning or stinging sensation of the skin.

Patients were monitored regularly every week for 4 months. Patients were instructed to report immediately if any of the adverse effects were noted. PASI scoring was done at 4, 8, 12 and 16 weeks. Results were statistically analysed.

RESULTS

Of the 40 patients studied, 20 received NBUVB mono therapy and 20 patients received NBUVB plus tazarotene combination therapy. The two groups were well matched for age, sex, skin type, involvement of body surface area and PASI score. The maximum number of patients in both groups were in the age group of 21-40 years. The minimum age was 14 years and the maximum was 76 years. The mean age in our study was 36 years. In the NBUVB mono therapy group, there were 11 males and 9 females and in the photo combination group there were 12 males and 8 females. In our study, total duration of disease at the time of inclusion ranged from 3 months to 120 months and the mean duration of illness was 42.4 months.

The mean baseline PASI scores for NBUVB group and tazarotene combination group were 11.48 and 11.32 respectively (Table 1, Figure 1). There was no statistically significant difference ($p>0.05$) in baseline PASI among NBUVB group and Tazarotene combination group. At 4 weeks, PASI scoring reduced to 7.47 and 5.64 respectively for NBUVB group and tazarotene combination groups. There was more than 50% reduction in the tazarotene combination group whereas only 34.9% reduction in NBUVB group (Table 2, Figure 2). There was a further fall in PASI scoring at 8 weeks to 3.96 and 1.70 in NBUVB group and tazarotene combination groups which corresponded to reduction in percentages of 65.5% and 84.9% respectively. A further reduction in PASI score was observed at 12 and 16 weeks to 2.26 and 0.92 in the NBUVB group which corresponds to a percentage reduction to 80.3% and 91.9%. In the tazarotene combination group, the reduction in PASI was more rapid with mean PASI score of 0.57 at 12 weeks corresponding to a percentage reduction of 94.9%. There was a statistically significant difference ($p<0.05$) in PASI between NBUVB and tazarotene combination group at 4, 8 and 12 weeks.

Table 1: PASI reduction.

Duration	Mean PASI score	
	NBUVB	Tazarotene combination
Baseline	11.48	11.32
4 weeks	7.47	5.64
8 weeks	3.96	1.70
12 weeks	2.26	0.57
16 weeks	0.92	

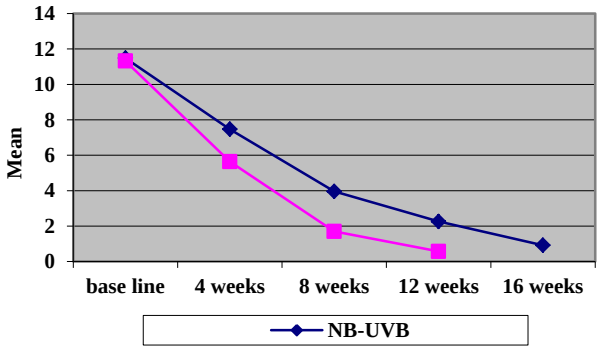

Figure 1: Reduction in PASI score.

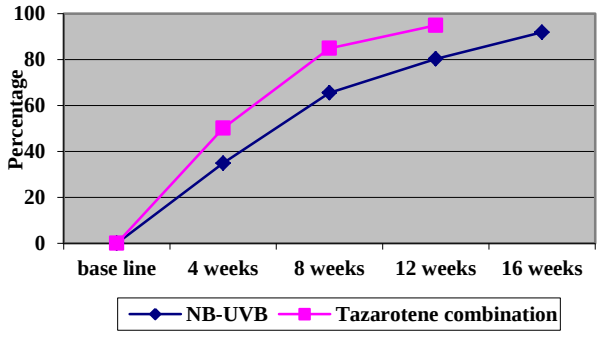

Figure 2: Percentage reduction in PASI score.

Table 2: Percentage reduction in PASI score.

Duration	NBUVB	Tazarotene combination
Baseline	0	0
4 weeks	34.9	50.1
8 weeks	65.5	84.9
12 weeks	80.3	94.9
16 weeks	91.9	

The average number of treatments required for clearance of psoriasis was 34.8 and 25.2 in NBUVB mono therapy and tazarotene combination groups respectively. The mean duration of treatment was 8.8 weeks in the tazarotene combination group and 11.6 weeks in the NBUVB group. The mean cumulative dose was 25.1 J/cm^2 in tazarotene combination group and 43.3 J/cm^2 in the NBUVB group (Table 3).

Table 3: Duration of treatment and mean cumulative dose.

	Group A (NBUVB)	Group C (Tazarotene combination)
Average number of exposure	34.8	25.2
Duration of treatment(weeks)	11.6	8.8
Mean cumulative dose (J/cm^2)	43.3	25.1

Table 4: Response to therapy in NB-UVB group.

Result	% reduction in PASI score at 16 weeks	No. of patients
Excellent	100	10
Good	75-100	6
Moderate	50-75	1
Poor response	<50	2

Table 5: Response to therapy in NBUVB and tazarotene combination group.

Result	% reduction in PASI score at 12 weeks	No. of patients
Excellent	100	15
Good	75-100	1
Moderate	50-75	1
Poor response	<50	-

Based on the percentage reduction in PASI the results were graded as excellent (100%), good (75-100%), moderate (50-75%) and poor (<50%). Out of 20 patients in NBUVB mono therapy group, 10 patients had complete clearance, 6 patients had good response and 1 had moderate response. 2 patients had poor response and 1 patient discontinued therapy due to unknown reasons (Table 4). In tazarotene combination group, out of 20 patients, 15 patients had complete clearance, 1 patient had good response and 1 patient had moderate response (Table 5). Three patients discontinued treatment due to unknown reasons.

Pruritus and erythema was noted in both the groups. Initial exacerbation was noticed in one patient in each group and it gradually resolved with continuation of the therapy. Irritation was seen in 4 patients in the tazarotene combination group. It was mild and resolved with liberal use of emollients.

DISCUSSION

NBUVB is increasingly being used in the treatment of psoriasis. NBUVB lamps emit a narrow UV band at 311/312 nm thereby matching the closely assumed therapeutic optimum for psoriasis. NBUVB phototherapy has a higher therapeutic to erythmogenic ratio resulting in increased efficacy, reduced incidence of burning and longer remission. It is a relatively safe method in the treatment of psoriasis responding poorly to topical treatment, rapidly spreading psoriasis, wide spread psoriasis and severe psoriasis of palms and soles. Phototherapy may be combined with topical or systemic agents to achieve higher clearance rates, longer disease free intervals and a lower carcinogenic risk.[6]

Only sparse data are available with regards to the therapeutic efficacy and tolerability of NBUVB and tazarotene combination therapy. There are few studies comparing NBUVB mono therapy with NBUVB plus tazarotene combination therapy and most of these earlier studies have compared these two modalities using half-bodycomparison.[7,8]

The present study was therefore undertaken in which we compared NBUVB mono therapy with NBUVB plus tazarotene combination therapy in chronic plaque type psoriasis. The final evaluation involved comparison of both treatments according to the response, duration of treatment and cumulative dose of NBUVB required for clearance of psoriasis and adverse effects.

When NB-UVB group was compared with NB-UVB and tazarotene combination group, there was a significant difference ($p<0.05$) in PASI scores at 4weeks, 8 weeks and 12 weeks. At 4 weeks, there was more than 50% reduction in PASI in the tazarotene combination group and only 34.9% reduction in NB-UVB group. There was further reduction to 84.9% and 94.9% at the end of 8 weeks and 12 weeks respectively in the tazarotene combination group while there was only 65.5% and 80.3% reduction at 8weeks and 12 weeks respectively in the NBUVB group. This explains that there was a rapid fall in PASI score in tazarotene combination group when compared with NBUVB mono therapy group.

The mean duration of treatment was 8.8 weeks in the tazarotene combination group and 11.6 weeks in the NB-UVB mono therapy group. The mean cumulative dose was 25.1 J/cm^2 in tazarotene combination group and 43.3J/cm^2 in the NB-UVB mono therapy group. This explains that tazarotene combination group showed a faster clearance with a lesser cumulative dose.

Koo et al reported that tazarotene plus NBUVB phototherapy is significantly more effective than NBUVB phototherapy alone for the treatment of psoriasis and mean cumulative UVB exposure required is significantly lower when tazarotene was combined.[7] The same observations were reported by Behrens et al.[8] In our study also, tazarotene combination proved to be more effective than NB-UVB mono therapy and achieved faster clearance with lesser cumulative dose.

The adverse effects in our study were minimal and none of the patients required discontinuation of therapy. In our study, the common side effects noted were pruritus, erythema and initial exacerbation. The adverse effect profile observed in our study was similar to that reported in the literature.

Significant erythema was noted in only 4 of our patients, one in NBUVB group and 2 in tazarotene combination group but according to literature[9] the common side effect of UV therapy is erythema. This significant difference is probably because all our patients were of skin type IV and V.

Initial exacerbation was noted in 3 of our patients, one in each group but newer lesions ceased to appear with continuation of therapy. This could be due to immune modulatory effect of NB-UVB. Pruritus was noted in 4 of our patients initially which subsided with regular use of emollients and continuation of therapy. It is assumed to be related to prostaglandin release.

Irritation was the common side effect noted in the tazarotene combination group in the previous studies and also in our study but it was very mild and managed with liberal use of emollients.[7,8] Tazarotene combination was well tolerated, with only 3 patients discontinuing therapy due to unknown reasons.

CONCLUSION

In conclusion our study has shown that NBUVB phototherapy is an effective modality of treatment in plaque type of psoriasis. NBUVB is safe and well tolerated in our patients with very few side effects. Combination of tazarotene and NBUVB phototherapy is significantly more effective than NBUVB phototherapy alone for the treatment of psoriasis. The addition of tazarotene to NBUVB therapy promotes faster clearing of psoriasis when compared with NBUVB mono therapy. The cumulative dose of NBUVB is reduced when tazarotene is combined with it which means a lower risk for long term complications. Irritation due to tazarotene is mild and combination of tazarotene with NBUVB is well tolerated. Photo combination therapies can broaden the therapeutic options for the treatment of patients with psoriasis.

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