

Efficacy And Safety Of Narrow Band Ultraviolet B Radiation In Treatment Of Pityriasis Rosea, Small Plaque Parapsoriasis And Uremic Pruritus

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ABSTRACT

Background: Narrowband ultraviolet B radiation (NB-UVB) has antiproliferative and immunomodulatory effects. The efficacy of PV-UVB has not been studied in detail for the treatment of skin conditions like pityriasis rosea, parapsoriasis and uremic pruritis. Therefore, the present study was designed with the objectives of analyzing the efficacy and safety of NB-UVB in these skin conditions.

Materials and Methods: Prospective interventional and hospital based study was conducted at Department of Dermatology, Government Stanley medical college, Chennai over a period of one year from July 2020 to June 2021. The study participants were the patients attending the Department of Dermatology, Government Stanley medical college, Chennai. They were divided into three groups – Group A, B and C. About 10 patients each of pityriasis rosea, parapsoriasis or uremic pruritis were allotted to each group.

Results: The mean (SD) age in years of the study participants in three groups A, B and C were found to be 10.30 (1.64), 27 (8.49) and 51.10 (12.11) years respectively. Males were 17 (56.67%) and females were 13 (43.33%). The mean (SD) duration of disease in days in three groups A, B and C were found to be 8 (2.16), 27 (10.22) and 60.80 (15.87) days respectively.

Complete response to treatment was 100% in group A and 80% in group B. DQLI scores were found to be statistically significant in all groups before and after treatment.

Conclusion: Narrow Band UVB (NB-UVB) phototherapy is an effective modality of treatment in Pityriasis rosea, small plaque Parapsoriasis and Uremic pruritus.

Key words: NB-UVB, pityriasis rosea, parapsoriasis, uremic pruritis

INTRODUCTION:

Phototherapy is the therapeutic use of Ultraviolet irradiation without exogenous photosensitiser. Photochemotherapy (PUVA) is the combined use of the drug Psoralen and UVA radiation in the treatment of various skin disorders like pityriasis rosea, parapsoriasis and uremic pruritis. [1] Narrowband ultraviolet B radiation (NB-UVB) is a spectrum of wavelength of light; present in the natural sunlight centred around 311 nm, which is less than 1% of total range of wavelengths from sunlight. NB-UVB therapy is the application of the light to the skin by using special lamps that emit UVB at selected wavelength of 311 nm as a treatment. NB-UVB has antiproliferative and immunomodulatory effects. [2]

Photobiological reactions are dependent on the dose and frequency of the light, both ultra violet radiations and visual light produces this type of reactions. The biological effects of shorter wavelengths are much more pronounced than longer wavelengths because of higher quantum energy of shorter wavelength. The erythema dose of UVA is 1000 times higher than erythema dose of UVB, because of low quantum energy of UVA. [3]

Pityriasis rosea is an acute self-limiting disease probably infective in origin, affecting mainly children and young adults, and characterized by distinct skin eruptions and minimal constitutional symptoms. Many studies have shown beneficial effect of ultraviolet therapy for Pityriasis rosea. [4]

Parapsoriasis may be a precursor to cutaneous lymphoma in the form of Mycosis Fungoides (MF). The majority of cases of Small-plaque Parapsoriasis are chronic and benign, in contrast to Large-plaque Parapsoriasis, which can evolve to MF. UVB Phototherapy may result in clearance of the lesions. [5]

Persistent itching is a major cause of impairment of quality of life for the patients with Chronic Renal Failure (Uremic Pruritus). [6] It is less prevalent due to more efficient dialysis techniques, but still occurs in 20% of patients. It is rarely seen in patients with acute renal failure. It is more common in patients receiving haemodialysis than in patients on continuous ambulatory peritoneal dialysis (CAPD). Phototherapy with NB-UVB is effective in relieving pruritus and its value has been supported by a recent meta-analysis study. [7]

The efficacy of PV-UVB has not been studied in detail for the treatment of above mentioned skin conditions especially in developing countries. So, the present study was designed with the objectives of analyzing the efficacy and safety of NB-UVB in Pityriasis rosea, small plaque Parapsoriasis and Uremic pruritus in South Indian population.

MATERIALS AND METHODS:**Study design:**

Prospective interventional and hospital based study was conducted at Department of Dermatology, Government Stanley medical college, Chennai over a period of one year from July 2020 to June 2021.

Study Population:

The study participants were the patients attending the Department of Dermatology, Government Stanley medical college, Chennai with pityriasis rosea, parapsoriasis or uremic pruritis. Patients of both sexes of all ages were included in the study. Pityriasis rosea was clinically diagnosed, parapsoriasis patients had both clinical and pathological confirmation and patients of uremic pruritis had intense itching not cured by antipruritic drugs in the presence of chronic renal failure. Seriously ill patients, those who had previous history of skin malignancy and pregnant and lactating women were excluded from the study.

Study Methodology:

The study participants were divided into three groups – Group A, B and C. About 10 patients each of pityriasis rosea, parapsoriasis or uremic pruritis were allotted to groups A, B and C respectively. The total sample size was 30.

Before starting treatment, patients were well informed about the method of treatment, course of treatment and possible adverse effects. Complete history regarding onset, duration, any other coexisting systemic illness. A thorough clinical examination as given was also done. Laboratory investigations included HB, TC, DC, ESR, platelet count, blood glucose level, renal function tests, SGOT, SGPT, screening for Hepatitis B, HIV, VDRL testing, scraping for fungal elements, slit skin smear for AFB and pre-treatment photographs.

Treatment was started after getting clearance from ethical committee, informed consent, brief relevant medical history, and physical examination and baseline investigations. As all the patients were of skin types IV and V, initial UVB dose of 250 mJ / cm² was started in all patients. All the patients were advised to wear UV goggles when inside the phototherapy unit and men were advised to protect their genitalia.

Patients were instructed to report immediately if any of the adverse effect were noted. If the initial dose was tolerated, subsequent 20% (3 times in a week for 12 weeks) incremental dose was given at each subsequent visit depending on the patient's erythema response and they were monitored regularly every week.

Patient is followed every week for improvement in skin lesions and adverse effect, pre-treatment and post-treatment photographs will be taken. Severity of the disease is analysed by using Dermatology life quality index (DLQI) in all the groups. To analyze the severity of itching, visual analogue scale (VAS) was used in group C.

Statistical analysis:

Data collection sheet included patient's demographic information, clinical features, examination findings, and laboratory investigation. Statistical analysis was carried out using SPSS software version 21. Descriptive statistics included mean and standard. To find the significance difference between the paired samples (before and after treatment), the paired t -test was used and for multiple comparisons (Pityriasis Rosea, Small Plaque Parapsoriasis, Uremic Pruritus), one way ANOVA with Tukey's Post Hoc test was used. In all the statistical tests, P value of less than 0.05 was considered to be statistically significant.

Ethical issues:

The study was approved by the institutional ethical committee (IEC) before data collection. Informed written consent was obtained from the study participants before administering questionnaire and performing clinical examination, laboratory investigations and interventions.

RESULTS

Age and sex distribution:

The total sample size was 30. The study participants were divided into three groups – A, B and C each having 10 confirmed patients of pityriasis rosea, parapsoriasis or uremic pruritis respectively. The mean (SD) age in years of the study participants in three groups A, B and C were found to be 10.30 (1.64), 27 (8.49) and 51.10 (12.11) years respectively. Among 30 study participants, males were 17 (56.67%) and females were 13 (43.33%). The distribution of males and females in the three groups were given in table 1.

Table 1: Sex distribution among study participants:

Study Group	Name of the Disease	Male	Female	Total
Group A	Pityriasis Rosea	6	4	10
Group B	Small plaque Parapsoriasis	5	5	10
Group C	Uremic Pruritus	6	4	10

Duration of disease:

Pityriasis rosea patients had short mean duration of disease (acute), Uremic pruritus had longer duration of illness (chronic) whereas Small plaque Parapsoriasis had sub-acute duration of disease. The mean (SD) duration of disease in days in three groups A, B and C were found to be 8 (2.16), 27 (10.22) and 60.80 (15.87) days respectively.

Response to treatment:

The complete response (CR) was defined as more than 90% of the lesions resolving. Partial response (PR) was defined as 50 to 90% of lesions resolving and no response (NR) was defined as less than 50% of lesions resolving. The response to treatment among study participants is represented in table 2.

Table 2: Response to treatment among study participants

<i>Study group</i>	<i>N</i>	<i>CR</i>	<i>PR</i>	<i>NR</i>
Group -1	10	10	Nil	Nil
Group-2	10	8	2	Nil

During follow up, there was no recurrence in group A. In groups B and C, the frequencies of recurrences were found to be 10% and 100% respectively.

Dermatology life quality index (DLQI):

The DLQI scores were compared in three groups both before and after treatment. The DLQI scores in group A reduced from 11.30 to 0.4, in Group B from 26.60 to 1.90 and in group C from 15.80 to 5.40. The decrease in scores in all the groups was found to be statistically significant before and after treatment with a P value of 0.001.

Visual analog scale (VAS):

Visual analog scale (VAS) was used only in group C patients. The mean (SD) VAS score before treatment was 3.1 (0.99) and after treatment was 8.01 (0.82). There was a statistically significant difference between the two with a P value of 0.001.

DISCUSSION:

Currently phototherapy with narrow band UVB is considered one of the most effective therapeutic modalities for pityriasis rosea, small plaque parapsoriasis and uremic pruritus. Many studies have documented the efficacy and therapeutic index for narrow band UVB. However the long term side effects of narrow band ultraviolet therapy have not been fully documented.

In the present study, the mean (SD) age in years of the study participants in three groups A, B and C were found to be 10.30 (1.64), 27 (8.49) and 51.10 (12.11) years respectively. Among 30 study participants, males were 17 (56.67%) and females were 13 (43.33%). This shows that pityriasis rosea is a disease of childhood, parapsoriasis is a disease of young adults and uremic pruritus is a disease of older adults. Pityriasis rosea and uremic pruritus were found to be more common among males (60%) than females (40%). But, the difference is not statistically significant. Parapsoriasis showed no gender inequality.

We have found that the mean (SD) duration of disease in days in three groups A, B and C were found to be 8 (2.16), 27 (10.22) and 60.80 (15.87) days respectively. So, we can conclude that pityriasis rosea is an acute disease, parapsoriasis is sub acute and uremic pruritus is chronic and have a longer duration of illness.

In pityriasis rosea, we found that all the patients had complete response without any side effects and recurrences with in the mean duration of 3.6 weeks of phototherapy. The mean DLQI decreased from 11.30 before treatment to 0.40 after treatment, at a mean cumulative dose of 11.40 J/cm². This was found to be statistically significant with a P value of 0.001. Similar results were also obtained by Leenutaphong V et al [8] and Valkova S et al [9] in their studies.

In group B (small plaque parapsoriasis), complete response was seen in 80% and partial response in 20%. The mean DLQI decreased from 16.6 before treatment to 1.90 after treatment. The mean cumulative dose was 35.60J/cm² for the mean number of exposures of 28.80. During the treatment Hyperpigmentation was noted as a side effect in one (10%) patient. Recurrence was reported in one patient, in the follow-up period (p < 0.05). Aydogan K et al [10] in their study reported complete response in 73.3%.

In group C (uremic pruritis), the mean DLQI decreased from 15.8 to 5.40 after treatment and the VAS decreased from 8 to 3 after the treatment. Recurrence was noted in all the patients. Yang Jy et al [11] in their study reported significant improvement in VAS in uremic pruritis patients. Ada S [12] in their study had found that that NB-UVB may be an effective treatment for uremic pruritus but recurrence is a frequent problem.

CONCLUSION:

Narrow Band UVB (NB-UVB) phototherapy is an effective modality of treatment in Pityriasis rosea, small plaque Parapsoriasis and Uremic pruritus. Pityriasis rosea responded very well with no recurrence. NB-UVB therapy for Small plaque Parapsoriasis is effective, safe and practical alternative treatment modality. Uremic pruritus responded well to NB-UVB but recurrence was invariably present in all the patients.

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