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Original Research Paper

A Study of Efficacy and Safety of Phototherapy in Vitiligo Patients At Tertiary Care Hospital – Original Article

Medical Science

KEYWORDS : Vitiligo, phototherapy, Narrow band UVB, PUVA.

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ABSTRACT

Although PUVA therapy is a well established first line of treatment for vitiligo, recent studies have shown that NB-UVB therapy is more effective, less dangerous and superior to PUVA therapy. In view of these, present study has been planned to assess Efficacy and safety of Phototherapy in Vitiligo. The repigmentation obtained with NBUVB group was comparable with PUVA group. Majority of the patients had Repigmentation between 25 to 75% i.e. moderate response. More than 75% response was seen in 15% of PUVA and 8% of NBUVB group . Repigmentation with PUVA group was early to start and Maximum responders (50-75% and >75% group) belonged to PUVA group than NBUVB. This study result confirms phototherapy leads to stabilization of the disease.

Introduction:

Phototherapy is the use of ultraviolet irradiation with or without exogenous photosensitizer. Ultraviolet radiation is a small component of the electromagnetic spectrum with a narrow band of radiation from 200-400 nm. The UV spectrum is further divided into UVC (200-280 nm), UVB (280-315 nm) and UVA (315-400 nm). It can be administered as photochemotherapy, Broadband UVB and narrowband UVB therapy, UVA1 phototherapy , photodyanamic therapy, Excimer laser. Phototherapy may be combined with topical or systemic agents to achieve higher clearance rates, longer disease free intervals and a lower carcinogenic risk. Phototherapy is an established and first line treatment in vitiligo. NBUVB is a safe and effective treatment option for childhood vitiligo. Although PUVA therapy is a well established first line of treatment for vitiligo, recent studies have shown that NB-UVB therapy is more effective, less dangerous and superior to PUVA therapy[1]. In a recent, meta analysis of non surgical therapies in a generalised vitiligo by NJoo et al, higher success rates were observed with NB-UVB (63 %) than with oral PUVA (51 %)[2]. In view of these, present study has been planned to assess Efficacy and safety of Phototherapy in Vitiligo.

Aims and objectives:

1 To assess the efficacy of phothotherapy in vitiligo patients
2 To assess the efficacy of phototherpy in stabilization of vitiligo
3 To compaire the efficacy of UVB and PUVA in vitiligo.

Materials & Methods:

The study group includes 100 cases of generalized and localized vitiligo, attending the outpatient in department of dermatology fulfilling the selection criteria for the present study.

The study was prospective, open and randomized, consisting of 100 patients (males, females) of vitiligo with ages ranging from 3yrs to 65 years were included. The patients were randomly divided into two groups of 50 patients each. The first group (Group A) received NBUVB as monotherapy and second group received PUVA therapy as monotherapy.

Selection of patients

Inclusion criteria

Patient with segmental, non-segmental, generalized and localized vitiligo and patient with history of stable or progressive vitiligo were included in study.

Exclusion criteria

Patient with history of photosensitizing disorders, skin cancer, suffering from claustrophobia, sensitive to photo therapy, lesions over genital ,patients with co existing liver disease and history of spontaneous repigmentation were excluded from study[3].

All these patients were advised to stop any previous treatment for at least 8 weeks before starting phototherapy. A thorough dermatological examination was carried out taking note of the number of depigmented macules and the approximate percentage of the body surface area using "RULE OF NINE" cases of vitiligo were classified as generalized and localized vitiligo[4].

All the patients were also assigned a VIDA score. The Vitiligo Disease Activity (VIDA) Score is a 6-point scale for assessing Vitiligo activity. It helps to assess the effectiveness of interventions to halt and reverse the extension of depigmentation. Scoring is based on the individual's own perception of the present disease activity over time. Relevent haematological and biological investigations were carried out in selected patients.

Equipment used

Whole body Phototherapy unit with NBUVB (311nm) unit with 24 tubes (TL-01)Phillips holand tubes (100 W, 6 ft. tubes).

Treatment protocol for vitiligo

NBUVB

A total of 50 patients were selected randomly. As all the patients were of skin type IV and V, the minimal erythema dose (MED) was not calculated and the initial dose of 200 mg/cm2 was started in all patients and treatment was administered three times per week on non consecutive days with NBUVB[5,6].

The irradiation time was increased on every other session till optimal dose was achieved to obtain minimal erythema in the lesions. If symptomatic erythema, burning pain or blistering developed further treatment was withheld until resolution of symptoms. Treatment was then reinitiated at the last dose before the phototoxic effect.

PUVA

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All the 50 patients selected randomly were administered PUVA therapy with topical application of 0.1% of 8-MOP lotion followed by exposure to sunlight three to four times per week on non consecutive days[7].

During treatment, the affected parts were only exposed and the genitalia and other uninvolved areas were protected. Similarly, the eyes were protected by the UV blocking goggles.

All the patients were asked to use sunscreens during daytime and apply emollients to their skin daily after treatment.

The maximum period of treatment was 18 months or earlier if 75 % or greater repigmentation was achieved or no response after 6 months of treatment.

All the patients were examined at regular intervals and the lesional photographs were taken at baseline and thereafter to document the pattern and extent of repigmentation.

Evaluation of response
The patients who responded to NB-UVB and PUVA therapy were grouped as response to treatment.

Group A	No response (0%)
Group B	<25% repigmentation
Group C	26-50% repigmentation
Group D	51-75% repigmentation
Group E	>75 % repigmentation

Table -1 Response to treatment

VIDA score
A set of objective criteria- the Vitiligo disease activity score (VIDA), was suggested by Njoo et al. in 1999 to follow the progress of the patient. It is a 6-point scale on which the activity of the disease is evaluated by the appearance of new vitiligo lesions or the enlargement of preexisting lesions gauged during a period ranging from < 6 weeks to one year [8].

Response to treatment was assessed by comparing the photo graphs of before and after therapy. More than 75% repigmentation was considered as cosmetically acceptable repigmentation.

Patient compliance was scored as:
Patient compliance score [Table -2]

Score 1	< 25 treatments
Score 2	Between 25 – 50 treatments
Score 3	Between 51 -75 treatments
Score 4	>75 treatments

In children the maximum duration allowed is 12 months. Subsequently if required, only limited areas should be exposed.

Statistical methods were employed to establish the relation between the response and the number of exposure, duration of treatment and the compliance.

Results:
A total of 100 patients of vitiligo were recruited.The patients were randomly divided into two groups of 50 patients each. The first group (Group A) received NBUVB as monotherapy and second group received PUVA therapy as monotherapy. 10 patients of received phototherapy for less than 3 months (<20 sessions) and were lost to follow up. These patients were excluded from the further analysis.

Age and sex distribution [Table 3]

Age of the patients	No of male patients	No. of female patients	% of patients
<10	2	6	8.89%
11-20	14	15	32.22%
21-30	30	13	47.78%
31-40	4	4	8.89%
41-50	1	1	2.22%
Total	51	39	90

Of 90 patients, 51 were males and 39 were females. Male to female ratio was 1.3:1 Majority of the patients were in age group of 21-30 age group followed by age of 11-20 years. Youngest patient was 3years of age and oldest was 65 years of age.

Family History [Table 4]

	Family history	Percentage
Positive	8	8.89%
Negative	82	91.11%

Family History was positive in 8.89% of patients.
Clinical Types of vitiligo [Table 5]

Type of vitiligo	No. of Patients	% of patients
Vitiligo vulgaris	71	78.89%
Focal/local	8	8.89%
Acral/Acrofacial	5	5.56%
Segmental	3	3.33%
Lip Tip	3	3.33%

Vitiligo vulgaris was the commonest type followed by Focal>Acrofacial>Segmental/Liptip.

Distribution according to site [Table 6]

Site	Male	Female	Total	% of patients
LL	42	35	77	85.56%
UL	25	22	47	52.22%
Trunk	8	10	18	20.00%
Face	9	8	17	18.89%
Neck	8	3	11	12.22%

Features[Table 7]

Features	No. of Patients	Percentage
Koebners phenomenon	32	35.56%
Mucosal	24	26.67%
Leukotrichia	43	47.78%

Koebners phenomenon was present in 35.56% (n=32). Mucosal Involvement was present in 26.67% (n=24).Lip mucosa was most commonly involved . Mucosal lesions were resistant to treatment. Leukotrichia was found in 47 % of patient. Though Leukotrichia is a marker of poor prognosis few of the lesions with leukotrichia responded to well to phototherapy. Diabetes was the most common systemic association with vitiligo (4 patients), two of which had juvenile Diabetes Mellitus. Two patients had Hypothyroidism as association.

Side effects [Table 8]

Symptoms	NBUVB group	PUVA group
Itching	10	12
Symptomatic Erythema	5	11
Blister formation	1	3
Total	16	26

Side effects were very limited and of minor degree. None

of the patient required discontinuation of treatment due to side effects. Itching was commonest side effect of Phototherapy. Symptomatic erythema was present in 11 patient of PUVA therapy and 5 patient of NBUVB. Further dose of Phototherapy was withheld and emollients, soothing agents were prescribed.

Therapeutic Index [Table 9]

Groups	Group I (NBUVB)	Group II (PUVA)	Percentage
Group A (0%)	16.00% (8)	17.50% (7)	16.67%
Group B(<25 %)	16.00% (8)	15.00% (6)	15.56%
Group C(25-49%)	38.00% (19)	25.00% (10)	32.22%
Group D(50-74%)	20.00% (10)	27.50% (11)	23.33%
Group E(>75%)	8.00% (4)	15.00% (6)	11.11%

The repigmentation obtained with NBUVB group was comparable with PUVA group. Majority of the patients had Repigmentation between 25 to 75% i.e. moderate response. More than 75% response was seen in 15% of PUVA and 8% of NBUVB group . Repigmentation with PUVA group was early to start and Maximum responders (50-75% and >75% group) belonged to PUVA group than NBUVB. However, color match ,cosmetic appearance, safety and patient acceptability was better with NBUVB. Perifollicular repigmentation was the commonest type of repigmentation followed by marginal type,mixed type.

Compliance Score [Table 10]

Compliance Score	No.of treatment sessions received	No.of patients
Score 1	<25	6
Score 2	25-50	15
Score 3	51-75	25
Score 4	>75	44

Maximum no of patients (69) received > 50 sittings of therapy.

Clinical experience with NBUVB in Indian patients is limited and currently there is no defined safe limit for maximum duration of use in vitiligo. Njoo et al[48] recommended that responsive patients could be given this treatment for a maximum of 24 months .After the course of 1year , a resting period of 3 months was recommended to minimize the annual cumulative dose of UVB.

Response to Phototherapy and Mean no. of treatments [Table 11]

Group	% Improvement	No.of patients	Mean no. of treatments
Group A	0	14	68
Group B	<25	24	72
Group C	25-49	19	69.36
Group D	50-74	21	73.52
Group E	>75	10	100.2

More the No. of treatment sessions, better was the response in terms of % improvement.

VIDA Score before and after phototherapy [Table 12]

	Pre treatment VIDA score	Post treatment VIDA score
1 to 4(Active disease)	73(81.11%)	10(11.11%)
-1 to 0(Stable Disease)	17(18.9%)	80(88.88%)

Majority of the patients (81.11%) had pre treatment VIDA scores of +1 to + 4 i.e. Active disease and on completion of phototherapy majority had VIDA scores of -1 to 0 i.e. stable disease (88.88%) indicating that Phototherapy leads to stabilization of the disease.

Discussion:

Phototherapy is an established and first line treatment in vitiligo. NBUVB is a safe and effective treatment option for childhood vitiligo[9]. Phototherapy is effective in halting the progress of above diseases and can also be used as maintenance therapy. Phototherapy is still undergoing evolution. While many new indications are coming up every day the efficacy and safety in Indian patients needs to be reviewed. Future directions are bright with newer technological advances like targeted phototherapy, micro phototherapy, Excimer Laser being used in conventional and newer indications with greater efficacy and lesser side effects[10].

Comparison of our study to Kumar and Rao study [11] [Table 13]

	Our Study	Kumar and Rao study[12]
Group A(<25 %)	32.00%	34.00%
Group B(25-75%)	58.00%	48.67%
Group C(>75%)	8.00%	17.33%

Our study results were comparable with Kumar and Rao study results for NBUVB in vitiligo .

Conclusion:

Repigmentation achieved with NBUVB is cosmetically acceptable and matches with normal skin color. Better and faster repigmentation can be achieved, with good compliance to treatment and adherence . Hairy areas respond more than non hairy areas. Face is most responsive to phototherapy followed by Neck>Trunk>Proximal extremity>Distal extremity>buttocks>groin. NBUVB is safe and effective treatment option for paediatric age group and also in conditions where other modalities are contraindicated. Acral areas, palms ,soles ,lips, nipple ,areola, bony prominences (elbows, malleoli, wrist) respond very minimally or do not respond. Rate of pigmentation by NBUVB is comparable to that of PUVA[12].

Conflicts of Interest: NIL

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