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THE EFFICACY AND SAFETY OF PHOTOTHERAPY AMONG ELDERLY IN A TERITIARY CARE CENTRE IN COASTAL AREA OF SOUTH INDIA: A RETROSPECTIVE STUDY

Dermatology

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ABSTRACT

BACKGROUND: Although phototherapy is well known treatment method for may dermatological diseases, Data regarding the use of phototherapy in elderly alone is limited. **OBJECTIVE:** To evaluate the safety and effectiveness of phototherapy in elderly patients. **METHODS:** This study includes 100 patients who are aged 65 years and above and were treated with phototherapy between 2017 to 2022. Data used in this study was collected from follow-up forms in phototherapy unit retrospectively. **RESULTS:** Phototherapy was given to 30 patients with vitiligo, 25 patients with psoriasis, 15 patients with palmoplantar psoriasis, 12 patients with generalised pruritis, 12 patients with lichen planus and 6 patients with atopic dermatitis. Among these patients 67 had received narrowband UVB (NB-UVB), 18 patients received oral psoralen UVA (PUVA), and 15 local PUVA treatment. 76.9-85.7% of vitiligo, 73.71-100% of psoriasis vulgaris patients showed complete response treated with NB-UVB and PUVA, respectively. 80% of the patients with generalised pruritis showed significant improvement to treatment with NB-UVB. Common side effect noted was erythema, 0.43% per session for NB-UVB and 0.46% per session for PUVA treatment. **STUDY LIMITATIONS:** remission durations of patients were not known as it is a retrospective study. **CONCLUSION:** With proper dose and close follow ups phototherapy is an effective and reliable treatment modality in elderly.

KEYWORDS

phototherapy, elderly patients.

INTRODUCTION:

In elderly people, in addition to systemic disorders dermatological disorders are also important as they effect quality of life. Considering the accompanying comorbidities and multiple drug usage in elderly and keeping in mind the possible physiological and metabolic changes in this age group the treatment method was selected. To prevent the side effects caused by systemic therapy topical medications are preferred in elderly for dermatological diseases, when topical therapy is ineffective phototherapy becomes an important modality of treatment. Phototherapy is an effective and reliable method of treatment in adult age group, but data in literature is inadequate.

The objective of this study is to evaluate the safety and effectiveness of phototherapy in elderly patients who are aged 65 years and above and were treated phototherapy between 2017 to 2022.

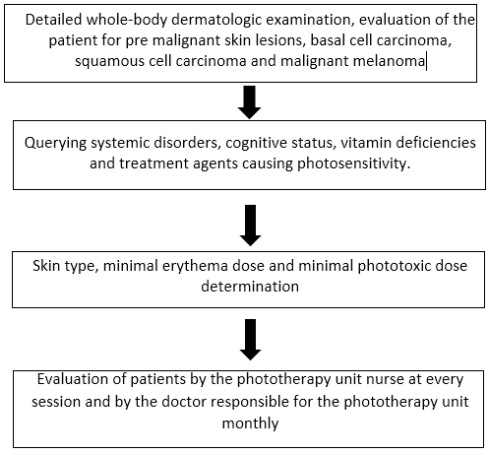
METHODS:

This study includes 100 patients who are aged 65 years and above and were treated with phototherapy between 2017 to 2022. Data used in this study was collected from follow-up forms in phototherapy unit retrospectively.

PHOTOTHERAPY PROTOCOL:

All treatment protocols were started at three times a week. NB-UVB treatment was started with 70% of the minimal erythema dose (MED), and PUVA treatment was started with 70% of the minimal phototoxic dose (MPD). The subsequent dosage increased by 10-20% of the previous dose at each session, according to the clinical situation of the patient for NB-UVB. 8-methoxypsoralen was administered at a dose of 0.6mg/kg for PUVA, and treatment was continued with 0.5 j increases weekly. Treatment was continued with 10% increases in the case of minimal erythema presence during the treatment with NB-UVB. The dose was not increased in the case of continuous moderate erythema. The treatment was interrupted until symptoms regressed in the cases of severe erythema, oedema and bullae development. After symptoms regressed, treatment was continued with 50% of the last dose, and dose increases were determined as 10%. Treatment was continued without an increase in PUVA treatment in the case of the presence of minimal-mild erythema. The treatment was interrupted until symptoms regressed in the cases of severe erythema, oedema, and bullae development. After symptoms regressed, treatment was started with 50% of the last dose and continued with 10% increases. Patients who used only topical corticosteroids, moisturizers, or antihistamines were included in the study. Patients who were treated with phototherapy for less than 8 sessions (due to their own request) were excluded from the evaluation of the relationship between the disorder and the phototherapy dose, effects, and side effects. The steps followed up before and during the phototherapy treatment in individuals of 65 years of age and older in our clinic are presented in figure 1. Besides liver and renal function tests, complete blood cell counts were performed monthly for the evaluation of 8-MOP side effects in patients treated with PUVA.

Figure 1: Follow-up steps for elderly patients receiving phototherapy



RESULTS

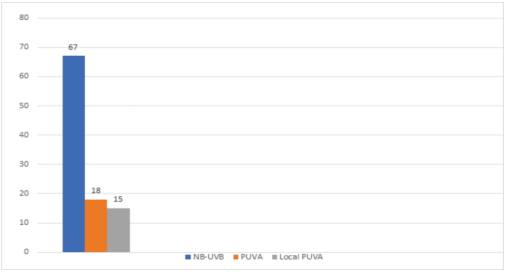
This study included 100 patients (43 female, 57 male) with a mean age of 71.6±5.4 years. Phototherapy was given to 30 patients with vitiligo, 25 patients with psoriasis, 15 patients with palmoplantar psoriasis, 12 patients with generalised pruritis, 12 patients with lichen planus and 6 patients with atopic dermatitis(Table 1).

Table 1: Distribution of patients according to phototherapy recommendation and phototherapy type

	Total number of patients (n)	DUVB n	PUVA n	Local PUVA n
Vitiligo	30	15	15	

Psoriasis	25	22	3	
Generalized pruritis	12	12		
Palmoplantar psoriasis	15			15
Lichen planus	12	12		
Atopic dermatitis	6	6		

Of the 100 patients, 67 patients received NB-UVB, 18 received PUVA and 15 local PUVA treatment (Graph 1).



VITILIGO (n=30)

Vitiligo was most common at 30% among the patients. 15 (30%) patients were treated with NB-UVB, and 14 (50%) patients were treated with PUVA (Table 1). One patient treated with PUVA discontinued the treatment before completing 8 sessions. The median age was 75 (65-82) years for the 15 patients who received NB-UVB treatment and 68 (65-84) years for the 14 patients who received PUVA treatment. The median number of sessions was 55 (10-148), with a median cumulative dose of 59.3 (5.2-240) j/cm2, for NB-UVB treatment, while the median number of sessions was 39 (10-146), with a median cumulative dose of 253.0 (35-1242) j/cm2, for PUVA treatment. No statistically significant difference was found between NB-UVB and PUVA treatments in terms of the number of sessions (p = 0.616). Erythema was found as a side effect in 3(20%) patients treated with NB-UVB and 4 (28.5%) patients treated with PUVA. A complete response was obtained with treatment in 86.6% of the patients treated with NB-UVB and in 78.57% of the patients treated with PUVA. No statistically significant difference was found between those who were treated with NB-UVB and PUVA in terms of the rate of benefiting from the treatment (p = 0.367). Parameters regarding NB-UVB and PUVA treatment in vitiligo patients are summarized in table 2.

TABLE 2: Features of patients with Vitiligo.

	DUVB (n=14)		PUVA(=13)	
	Mean±SD	Median (range)	Mean±SD	Median (range)
Age (years)	74.1±6.5	75 (65-82)	70.5±6.5	68.0 (65-84)
Number of Sessions	55.4±35.4	55.0 (10-148)	52.7±41.1	39 (10-146)
MED/MFD dose (mj/cm2-j/cm2)	540.5±153.2	575 (245-800)	3.3±1.4	3.5 (1-5)
First dose (mj/cm2-j/cm2)	335.8±78.8	332 (166-420)	2.0±0.9	2.3 (1-3)
Maximum Dose (mj/cm2-j/cm2)	1400±588.4	1336 (492-2100)	6.0±2.6	6.0 (3-11)
Cumulative Dose (j/cm2)	70.3±60.4	59.3 (5.2-240)	363.2±357.7	253.0 (35-1242)
Side Effect	3(20%)		4(28.5%)	
Treatment Response	13(86.66%)		11(78.57%)	

PSORIASIS (n=25)

Plaque type psoriasis was present in 25 patients included in this study. NB-UVB treatment was used in 22 (88%) patients and PUVA treatment in 3 (12%) patients. Three patients treated with NB-UVB discontinued the treatment before completing 8 sessions. The median age was 71 (65-80) for NB UVB and 68 (66-77) for PUVA. The median number of sessions was 42 (14-170), with a median cumulative dose of 66.8 (4.9-198.9) j/cm2, for NB-UVB treatment, while the median number of sessions was 25 (19-69), with a median cumulative dose of 219.8 (90-873) j/cm2, for PUVA treatment. PASI 75 response was achieved in 73.7% of the patients treated with NB-UVB and in all of the patients treated with PUVA. Erythema was found as a side effect in 7 (36.8%) patients who received NB-UVB treatment and in 1 (33.3%) patient who received PUVA treatment. Parameters regarding NB-UVB and PUVA treatment in psoriasis patients are summarized in table 3.

TABLE 3: Features of patients with psoriasis vulgaris.

	DUVB (n=19)		PUVA(n=3)	
	Mean±SD	Median (range)	Mean±SD	Median (range)
Age (years)	71.3±5.0	71 (65-80)	70.3±5.9	68 (66-77)
Number of Sessions	55.1±38.7	42.0 (14-170)	36.0±24.4	25 (19-69)
MED/MFD dose (mj/cm2-j/cm2)	504.0±135.7	486 (250-800)	2.7±1.4	3.5 (1-4)
First dose (mj/cm2-j/cm2)	285.6±79.2	300 (150-480)	1.5±0.9	1 (1-3)
Maximum Dose (mj/cm2-j/cm2)	1466.8±644.7	1368 (350-2458)	12.23±7.5	15 (4-18)
Cumulative Dose (j/cm2)	70.0±50.8	66.8 (4.9±198.9)	394.3±419.6	219.8 (90-873)
Side Effect	7 (36.8%)		1 (33.3%)	
Treatment Response	14 (73.7%)		3 (100%)	

GENERALISED PRURITIS(n=12)

Generalized pruritus was present in 12 patients included in this study, in which all of the patients received NB-UVB treatment. Two patients who started phototherapy discontinued the treatment before completing 8 sessions. The median age of the patients was 69 (65-81) years. The median number of sessions was 33.5 (12-108), with a median cumulative dose of 50.5 (4.5-205) j/cm2. The number of patients who benefited from NB-UVB treatment was 8 (80%). Erythema was observed in 2 (20%) patients as a side effect. Parameters regarding NB-UVB treatment in generalized pruritus patients are summarized in table 4.

TABLE 4: Features of patients with pruritis.

	DUVB (n=10)	
	Mean±SD	Median (range)
Age (years)	70.9±5.3	69 (65-81)
Number of Sessions	43.7±29.3	33.5 (12-108)
MED/MFD dose (mj/cm2- j/cm2)	540.5±153.2	600 (245-800)
First dose (mj/cm2-j/cm2)	360.8±77.3	375 (243-480)
Maximum Dose (mj/cm2- j/cm2)	1516±454.9	1541 (751-2148)
Cumulative Dose (j/cm2)	63.2±56.6	50.5 (4.5-205)
Side Effect	2 (20.0%)	
Treatment Response	8 (80.0%)	

LICHEN PLANUS (n=12)

All the patients with lichen planus received NB-UVB treatment, and a response was achieved in 37.5% of the patients, with a median cumulative dose of 21.4 (4.9-99.7) j/cm2 and a median number of 19 (9-60) sessions.

OTHER DERMATOSES:

6 patients with atopic dermatitis were treated with NB-UVB. Treatment response was observed in 4 patients who underwent minimum of 40 sessions and a minimum of 64.8 j/cm2 cumulative dose.

DISCUSSION:

This study demonstrated that phototherapy is effective and reliable in

the elderly population. Studies evaluating skin disorders and quality of life in the elderly population are available in the literature, but, to date, only one study has evaluated the use of phototherapy in this population.

Powell et al. reported that psoriasis was the most common skin disorder, with 51% of 37 elderly patients treated with phototherapy, but in this study vitiligo is common disorder treated with 30 cases.

Vitiligo is a chronic, benign disorder of pigmentation with an incidence of 1–2% worldwide and 0.3–2.5% in India. Although many oral and topical medications are available, results are often unsatisfactory. No statistically significant difference was found between NB-UVB and PUVA treatments in terms of the number of sessions (p = 0.616). Erythema was found as a side effect in 3(20%) patients treated with NB-UVB and 4 (28.5%) patients treated with PUVA. A complete response was obtained in 86.6% of the patients treated with NB-UVB and in 78.57% of the patients treated with PUVA. No statistically significant difference was found between those who were treated with NB-UVB and PUVA in terms of the rate of benefiting from the treatment (p = 0.367).

Systemic treatment administration is quite difficult in moderate and severe psoriasis in the elderly population due to the accompanying comorbidities and multiple drug use. On the other hand, phototherapy is a reliable treatment method with fewer side effects in this patient group. However, the evaluation of previous phototherapy doses and immunosuppressive drugs received by the patients is quite important before the phototherapy decision is made in psoriasis. Our study revealed a PASI 75 response in 73.7% of the 19 psoriasis vulgaris patients treated with NB-UVB, with a median number of 42.0 sessions and a median cumulative dose of 66.8 j/cm2. All patients (n= 3) treated with PUVA achieved a PASI 75 response with a median number of 25 sessions and a median cumulative dose of 219.8 j/cm2. Yones et al. observed full recovery in 84% of their chronic plaque type psoriasis patients who received PUVA, with a median number of 17 sessions, and in 65% of those who received NB-UVB, with a median number of 28.5 sessions. Markham et al. reported that they observed an improvement in psoriasis patients in 25.5 (18-32.5) sessions, with NB-UVB and in 19 (14.6-25.0) sessions with PUVA .

Pruritus is a common dermatologic problem in the elderly population with a prevalence of 29% and is usually idiopathic in this age group. There is a scarcity of publications on phototherapy in generalized pruritus. Seçkin et al. reported obtaining relief in 68% of the 25 idiopathic pruritus cases, with a mean age of 51.7 (range 25- 91) years, with a mean number of 22 sessions and cumulative dose of 20801 mj/cm2. In our study, NB-UVB treatment was administered to all of the patients with idiopathic generalized pruritus, in which complete relief was observed in 80% of the patients, with a median number of 33.5 sessions and a median cumulative dose of 50.5 j/cm2. All of the patients with lichen planus were treated with NBUVB, and a significant improvement was obtained from the treatment with a median cumulative dose of 21.4 (4.9-99.7) j/cm2 and a median number of 19 (9-60) sessions. Gamil et al. reported that 68.8% of their patients who received NB-UVB at a cumulative dose of 84.5±31.6 achieved a complete response, while 70% of the patients who received NB-UVB in another study showed significant improvement in a mean number of 10.9 weeks. Saricaoğlu et al.

observed a complete response in 50% of the patients treated with NB-UVB in 30 sessions.

This study shares similar results with other studies. However, the number of sessions in our study is higher than in the other studies in the literature. The reason for this difference may be explained by the fact that that our patients were generally treated with a low increment regimen. We could not discuss the impact of phototherapy for other dermatoses in elderly patients, due to low number of the patients.

Polypharmacy in elderly patients is important due to their phototoxic and photoallergic side effects, in addition to their hepatic and renal side effects, during phototherapy treatment. The patients should be advised not to use additional systemic and topical drugs without asking their doctors. Moreover, we recommend that the clinician should bear in mind that commonly used non-steroidal anti-inflammatory drugs and antihistamines in this population can cause phototoxic and photoallergic reactions. Although we did not observe severe acute adverse effects that would require the interruption of treatment in any of our patients in this study, erythema was observed in 35% of the patients treated with NB-UVB and in 33% of the patients treated with PUVA. Martin et al. reported that an acute adverse event was observed in 0.6% of NB-UVB treatments and 1.3% of systemic PUVA treatments in their study where they evaluated the acute side effects of these two methods.20 In our study, the incidence of erythema per treatment was 0.43% for NB-UVB treatment and 0.46% for PUVA treatment. No side effect, except slightly elevated liver enzymes secondary to psoralen, which would require the interruption of treatment, was found in any of the patients treated with PUVA. No difference was observed between the two treatment groups in terms of side effects. However, the low number of patients and the fact that PUVA treatment was not used in the risky patient group may have caused this result. Late side effects of phototherapy such as photoaging and photocarcinogenicity, were not evaluated in our patients. The limitations of our study are that it was retrospective and that the remission durations of the patients are unknown. However, this study is valuable as the number of patients is high, and there are no other studies in the literature that evaluate the number of phototherapy sessions, dose, effectiveness, and side effects of phototherapy together in the elderly population.

CONCLUSION

In conclusion, the incidence of the response rate and adverse effects in our study is consistent with results from other studies in the literature, and our data shows that phototherapy is effective and reliable with proper dose increases and close follow-up in geriatric patients.

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