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THERAPEUTIC EFFECTS OF BLUE LIGHT FOR THE FACIAL ACNE VULGARIS IN MILD AND MODERATE CONDITIONS

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Abstract:
Purpose: *To know the efficacy of treatment with blue light in patients with mild or moderate facial acne vulgaris.*
Study Design: *semi-experimental study.*
Place and Duration: *The study was performed in the Dermatology department of Mayo Hospital Lahore for the period of six months from January 2017 to june 2017.*
Methodology: *The study included 105 patients, with non-sequential probabilistic sampling. Patients spent 16 sessions of blue light twice a week for 8 weeks each for 15 weeks. The overall acne score (GAS) was calculated at the beginning of treatment and 8 weeks. The average decrease in GAS was measured. Statistical analysis was performed with SPSS version 16.*
Findings: *91 (87%) patients were between 15-30 years of age, 14 (13%) were between the ages of 31,45 and the mean age was 22.90 ± 5.97 years. 28 (26.7%) were male and 77 (73.3%) were female. Acne 50 (47.6%) was mild in the patient and moderate in 55 (52.4%). The pre-treatment general acne score was 18.990 ± 6.24884 and the post-treatment general acne score was 15.1143 ± 5.1143. After 8 weeks in the general acne score, the mean decrease was 3.87619 ± 3.33021 (p <0.0038).*
Result: *Blue light is an effective monotherapy in the treatment of mild to moderate acne vulgaris in our population.*
Keywords: *Blue light, spherical acne score (GAS), Acne vulgaris.*

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INTRODUCTION:

Acne vulgaris traces are usually comedones, papules, pustules, nodules, cysts and chronic inflammatory diseases of pilosebaceous follicles. Acne pathogenesis is very common, and the four main factors that play a role in pathogenesis are Propionibacterium acnes and inflammation and sebum production, hypercoherence of pilosebacial ducts, follicular colonization. the prevalence of acne vulgaris in puberty ranges from over 90% to 35% and half of them continue to live on in adulthood. The psychological effects of acne vulgaris are low self esteem, depression, social isolation and suicidal ideation. The multifactorial etiology of acne vulgaris makes it difficult to treat. Current treatments include topical retinoids, topical and systemic antibiotics, azelaic acid, and systemic isotretinoin. As mild forms of acne, topical treatment is severe, most suitable for treatment with medium, topical retinoids, topical antibiotics and systemic retinoids and systemic antibiotics. Among non-pharmacological measurements, light-based therapy may be used with or without a photosensitizer as an alternative or adjuvant to pharmacological therapy. Between light therapy for acne vulgaris, blue light is used more because of its internal antimicrobial activity. Blue light high cytotoxic reagent species induce intrinsic intracellular porphyrins leading to oxygen production and can lead to transmembrane proton flux, P. acnes and death. This study was conducted to determine the efficacy of blue light treatment in patients with mild to moderate acne vulgaris.

MATERIALS AND METHODS:

A quasi-experimental trial was performed in the Dermatology department of Mayo Hospital Lahore for the period of six months from January 2017 to june 2017. Patients were taken after receiving prior approval from the hospital ethics committee. Written informed consent was obtained from each patient. A total of 105 patients were included in the study with nonconsecutive probabilistic sampling. Inclusion criteria were any gender and age of patients between 15 and 45 years of age. Exclusion criteria were the last 8 weeks and the use of topical treatment, laser peeling, chemical peeling and dermabrasion photosensitivity history in the last two weeks of use of the patient, absorption phototoxic drug, isotretinoin in the last 6 months did not cooperate and did not want to continue treatment. Acne global classification system was used to separate acne vulgaris from mild to moderate patients. Basic demographic information such as name, age and gender were noted. Sixteen sessions of blue light were administered twice weekly for 8 weeks each week for 15 weeks. The overall acne score was calculated at the start of treatment and in 8 weeks. The emission of blue light was obtained using a specific. Light source of 20-20 cm2 spot size, 420nm wavelength 405nm and power 40-400mW / cm2. Statistical analysis was performed with SPSS 16. Quantitative variables such as age and reduction in GAS were calculated as mean and standard deviation. Qualitative variables such as gender and type of acne were calculated as frequency and percentage. The mean reduction in GAS was measured by subtracting GAS after treatment from GAS before treatment. The paired samples were subjected to a T test. P value ≤0.05 was considered significant. The data are stratified by age and sex to address impact modifiers. Post-trail T-test was performed.

RESULTS:

105 patients who met the inclusion / exclusion criteria were included. The age distribution of the patients showed that 91 (87%) patients were between the ages of 15-30, and 14 (13%) were between the ages of 31-45. The mean age was 22.90 ± 5.97 years. 28 (26.7%) were male and 77 (73.3%) were female. Acne type 50 (47.6%) was mild in the patient and 55 (52.4%) in the middle level (Table 1).

Age (years)	n (%)	Gender	n (%)	Type of acne vulgaris n (%)	
15-30	91 (86.7)	Male	28 (27)	Mild	50 (47.6)
31-45	14 (12.3)	Female	77 (73)	Moderate	55 (52.4)

The pre-treatment general acne score was 18.990 ± 6.24884 and the mean post-treatment GAS was 15.1143 ± 5.1143 (Table 2).

Table 2 Mean Global Acne score pretreatment and posttreatment (n=105).

	Mean	Std. Deviation	Std. Error Mean
Pretreatment Global Acne score	18.9905	6.24884	0.60982
Posttreatment Global Acne score	15.1143	5.1143	0.50967

After 8 weeks in the general acne score, the mean decrease was 3.87619 ± 3.33021, p <0.0038, (Table 3).

Mean		Std. Deviation	Paired Differences Std. Error Mean	95% Confidence Interval of the Difference		P value
				upper	lower	
Pretreatment Global Acne Score - Posttreatment Global Acne Score	3.87619	3.33021	0.32500	3.23171	4.52067	<0.00038

DISCUSSION:

Medical treatments for acne vulgaris include various topical and oral medications. Poor compliance, lack of permanent remission and possible side effects are common disadvantages of these treatments. For this reason, there is an increasing demand for new, fast, safe and side-effect therapy. Acne usually develops after exposure to sunlight, which has led to the development of laser therapies and other light therapies that result in the overall simplicity of treatment with minimal side effects10.

Blue light induces intrinsic intracellular P. acnes porphyrins leading to the production of highly cytotoxic reactive oxygen species, and transmembrane proton flux causes S. acnes.9 death

Dawson and Dellavalle3 and Bhate and Williams11, who showed age distribution of age distribution in acne development in the current study, were 87% comparable between 15-30 years.

This study has shown that the prevalence of facial palsy in mild to moderate female patients is higher in women who are in agreement with previous studies12,13. This may be due to a greater cosmetic concern in men than women in general.

In this study, the pre-treatment general acne score was 18.99 ± 6.24 and post-treatment mean.
The overall acne score was 15.11 ± 5.11, comparable to the previous study.
A similar result was observed in a study conducted by Faghihi et al.14 after 3.8 ± 3.331 (p <0.0038).

CONCLUSION:

In the treatment of mild to moderate acne vulgaris in our population blue light is an effective monotherapy. Blue light used in mild to moderate facial acne vulgaris and comparative studies of other therapies are required to provide blue light as first-line monotherapy.

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