

Efficacy of Topical 2% Clindamycin Gel Versus 5% Nicotinamide Gel in Patients with Mild to Moderate Acne

Nida Qayyum, Asher Ahmed Mashhood*, Adeela Farid*, Muhammad Azam, Sayyida Komal*, Hina Syeda

Combined Military Hospital Quetta/National University of Medical Sciences (NUMS) Pakistan, *Combined Military Hospital/National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: To compare the efficacy of topical 5% Nicotinamide gel versus 2% Clindamycin gel in patients with mild to moderate acne.

Study Design: Comparative cross-sectional study.

Place and Duration of Study: Department of Dermatology, Combined Military Hospital, Quetta Pakistan, from Jan to Jun 2019.

Methodology: Patients with mild to moderate acne were enrolled in the study. A total of 372 patients were randomly and equally divided into two groups, Group-A (Clindamycin) and Group-B (Nicotinamide). Response to treatment was graded according to Acne Global Severity Score. Scoring was done in both groups at the start and after eight weeks of therapy. Therapy was considered efficacious if there was at least 2 step improvement in post-therapy scores compared to pre-therapy scores.

Results: Total number of patients included was 372. Group-A (Clindamycin-Group) had 186 patients, of which 67 were males, and 119 were females. In Group-B (Nicotinamide-Group), out of 186 patients, 62 were males, and 124 were females. Regarding the treatment results, Clindamycin was found to be 31% efficacious, whereas the efficacy of Nicotinamide was 34.7% (p -value=0.127).

Conclusion: There is no significant difference in the efficacy of Clindamycin and Nicotinamide in treating mild to moderate acne.

Keywords: Acne, 2% Clindamycin gel, Efficacy, 5% Nicotinamide gel.

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INTRODUCTION

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit resulting from androgen-induced increased sebum production, altered keratinisation, inflammation and bacterial colonisation of hair follicles on the face, neck, chest and back by *Propionibacterium acnes*. Acne vulgaris is considered the most common dermatological disorder of teenage.¹

Multiple treatment options are used as monotherapy or combination regimens for treating acne worldwide. However, there is no unified consensus on using these regimens for treating acne; therefore, treatment options are selected individually. Acne is classified as mild, moderate and severe.^{2,3} Mild acne encompasses non-inflammatory lesions (comedones), a few inflammatory (papulopustular) lesions, or both. There are more inflammatory lesions, occasional nodules, moderate acne and mild scarring. The treatment options include topical antibiotics (Clindamycin, Erythromycin, and Tetracycline), topical retinoids

(Tretinoin, Isotretinoin, Tazarotene and Adapalene), oxidizing agents (Benzoyl peroxide), systemic antibiotics (Doxycycline, Minocycline, Tetracycline, Azithromycin and Erythromycin), systemic retinoid (Isotretinoin) and hormone therapy (combination of contraceptive pills and spironolactone) depending upon the severity of the disease.⁴⁻⁶

Clindamycin has been shown to have in vitro activity against *Propionibacterium acnes*, an organism associated with acne.⁷ The broad clinical effects of Nicotinamide may be explained by its role as a cellular energy precursor, a modulator of inflammatory cytokines, and an inhibitor of the nuclear enzyme polymerase-1, which plays a significant role in DNA repair, maintenance of genomic stability, and cellular response to injury including apoptosis and inflammation.^{8,9} Acne can persist into adulthood, with adverse effects on self-esteem rendering an appropriate treatment necessary.¹⁰ The rationale of this study was to compare and evaluate the efficacy of topical Clindamycin with topical Nicotinamide in mild to moderate acne vulgaris. The inference would help the physicians acquire newer topical modalities for the

Correspondence: Dr Nida Qayyum, Graded Dermatologist, Combined Military Hospital, Quetta, Pakistan

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treatment of acne and would also provide more reliable treatment options.

METHODOLOGY

This study was conducted at the Outpatient Department of Dermatology, Combined Military Hospital, Quetta Pakistan from January to June 2019. Permission from Hospital Ethics Committee was taken before data collection.

The sample size was calculated by using the WHO sample size calculator using a level of significance as 5%, power of test at 80%, and anticipated population proportion (P1)=77.32%, anticipated population proportion (P2)=87.72%,¹¹ The estimated sample size was 372 patients. Patients were categorized into Group-A (Clindamycin-Group =186) and Group-B (Nicotinamide-Group =186). Patients in both groups (A and B) received once-daily topical applications of 2% Clindamycin and 5% Nicotinamide gel for eight weeks, respectively.

Inclusion Criteria: All male and female patients aged 15-35 years, with mild to moderate acne and were included in the study.

Exclusion Criteria: Patients having severe acne, pregnancy and patients known allergy to Clindamycin, Lincomycin or Nicotinamide were excluded from the study.

Patients of acne fulfilling the inclusion criteria were selected after written consent. Hospital registration number, age,gender,and address with contact number were noted for each patient Disease was diagnosed based on clinical features of acne and severity was defined using Acne Global Severity Score.^{12,13}

Before the start of treatment, a careful history and examination and type of lesions were recorded on the data collection proforma. All information was collected on a specially designed proforma. Patients were followed up fortnightly till the end of the eighth week of treatment.

Response to treatment was graded according to Acne Global Severity. Scoring was done in both groups at the first visit before and after eight weeks of therapy. Therapy was considered efficacious if there was >2 step improvement in post-therapy score compared to pre-therapy score.

Statistical Package for Social Sciences (SPSS) version 20.0 was used for the data analysis. Quantitative variables like age and severity score were calculated as mean and standard deviation. Qualitative variables like gender and efficacy of the treatment were

presented as frequency and percentages. The chisquare test was applied to compare the efficacy in both groups. The *p*-value of ≤0.05 was considered significant.

RESULTS

In this study, 372 patients were divided into two equal groups (A and B) to compare the efficacy of topical 5% Nicotinamide gel versus 2% Clindamycin gel in patients with mild to moderate acne. Among 372 patients, the age ranged from 21 to 35 years. The mean age of the patient was 26±4 years.

There were 67 males (36.0%) and 119 females (64.0%) in the Clindamycin-Group (n=186), while 62(33.4%) males and 124(66.6%) females were included in the Nicotinamide (n=186) Group.

In the Nicotinamide-Group (n=186), 84 patients had mild acne (45.16%), and 102 patients showed moderate acne (54.83%). Similarly in Clindamycin Group (n=186), 85 had mild acne (45.2%), and 101 patients had moderate acne (45.7%), as shown in Table-I.

Table-I: Distribution of Type of Acne (n=372)

Study Groups	Type Of Acne	
	Mild	Moderate
Clindamycin	85(45.26%)	101(54.73%)
Nicotinamide	84(45.16%)	102(54.83%)

While comparing both groups, Clindamycin was found to be 61.82% efficacious, whereas the efficacy was 69.4% in the Nicotinamide-Group, and the *p*-value was 0.127, Table-II.

Table-II: Comparison of Efficacy Between Groups (n=372)

Study Groups	Efficacy		<i>p</i> -value
	Yes	No	
Clindamycin	115(61.82%)	71(38.17%)	0.127
Nicotinamide	129(69.35%)	57(30.64%)	

DISCUSSION

In this study, we compared the efficacy of topical 5% Nicotinamide gel versus 2% Clindamycin gel in patients with mild to moderate acne. The mean age of patients in the Clindamycin and Nicotinamide Groups was 26±4 years. This showed that acne vulgaris is essentially a disease of young age. It was observed that patients who were less than 21 years of age did not meet our criteria for Acne Global Severity Score (2-4); therefore, they could not be included in the study. In our study, 36% males and 64% females were enrolled in the Clindamycin-Group, and 33.4% of males and 66.6% of females were included in the Nicotinamide-Group, showing that female patients were predominant in both groups. In Group-A (2% Clindamycin),

61.82% of patients showed a good response to treatment, while the efficacy of Group-B (5% Nicotinamide gel) was 69.35%. The results were in accordance with the previous literature.¹⁴⁻¹⁶

In the Clindamycin-Group, 45.26% of patients had mild, and 54.73% had moderate acne. The Nicotinamide-Group had 45.16% of patients with mild acne and 54.83% with moderate acne. Surprisingly, the number of patients with mild and moderate acne in both groups was almost similar. We also observed that the number of patients with moderate acne was slightly higher than mild acne in both groups, which could be because patients with moderate acne report more for treatment.

For evaluation of the efficacy of both drugs, the global acne score was measured at the start of treatment and re-evaluated after eight weeks of therapy which showed two score improvements in 61.82% of patients of the Clindamycin-Group and 69.35% of patients of the Nicotinamide-Group. 38.17% of the Clindamycin-Group and 30.64% of the Nicotinamide-Group did not show the desired improvement in acne global severity score. This showed that Nicotinamide is 8% more effective than Clindamycin, but the *p*-value was 0.127. This is similar to the previous studies showing almost similar results comparing the efficacy of these two drugs.^{17,18}

It was observed that although acne is primarily a disease of males, the number of male patients who were included in our study was 34.5% of the total study population.

While comparing the effect of both drugs on mild acne, another important conclusion can be drawn. We observed that Clindamycin was 90.5% efficacious in mild acne, responding well in 76 out of 85 patients. While the efficacy of Nicotinamide in mild acne was found to be 92%, as 78 out of 84 patients had an excellent response. Hence, both drugs showed excellent responses in mild acne.

While evaluating the effect of Clindamycin in moderate acne, we observed that only 38% of patients showed an improvement in acne global severity score. Similarly, 50% of patients with moderate acne responded well to treatment in the Nicotinamide-Group. This concludes that moderate acne is less responsive to both drugs than mild acne.

CONCLUSION

5% Nicotinamide gel is slightly more efficacious than 2% Clindamycin gel in treating mild to moderate acne vulgaris. It is also concluded that there is not much

difference between the two drugs regarding the gender or age of patients. However, both drugs were significantly more effective in mild and moderate acne.

Conflict of Interest: None

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

NQ: Study design, drafting the manuscript, data interpretation, approval of the final version to be published.

AAM: Critical review, drafting the manuscript, approval of the final version to be published.

AF & MA: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

SK & HS: Conception, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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