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COMPARING EFFICACY OF 10% GLYCOLIC ACID VERSUS 10% MANDELIC ACID PEEL IN TREATMENT OF ACNE

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ABSTRACT

Objective: Comparing the efficacy of 10% Glycolic acid versus 10% Mandelic acid peels in treatment of acne.
Study Design: Comparative cross sectional study.
Place and Duration of Study: This study was carried out at department of dermatology, Sheikh Zayed Hospital, Rahim Yar Khan, from Mar to Sep 2019.
Methodology: One hundred and twenty cases of more than 12 years age and either gender suffering from mild to moderate acne scored on Global acne grading system were randomised into group A and group B to be treated with 10% Glycolic acid and 10% Mandelic acid peels respectively for 6 weeks. Patients were treated and scored for improvement on weekly basis up to 6weeks and finally followed up at 12th week for reoccurrence. Response was graded on the basis of percentage reduction in number of lesions.
Results: Out of total 120 cases and 60 in each group, the mean age was 27.87 ± 7.0 vs 25.57 ± 7.05 in group A and B with p=0.31. There were 34 (56.67%) females in group A and 38 (63.33%) in group B with p=0.58. Mean acne score in group A and B was 25.10 ± 8.83 versus 26.03 ± 7.35 with p=0.53. Mild response was seen in 20% in either group, moderate in 13.33% versus 36.67%, good in 30% versus 33.33% and significant in 36.67% and 10% of cases in group A and B respectively with p-value of 0.001.
Conclusion: 10% Glycolic acid was found significantly better than 10% Mandelic acid peels in the treatment of acne.

Keywords: Acne, Efficacy, Glycolic Acid, Mandelic Acid.

INTRODUCTION

Acne vulgaris is a disease of the pilo-sebaceous unit characterized by seborrhoea, comedones, papules, pustules, nodules and in few cases scarring[1]. Acne vulgaris is amongst the widely prevalent skin diseases, all across the globe that require frequent consults to dermatologists. The prevalence is highest in the adolescent age-group and spontaneous resolution without treatment is common[2].

Disease being a cosmetic problem causes psychosocial and emotional distress and affects life's quality due to self perception of poor health[3]. Current treatment options for this condition target the factors that contribute to pathophysiology of disease and include systemic and topical antimicrobials, retinoids and adjuvant therapeutic agents like peels[4]. Although retinoids and anti-microbials are considered the mainstay anti acne management, the other relatively newer adjunctive treatment options i.e. laser, chemical peels and photo-dynamic therapies are rising day by day because of emergence of drug resistance, side effect profiles, patients satisfaction and better efficacy[6].

Chemical peels are defined as applications of a weak biological acids to the skin, which results in controlled desquamation of a part or whole of the epidermis with or without involving dermis. This leads to ex-foliation and removal of superficial lesions, which is followed by re-juvenation of skin[7]. There are a number of chemical peels i.e. glycolic acid, mandelic acid, salicylic acid, and lactic acid. Each one has its own advantages and disadvantages andthe search for best treatment continues. Present study to compare the efficacy of 10% Glycolic acid with 10% Mandelic acid peels as mono therapy in the treatment of acne.

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METHODOLOGY

This comparative cross sectional was carried out from March to September 2019 in dermatology department of Sheikh Zayed hospital Rahim yarkhan after taking approval from ethics committee institutional review board (IRB), (Ref. no. 92) office of the journal of Sheikh Zayed medical college (JSZMC), Global acne grading system[7] was used to calculate the score where 0 was labelled as no acne to 10 as the highest. In this system, affected body areas are given certain constant factors i.e. forehead-2, each cheek-2, nose-1, chin-1 and upper trunk-3. The score is calculated by the following formula;

Local area score = Area Factor x Grade (0-4) AND Global score = Sum of all local scores.

Sixty patients with Fitzpatrick skin type IV–VI of 13-35 years age range and either gender with mild to moderate acne (up to 100 comedones/papules and 50 pustules) of grade 0-4 were included in study. Patients on oral contraceptives, tetracycline, oral isotretinoin therapy within the past 6 months, simultaneous facial hair removal (waxing, depilation, electrolysis), laser therapy, history of hypertrophic scarring, keloid, active or recurrent herpes, those working outdoors and with photosensitivity, Immunosupression, concurrent illness, recent head or neck surgery, having plane warts and dermatitis were excluded from study. These patients were then randomized through non probability consecutive sampling using a a random number allocation method to groups A to be treated with 10% Gly-colic acid and group B with 10% Mandelic acid peels on weekly basis for 6 weeks. Solutions used were prepared by GREEN Pharma Lahore.

After taking informed consent from each patient, treatment was carried out in OPD. Patients were instructed to remove any makeup and wash the face with soap and water. The skin was degreased first with alcohol. Vaseline was applied to protect corners of the mouth, nose and eyelids. The solution was applied with 4 × 4 cm gauze pads/cotton bud in circular fashion either clockwise or anticlockwise starting from the forehead. Peeling agents were applied for 3-5 mins until erythema or stinging develops, the peel was then neutralized by washing the area with copious amounts of cool tap water. Patients were instructed to avoid rubbing of face with towel and to apply a sunscreen with a sun protec-tion factor of 50 or above before leaving the clinic. Patients were advised to avoid sun exposure, use sun block during day and moisturize at night. They were also cautioned not to apply any cream or face wash containing alpha hydroxy acid, salicylic acid or retinoid.

Scoring was done at start of treatment, at each visit for improvement and finally on 12th

Table-I: Study demographics of the participants.

Demographics	Group A	Group B	*p*-value
Age (years)	27.87 ± 7.0	25.57 ± 7.05	0.31
Male	26 (43.33%)	22 (36.67%)	0.58
Female	34 (56.67%)	38 (63.33%)	
Duration of lesions (months)	4.13 ± 1.66	4.63 ± 1.46	0.97

Table-II: Acne score of the participants.

	Group A	Group B	*p*-value
Acne score (pre-treatment)	25.10 ± 8.83	26.03 ± 7.35	0.53
Acne score (post-treatment)	21.57 ± 8.20	22.23 ± 8.01	0.79

Table-III: Comparison of efficacy between participants of the two group.

Efficacy	Group A	Group B	*p*-value
Mild	12 (20%)	12 (20%)	0.001
Moderate	8 (13.33%)	22 (36.67%)	
Good	18 (30%)	20 (33.33%)	
Significant	22 (36.67%)	6 (10%)	

week for any recurrence. Response was graded on the basis of percentage reduction in number of lesions as mild if <25, moderate if 25-50%, good if 51-75% and significant if there was > 75% reduction.

The data was entered and analysed with the help of SPSS-23. Mean and SD were used for numerical data while frequencies and percentages for categorical data. Both groups were compared by using appropriate test i.e. chi square test for categorical and independent sample t-test for numerical variables. A *p*-value of equal to or less than 0.05 was considered as significant.

RESULTS

Out of total120 cases of acne included in the study, 60 were in each group. The mean age was 27.87 ± 7.0 vs 25.57 ± 7.05 in group A and B with *p*=0.31. There were 34 (56.67%) females in group A and 38 (63.33%) in group B with *p*=0.58. There was no significant difference in duration of lesion with *p*=0.98. (table-I). Mean acne score pre-treatment in group A and B was 25.10 ± 8.83 versus 26.03 ± 7.35 with *p*=0.53, post treatment with *p*-value 0.79 (table-II). Mild response was seen in 20% in each group, moderate in 13.33% vs 36.67%, good in 30% vs 33.33% and significant response in 36.67% and 10% of cases in group A and B respectively with *p*-value of 0.001 as shown in table-III.

DISCUSSION

In our study, we found 10% Glycolic acid peel to be significantly superior over 10% Mandelic acid peel as monotherapy in the treatment of mild to moderate acne with *p*-value of 0.001. These drugs have been used mostly as adjuvants in the past and compared with other peeling agents but have not been tried as monotherapy or compared to each other[8-11].

In a study done by Rosario *et al*[12], however, compared 12% Glycolic acid with 10% Azelaic acid and found Azelaic acid to be significantly better than Glycolic acid with *p*-value of <0.001 but in our study, Glycolic acid gave quite satisfactory results. Abels et al study 13 revealed improvement in mild acne vulgaris by using 10% glycolic acid peels i.e. effect similar to that observed in our study but it was placebo controlled trial. In a study by Keslar[14] comparing 30% salicylic acid and 30% glycolic acid peels concluded both agents to be equally effective in mild to moderately severe acne, but our study revealed that 10% strength gave desired results even in shorter duration. Takenaka[16] studied bactericidal effects of glycolic acid and in our study also it was observed that in patients treated with glycolic acid pustules settled earlier than those treated with mandelic acid peels.

A study done by Garg *et al*[17], comparing 35% Glycolic acid versus a combination of 20% Salicylic acid and 10% Mandelic acid revealed the combination to be superior both for the active lesions as well as pigmentation with *p*-values of <0.001. In our study, however, we found Glycolic acid in a lower concentration to be superior to Mandelic acid. Another study by Jartarkar *et al*[18] compared Mandelic acid with Salicylic acid peels and found salicylic acid peel superior to Mandelic even in inflammatory lesionsas well with *p*<0.05 each. In our study too, Mandelic acid was found to be less effective.

In this study, Glycolic acid has been found to be safe and cost effective treatment even in 10% strength without prior priming and without any post treatment sequela like hyper pigmentation, frosting or burning. Mandelic acid peels gave delayed and statistically insignificant results but better rejuvenation effects compared to glycolic acid peels.

CONCLUSION

10% Glycolic acid was found significantly better than 10% Mandelic acid peels in the treatment of mild to moderate acne.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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