

COMPARATIVE STUDY OF EFFICACY OF 20% SALICYLIC ACID CHEMICAL PEELING VERSUS TOPICAL ADAPALENE 0.1% IN THE TREATMENT OF NON-INFLAMMATORY AND INFLAMMATORY ACNE VULGARIS

Dermatology

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ABSTRACT

Background : Acne vulgaris is a disease of pilosebaceous unit that causes non-inflammatory lesions and inflammatory lesions. Chemical peeling method has been recently found to be effective for acne treatment. This study aimed to compare the efficacy of salicylic acid 20% peeling and topical adapalene 0.1% gel in the treatment of non-inflammatory and inflammatory acne vulgaris. **Methods :** This comparative study was undertaken in the out-patient department of Dermatology, ANMMCH, Gaya. A total of 40 patients were randomly divided into two groups. Group A underwent peeling with 20% salicylic acid every 15 days for six sessions. Group B received 0.1% adapalene gel to be applied overnight for a period of 12 weeks. Lesions counting and photographs were recorded every 15 days. **Results :** Efficacy and cutaneous tolerance were assessed at baseline and 2, 4, 6, 8, 10 and 12 weeks. At the end of 12 weeks treatment, 87% of patients on salicylic acid peel showed good response to significant response and 25% patients showed mild to moderate response. At the end of 12 weeks of treatment, 78% of patients using adapalene 0.1% gel showed good response to significant response and 22% patients showed mild to moderate response. There was significant reduction in the number of inflammatory and non-inflammatory lesions with better improvement in group A as compared to group B. **Conclusion :** salicylic acid peel was found to be more efficacious than topical adapalene 0.1% gel in the treatment of both inflammatory and noninflammatory acne.

KEYWORDS

Acne vulgaris, salicylic acid, adapalene 0.1%

Introduction

Acne vulgaris is a common, chronic disease of the pilosebaceous unit that causes non-inflammatory lesions (comedones) and inflammatory lesions (papules, pustules and nodules). Acne affects skin having dense sebaceous follicles in areas including face, chest and back. Acne vulgaris may be of two forms- inflammatory and non-inflammatory. Acne vulgaris is commonly seen in during adolescence and affecting about 80-90% of teenagers. It is considered to be a multifactorial condition associated with abnormal follicular keratinization, altered sebum production, proliferation of *Propionibacterium acnes* and altered immune response with inflammation. Although the course of acne may be self limiting, the sequelae can be lifelong, with pitted or hypertrophic scar formation. A wide range of therapeutic options are available, including topicals and systemic therapies.

Retinoids have been found to be useful in the treatment of acne, as they act on both keratinocytes and sebaceous glands. Adapalene is a third generation topical retinoid primarily used in the treatment of mild to moderate acne. It modulates keratinization and possess anti inflammatory activities.

Chemical peeling is a skin resurfacing procedure intended to regenerate normal skin from the application of exfoliative agents. For decades, chemical peeling has been used as an effective modality in the management of active acne. It results in better therapeutic outcome and rapid response in lesion count as well as improvement in skin texture.

Salicylic acid is a 2-hydroxybenzoic acid used for superficial peeling due to its strong keratolytic and comedolytic properties. It promotes shedding of epidermal cells and due to its lipophilic properties can penetrate comedones and pores to prevent clogging and neutralize bacteria. It promotes desquamation of the upper lipophilic layers of the stratum corneum. Also, it has well documented anti inflammatory properties.

Materials and methods

This prospective, randomized, comparative study was undertaken in the out-patient department of Dermatology, A. N. Magadh Medical College and Hospital, Gaya, Bihar from June 2022 to November 2022.

All the patients were informed about the nature of study and written consent was obtained before including them in the study. A total of 40 eligible patients of both sexes with inflammatory and /or non-inflammatory lesions were randomly divided into two groups. Group A

underwent peeling with 20% salicylic acid every 15 days for six sessions. Group B received 0.1% adapalene gel to be applied overnight for a period of 12 weeks. Lesions counting and photographs were recorded every 15 days.

Inclusion criteria

1. Patients with inflammatory and non-inflammatory acne lesions.
2. Patients of either sex in the age range of 15-39 years.

Exclusion criteria

1. Patients with a history of hypertrophic scarring / keloid
2. Patients with oral isotretinoin intake in the past 6 months
3. Pregnant and lactating women
4. Patients with active / recurrent herpes infection.

At baseline and each follow-up, clinical photos of the patients were taken including the front, left and right side of face. Sunscreen and moisturizer were prescribed. The improvement of lesions was evaluated : counted the number of non inflammatory lesions (comedones) and inflammatory lesions (papules and pustules) at baseline, 2, 4, 6, 8, 10 and 12 weeks.

Percentage of improvement in inflammatory and non-inflammatory lesions at the end of 12 weeks was the primary endpoint measure. The improvement was graded as percentage decrease in lesions, <25% as mild, 25-50% as moderate, 51-75% as good and >75% as significant improvement.

Severity of acne was evaluated counting the number of inflammatory lesions, non-inflammatory lesions and total lesions as follow :

Table1

severity	Inflammatory lesions	Noninflammatory lesions	Total lesion
0	absent	absent	absent
1	<15	<20	<30
2	15-50	20-100	30-125
3	>50	>100	>125

Results

The mean age group of patients presenting with facial acne vulgaris was 18.5 years and the most common age group of patients was 15-19 years. Females formed the majority in our study with 22 (55%). Table 2 shows baseline demographics.

Table 2:

Age(years)	Male(%)	Female(%)	Total
15-19	10 (25)	8 (20)	18
20-24	4 (10)	6 (15)	10
25-29	2 (5)	4 (10)	6
30-34	2 (5)	2 (5)	4
35-39	0	2 (5)	2
Total	18 (45)	22 (55)	40

In the present study, 40 subjects were studied. Group A underwent peeling with 20% SA every 15 days for six sessions. Group B received 0.1% adapalene gel to be applied overnight for a period of 12 weeks. Six peeling sessions were conducted for group A at baseline, 2, 4, 6, 8 and 10 weeks. Patients were also called at the end of 12th week for follow up visit, but peeling was not applied on that session. At baseline and each follow up clinical photos of patients were taken. Sunscreen and moisturizer were prescribed.

Efficacy and cutaneous tolerance were assessed at baseline and 2, 4, 6, 8, 10 and 12 weeks. Efficacy was determined counting the no. of inflammatory, open and closed comedones as well as global improvement. Cutaneous tolerance was evaluated by erythema, scaling and dryness along with burning and pruritus. Table 3 showing improvement of inflammatory, non inflammatory lesions and average improvement at 12 weeks in group A and group B.

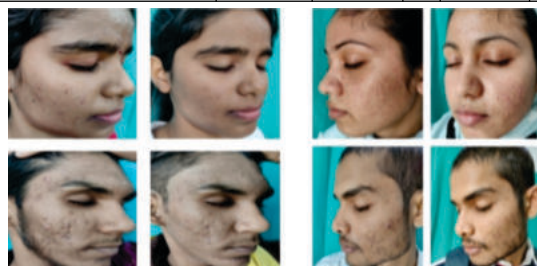
Table 3:

Group	Inflammatory lesions	Noninflammatory lesions	Average
A	72.6%	40.4%	66.4%
B	56.4%	34.8%	58.2%
			P=0.420

At the end of 12 weeks treatment, 87% of patients on 20% salicylic acid peel showed good response to significant response and 25% patients showed mild to moderate response. At the end of 12 weeks treatment, 78% of patients using adapalene 0.1% gel showed good response to significant response and 22% patients showed mild to moderate response. Table 4 show grading of response to treatment in inflammatory and non inflammatory lesions in group A and group B. Significant reduction in number of inflammatory, non inflammatory and total lesions were demonstrated in patients on 20% SA peel on two week interval, compared with those using only adapalene 0.1% gel. In group A, the most common side effect noted was post peel erythema in 44%, burning and irritation in 16% patients, which subsided in few hours and visible skin peeling in 20% patients, which resolved within week. In group B most common side effects observed was burning in 46% of patients, dryness and irritation in 18% and erythema in 26% patients. Patients treated with 20% SA peel tolerated this therapy significantly better than those treated with adapalene 0.1% gel.

Table 4:

Grading	Reduction of lesions	Group A		Group B	
		N (N=20)	%	N (N=20)	%
Inflammatory lesions					
Significant	76-100%	7	35	4	20
Good	51-75%	10	50	8	40
Moderate	25-50%	3	15	8	40
Mild	<25%	0	0	0	0
Non-inflammatory lesions					
Significant	76-100%	6	30	2	10
Good	51-75%	12	60	8	40
Moderate	25-50%	2	10	10	50
Mild	<25%	0	0	0	0

**Figure 1 : Photographs of patient at baseline and 8 weeks**

DISCUSSION

Acne vulgaris is a chronic inflammatory disease, characterized by formation of comedones, papules, pustules, nodules, cysts, abscesses and sometimes widespread scarring developed.

Acne therapy is aimed at correcting the abnormal infundibular hyperproliferation, reduction of sebum production, reducing the colony of *Propionibacterium acne* and preventing the release of inflammatory mediators responsible for the pathogenesis of acne.

Salicylic acid peels were more effective than topical adapalene 0.1% in the treatment of both inflammatory and non inflammatory acne.

Bea et al treated 13 patients with facial acne with salicylic acid is effective in both inflammatory and non inflammatory acne lesions, similar to the finding noted in the present study.

Conclusions

The present study showed salicylic acid peeling produced numerically greater lesion reductions than adapalene 0.1% gel at 2 to 4 weeks of treatment.

Salicylic acid peel was found to be more efficacious than topical adapalene 0.1% gel in treatment of both inflammatory and non inflammatory acne.

SA peel is a simple, safe and cost effective procedure for the treatment of acne as compared to topical adapalene 0.1% gel.

A study conducted by Bari et al on tolerance and safety of salicylic acid peeling in various dermatoses suggested that salicylic acid superficial peeling was well tolerated.

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