RESEARCH ARTICLE

A Prospective Observational Study and Comparative Efficacy of Topical Benzoyl Peroxide and Minocycline Gel with and without Added Chemical Peel in Acne Treatment

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Abstract

Objective: This prospective observational study aims to evaluate the effectiveness of the combination of topical benzoyl peroxide and minocycline gel, comparing it with and without added chemical peel in acne vulgaris treatment

Methods: In This study we have observed the effectiveness of two different treatment regimens in acne treatment. Based on the GAGS scale, the severity index of subjects was observed. A cohort of 110 young and adult populations are included in our study.

Results: A study on acne vulgaris (110 cases, 6 months) revealed a higher prevalence among females (70.9%). Severity at visit: severe (65.4%), moderate (24.5%), very severe (10.1%). Follow-ups showed a decrease in severe cases and an increase in mild. No initial counseling on food limitations was provided. Males comprised 29.1% of cases. Further analysis may elucidate treatment efficacy and the potential impact of lifestyle factors on acne management.

Conclusion: This study compares combining topical benzoyl peroxide and minocycline gel alone versus with chemical peel for acne treatment. Chemical peel adjunct shows enhanced efficacy, lower recurrence, and scar reduction. Female predominance was noted among 110 patients. Regular follow-ups and standardized acne scoring are recommended. Physicians should be educated on the benefits of combination therapy. The result is better clinical clearance with chemical peel addition.

Keywords: Acne vulgaris, Chemical peel, Minocycline gel, Benzoyl peroxide, Lifestyle, Efficacy.

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Introduction

Acne vulgaris is a common cutaneous inflammatory disorder of the pilosebaceous unit, which runs a chronic course. The condition commonly manifests with papules, pustules, or nodules primarily on the face, although it can also affect the upper arms, trunk, and back. The pathogenesis of acne vulgaris involves the interaction of multiple factors that ultimately lead to the formation of its primary lesion, which is known as comedo. Although acne vulgaris is commonly observed among adolescents, it is not restricted to this age group and can affect individuals of various ages.[1] Although acne is principally a disorder of adolescence, the number of adult patients with acne is increasing. Adult acne is defined as the presence of acne beyond the age of 25 years.[2] There is relatively little data on the prevalence and studies of acne in an adult population.[3]

Causes of Acne

- Acne is a multifactorial disease: genetic factors, stress, androgens, and excess sweating all influence its development and/or severity.[4]
- Corticosteroids, oral contraceptives, iodides, bromides, lithium, and chemicals such as dioxins are known to induce acne eruptions, as are endocrine disorders such as Cushing's syndrome and polycystic ovary syndrome.
- Generally, acne is due to more than one factor, but the dominant factor is genetics. If both parents had acne, three out of four children would have acne. If one parent had acne, then one out of four children will have acne. However, similar to other genetic conditions, not every family will have the same pattern, with acne vulgaris sometimes skipping generations.
- Hormonal activity such as menstrual cycles and puberty,

is one of the causes for acne. During puberty, the increase in male sex hormones called androgens causes the sebaceous gland, which is located around a hair follicle, to grow larger and produce more sebum. Sebaceous glands are affected when their activity becomes hyperactive compared with normal activity. *Propionibacterium acnes*, will attack the sebum that is trapped under the skin surface when the hair follicles become blocked.

- In a hot climate, sebaceous glands produce more oily substances called sebum, which may cause acne.[5]

Methodology

Study Design : A Prospective observational study
Study Site : Sruthi Skin Clinic, Narasaraopet.
Study Period : A period of 6 months (Sep 2023-March 2024)
Sample Size : 110

Inclusion criteria

- Both male and female patients were considered.
- People who are between 13 to 52 years of age were included in this study.
- People with PCOD, hormonal imbalance and other comorbidities were also considered in this study.
- Only outpatients were included.[6]

Exclusion criteria

- People who are not interested in taking treatment for acne vulgaris were excluded.
- People with age less than 13 years were excluded.
- Pregnant and lactating women were excluded.
- Patients with a history of drug reactions to tetracyclines were excluded.
- Patients on other systemic medications for acne were excluded.[6]

Results and Discussion

Gender wise distribution of acne vulgaris among selected subjects is shown in Table 1. Among them, 71% (n = 78) were female and 29% (n = 32) were male.

Diagnosis wise distribution of acne vulgaris among selected subjects is shown in Table 2. Among 110 subjects, 27 subjects (24.5%) are diagnosed with grade II acne, 72 subjects (65.4%) are diagnosed with grade III acne and 11 subjects are diagnosed with grade IV Acne.

Treatment-wise distribution of acne vulgaris among selected subjects is shown in Figure 1. Among 110 subjects, 76 subjects (69.1%) are prescribed with minym, peroclin 2.5 and 34 subjects (30.9%) are prescribed with minym, peroclin 2.5 and chemical peel. It shows that the majority of people are not taking chemical peel

Distribution of selected subjects according to severity index on their first visit is shown in Table 3. Among 110 subjects based on global acne grading system (GAGS) – a large number of subjects are having severity index range of

Table 1: Distribution based on gender of patients

S. No.	*Gender*	*No. of Subjects (n = 110)*	*Percentage*
1	Male	32	29
2	Female	78	71

Table 2: Distribution based on diagnosis

S. No.	*Type of diagnosis*	*No. of subjects*	*Percentage*
1	Grade I	0	0
2	Grade II	27	24.5
3	Grade III	72	65.4
4	Grade IV	11	10

Table 3: Distribution based on range of severity index on first visit (n = 110)

S. No.	*Range of Severity index on first visit*	*No.of subjects (n = 110)*	*Percentage*
1	1–18	0	0
2	19–30	27	25
3	31–39	72	65
4	>39	11	10

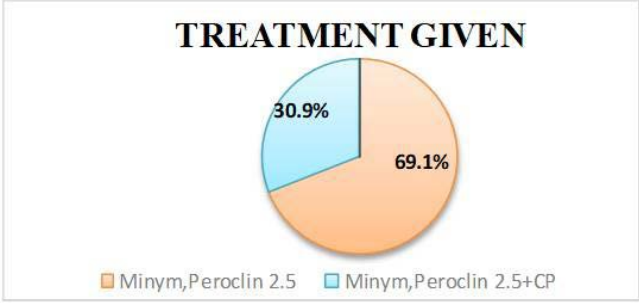

Figure 1: Distribution Based on Treatment given

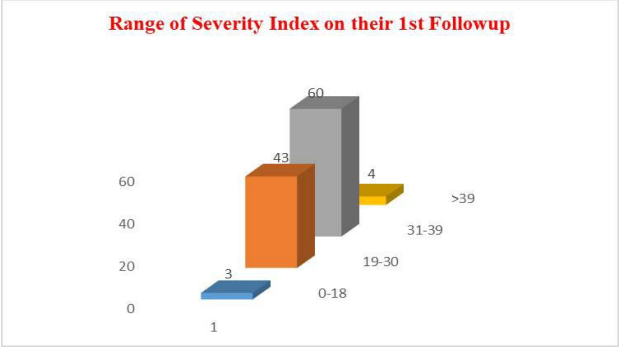

Figure 2: Distribution based on range of severity index on follow-up 1

31–39 (n = 72), followed by severity index ranges of 19–30 (n = 27), >39 (n = 11).

The distribution of selected subjects according to the severity index on their follow-up one is shown in Figure 2. Among 110 subjects based on the GAGS – large number of subjects are having severity index range of 31–39 (n = 60),

Table 4: Distribution Based on severity reduction comparing between gels with and without added chemical peel

S. No.	Severity index	Nature of severity	*Without chemical peel*		*With chemical peel*	
			Before treatment (%)	*After treatment (%)*	*Before treatment (%)*	*After treatment (%)*
1	1–18	Mild	0	14.4	0	32.3
2	19–30	Moderate	21	64.4	32.3	67.6
3	31–38	Severe	73.6	19.7	47	0
4	>39	Very severe	5.2	1.3	20.5	0

Note: No. of Participants without Chemical Peel 76; No. of Participants With Chemical Peel 34

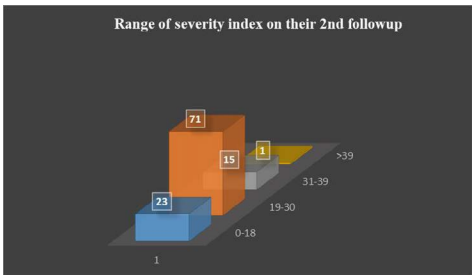

Figure 3: Distribution based on range of severity index on follow-up 2

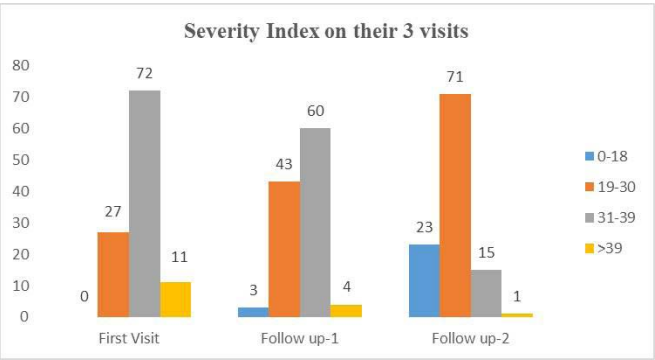

Figure 4: Comparative severity index on their three visits

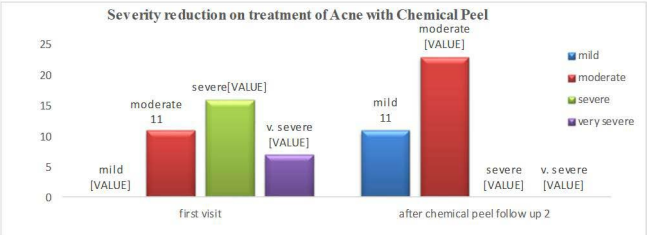

Figure 5: Severity reduction on the treatment of acne without a chemical peel

followed by severity index ranges of 1–18 (n = 3), 19–30 (n = 43), >39 (n = 4).[7,8]

The distribution of selected subjects according to their severity index on their follow-up 2 is shown in Figure 3. Among 110 subjects based on GAGS – large number of subjects are having severity index range of 19–30 (n = 71), followed by severity index ranges of 1–18 (n = 23), 31–39 (n = 15), >39 (n = 1).

The distribution of selected subjects according to the severity index on their three visits are shown in Figure 4. Among 110 subjects based on GAGS – During the first visit large number

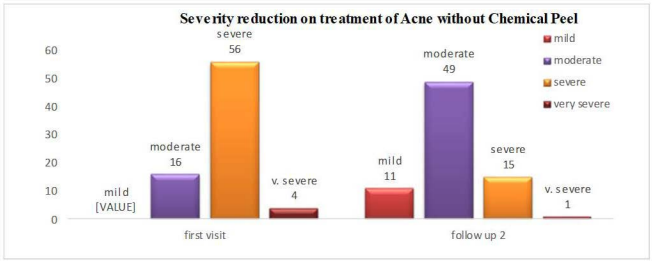

Figure 6: Severity reduction on treatment of acne with a chemical peel

of subjects (n = 72) had severe acne i.e., grade III acne. It is reduced to (n = 60) subjects in 2nd visit (follow up-1). During follow-up 2 majority of subjects (n = 71) come under mild and moderate acne (Grade-I & II).

The distribution of subjects based on their severity reduction comparing gels with and without added chemical peel is shown in Table 4. It indicates the difference between the severity reduction before and after treatment with gels alone and with added chemical peel. Among the 110 subjects, 76 subjects were treated with only gels, remaining 34 subjects were treated with added chemical peel. The severity reduction of acne for the subjects n = 76, using only gels, is shown in Figure 5. During the first visit, 73.6% of subjects are diagnosed with grade 3 acne, followed by grade 2, 21%. After two follow-ups 19.7% of subjects have grade 3 acne. The majority of the subjects, 64.4%, are included under grade 2 acne. The severity reduction of acne for the subjects n = 34, using gels with added chemical peel is shown in Figure 6. During the first visit, among 34 subjects, 47% of the members are under grade 3 acne, followed by grade 2 acne 32%. After two follow-ups 67.6% of subjects are under grade 2 acne, and grade 3, grade 4 becomes 0%.

Conclusion

In the present study acne vulgaris was most commonly seen in the age group of 13 to 22 years, showing teenagers and young adults are more prone to acne vulgaris. To get proper response for the treatment, patient acceptance of the medication and proper follow-ups are needed. Patients who had proper adherence to medication and timely came for follow-ups had better responses.

Most of the patients in our study were found to be diagnosed with grade III acne vulgaris, i.e., severe.

The acne score improved when compared at the time

of visit and at the time of follow-up. Acne scoring needs to be made according to the global acne grading system and patients are to be advised to come for regular follow-ups to achieve better results.

The global acne grading system can help the physician to know the stage of acne and its severity. This should be made compulsory to know the severity and treat them as required. The psychosocial impact of acne on health-related quality of life (QoL) has been identified, but it remains under-evaluated, especially in Indian patients. This study was aimed to assess the impact of acne and its sequelae on the QoL.

In conventional acne therapy, the use of combinational benzoyl peroxide and minocycline gels alone is usually prescribed. The physicians need to be made aware of the advantages of the addition of chemical peel to the regimen and its role in acne management, along with additional benefits. Patients who were put on the combinational treatment along with the addition of chemical peel achieved better clinical clearance like low recurrence rates and simultaneous clearing of acne scars.

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