

## THERAPEUTIC EVALUATION OF TOPICAL RETINOIC ACID IN ACNE VULGARIS

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### Summary

A clinical trial with topical retinoic acid 0.05% was undertaken on 43 patients with acne vulgaris. The response was assessed over a 12 week period. Drug proved very effective giving excellent to good response in 83.3% of cases. Local reaction was temporary and in most cases the treatment could be successfully continued with reduced frequency of applications. The drug was well accepted by patients.

Acne vulgaris, a common disorder of adolescents, is a disease of the pilo-sebaceous follicle, chiefly of the face and upper trunk, resulting in the production of comedones, papules and pustules. It is a disease dependent upon several pathogenetic mechanisms for its expression. Acne vulgaris usually begins around puberty. 85% of adolescents have mild acne<sup>1</sup>. In 60% of women with acne, there is a premenstrual flare. The role of stress and diet in acne is far from proven. About 60% of patients notice deterioration of their acne in winter and in a few acne is undoubtedly worse in the summer presumably due to excessive sweating<sup>2</sup>.

Treatment of acne vulgaris is far from satisfactory. For a long time, vitamin A has been administered systemically as treatment of acne vulgaris and Straumford<sup>3</sup> was the first to report beneficial effects of high doses

of oral vitamin A. It is given with the hope of reducing the hyperkeratosis of the pilo-sebaceous follicles. To obtain the antikeratinizing effects, Vit. A has to be given in very high concentrations which usually produces systemic toxicity. Kligman et al<sup>4</sup> have studied the efficacy of various forms of vitamin A in acne vulgaris and vitamin A acid (retinoic acid) was found to be the most suitable and effective.

Most of the studies reported from our country show the effect of this drug in solution form. The present study was undertaken to see the effect of retinoic acid in ointment form commercially available in the market.

### Material and Methods

This study is an open clinical trial of the efficacy of topical 0.05% Retinoic acid ointment, cream base in 43 patients with acne vulgaris attending the Skin & STD outpatient's department of M. L. B. Medical College Hospital, Jhansi (U.P.).

At the time of first interview with the patient, a detailed history of the disease, with special attention to

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predisposing and exacerbating factors, remissions and treatment taken till date, was recorded. The types of lesions with respect to number of comedones, papules, pustules, nodules and cysts and their distribution were also noted. The severity of the disease was calculated by the number and type of lesions present and classified as follows:—

- 0 = No lesion
- 1 = 1-2 lesions/100 cm<sup>2</sup>
- 2 = 3-5 lesions/100 cm<sup>2</sup>
- 3 = 6-10 lesions/100 cm<sup>2</sup>
- 4 = More than 10 lesions/100 cm<sup>2</sup>

All patients were instructed to apply Retinoic acid ointment on the surface of the lesions only at night after washing the face with soap and luke-warm water. All other drugs both topical and systemic were withheld during the course of this study. All cosmetic applications were also avoided. All patients were warned of a possible initial inflammatory reaction to the medicine and advised not to stop the application unless reaction was severe and intolerable. Such cases were asked to stop therapy for a few days. In others who tolerated the drug well, a day time application in addition to night application was allowed.

Each patient was advised to attend for follow up after 1, 2, 3, 5, 8, 10 and 12 weeks. At each visit patients were carefully assessed with respect to the number of lesions present and the degree of erythema and scaling. Mild to moderate degree of erythema and peeling were taken as normal and therapy was continued. Any other side effects of treatment, if noted, were also recorded.

On completion of trial, an overall assessment of the improvement observed was made on a four point scale based on the percentage reduction of all the countable lesions as follows:—

- Excellent — Disappearance of 76-100 % lesions
- Good — Disappearance of 51-75 % lesions
- Fair — Disappearance of 26-50 % lesions
- Poor — Disappearance of 1-25 % lesions

All patients were thereafter asked to continue therapy at their own discretion and come for check up now and then.

### Observations and results

Of the 43 cases studied, 26 were males and 17 females, varying from 12-37 years of age (Table 1). Maximum number of cases were in the age group of 12-20 years. Medical students and other staff members of this college comprised a large majority of these patients.

TABLE 1  
Age & sex distribution of acne vulgaris patients

Sex	Age in years					Total
	10-20	21-25	26-30	31-35	36-40	
Males	16	7	2	—	1	26
Females	12	4	1	—	—	17
Total	28	11	3	—	1	43

A number of factors alone or in combination were thought by these patients to be responsible for exacerbation of their disease (Table 2). High carbohydrate diet and heredity were blamed by a majority of them while most of the females gave a history of premenstrual exacerbation of the disease.

Almost all patients had taken some treatment for this ailment already in the form of topical application and or systemic administration (Table 3). The various treatments used for local application included the application of various proprietary medicines like eskamel ointment, clearasil ointment,

different indigenous ointments, different types of soaps and other common acne remedies available in the market. Vitamins, antibiotics especially tetracyclines and hormones were the main drugs taken systemically.

TABLE 2

Predisposing factors as ascribed by patients	
1. High carbohydrate diet	16
2. Family history	16
3. G. I. disturbances	11
4. Menstruation	9
5. Excess tea, coffee & alcohol intake	8
6. Infection	6
7. Stress	6
8. Spicy food	5
9. Cosmetics & drugs	4
10. Miscellaneous	2

TABLE 3

Treatments taken before	
Local	42
Systemic	28
No treatment	Nil

Seven out of 43 patients did not report for follow up and were excluded from this study. Among the remaining 36 patients, the response was excellent in 21 (58.33%), good in 9 (25.00%), fair in 3 (8.33%) and poor in 3 (8.33%). The latter two groups included most of the patients with cystic and nodular lesions (Table 4).

TABLE 4

Response of retinoic acid ointment in 36 cases

Response	No. of cases	Percentage
Excellent	21	58.33
Good	9	25.00
Fair	3	8.33
Poor	3	8.33

All patients tolerated the medicine well except 4 cases who developed severe irritation and erythema initially necessitating cessation of the therapy for few days. Side effects in the form

of post inflammatory hyperpigmentation was seen in only 3 cases. No excess facial oiliness, eczematous reactions, etc., were noticed.

Discussion

Because of remarkably good results the topical use of retinoic acid for acne vulgaris has now become a boon. It appears to us that it is perhaps the most potent topical antiacne drug available at present. It primarily attacks the abnormality in the follicular epithelial keratinization which results in comedones. It stimulates mitotic activity, accelerates the turnover of cells lining the follicular epithelium and increases the rate of production of horny cells. As cell attachments are decreased, horny cells quickly separate from each other, fall apart in a loose mass and weaken the anchorage of existing comedones<sup>6</sup>. The increased flow of horny cells converts closed comedones into open ones which then become extruded.

The dramatic therapeutic response observed in our cases speaks for its effectiveness as already reported by other clinicians in India<sup>6,7,8</sup> and abroad<sup>4,9</sup>. During the course of this treatment, few patients showed exacerbation of lesions i.e., worsening effect. Patients should be warned of this complication which actually represents a sign of improvement. In course of time patients will not have any impacted follicles left and the skin surface will become smooth.

REFERENCES

1. Kligman AM: A review of acne, *J Invest Derm*, 62: 268, 1974.
2. Cunliffe WJ and Tan SG: Acne and the sebaceous glands *Int J Derm*. 15: 337, 1976.
3. Struamford JV: Vitamin A—Its effects in acne, a study of 100 patients, *N. W. Med. Seattle*, 41: 119, 1943.

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4. Kligman AM, Fulton J and Blewig B: Topical vitamin A acid in acne vulgaris, Arch Derm, 99 : 469, 1969.
5. Gmaish JS: The management of acne vulgaris. J Applied Med, 3 : 351, 1977.
6. Shroff HJ and Shroff JC: Retinoic acid in the treatment of acne vulgaris. Ind J Derm Ven, 40 : 51, 1974.
7. Haribhakti PB: Topical retinoic acid in the treatment of acne vulgaris. Ind J Derm Vene, 39 : 5, 1973.
8. Singh G and Kumar B: Evaluation of retinoic acid in acne vulgaris. Ind J Derm Ven, 42 : 113, 1976.
9. Pedace FJ and Staughten R: Topical retinoic acid in the treatment of acne vulgaris. Brit J Derm, 84 : 465, 1971.

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— *Managing Editor*