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TOPICAL THERAPY OF ACNE VULGARIS WITH RETINOIC ACID AND ERYTHROMYCIN LOTION

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Seventy four patients having acne vulgaris were treated with 0.05% retinoic acid (23 patients), 2% erythromycin lotion (23 patients) or rectified spirit (28 patients) used as control, for a period of 12 weeks. The patients were evaluated at fortnightly intervals by spot counting of the lesions and by the use of clinical photographs. Good to excellent results were obtained in 82.4% of patients on retinoic acid, 73.9% of patients on erythromycin lotion and 71.5% of patients on rectified spirit. The mean reduction of non-inflammatory and inflammatory lesion counts was 92.5% and 64.7% respectively with retinoic acid, 82.7% and 80.3% respectively with erythromycin lotion and 40.5% and 44.0% respectively with rectified spirit. Both retinoic acid and erythromycin lotion were found to be equally effective but superior to rectified spirit in the treatment of acne vulgaris.

Key words : Acne vulgaris, Retinoic acid, Erythromycin lotion.

The management of acne vulgaris is complex. A large number of therapeutic modalities have been tried, many often empirically. It is generally agreed that acne vulgaris is associated with an increased sebum excretion rate,[1] obstruction of the pilosebaceous canal[2] and a significant alteration of the skin surface lipid composition by the skin flora.[3,4] Hence, measures aimed at reducing the canalicular and follicular obstruction or at normalising the skin surface lipid excretion and composition have been found useful in treating patients with acne. Topical retinoic acid (RA) was first used in 1969 for the treatment of acne vulgaris.[5] Since then, RA has been used in concentrations of 0.025% to 0.1% in a variety of vehicles.[6,7] RA affects both the epidermal cell proliferation and differentiation.[8] Though it is found to be more effective in the non-inflammatory acne lesions,[6] it also decreases the inflammatory acne lesions.[9] Erythromycin lotion (EM) has also been found useful in acne vulgaris.[10-12] It affects the metabolism of *Propionibacterium acnes*[13] thereby reducing the levels of free fatty acids.[10] Inflammatory lesions respond better than comedones.[11]

The present study was undertaken to study the relative efficacy of 0.05% RA cream and 2% EM lotion in comparison with rectified spirit (RS) in the management of acne vulgaris.

Materials and Methods

Patients of both sexes having acne vulgaris were included in the study. Patients who had known endocrinal problems like hirsutism, menstrual dysfunction, diabetes or adrenal dysfunction, those who were already on anti-acne therapy, and female patients who were either pregnant or using oral contraceptives were not included.

At the first visit, the severity of acne was judged by spot counting of the non-inflammatory (NI) and inflammatory (I) acne lesions, and graded as follows : (a) Mild acne : Upto 50 NI lesions with less than 5 I lesions. (b) Moderately severe acne : 5-15 I lesions and/or more than 50 NI lesions. (c) Severe acne : More than 15 I lesions including nodulocystic acne.

The patients were allocated to one of the following three treatment schedules : (a) 0.05%

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RA cream to be applied at night; (b) 2% EM lotion in 95% RS applied twice daily, and (c) 95% RS applied twice daily to serve as control for (b). The allocation was random, but each of the schedules had statistically similar number of patients with mild, moderately severe and severe acne.

Treatment was continued for 12 weeks. Patients were assessed at two weekly intervals by spot counting done by the same observer. Photographs were taken before the start of therapy and every 4 weeks for the next 12 weeks. The criteria for effectiveness of therapy were reduction in the number of lesions and improvement in the photographic records. Improvement was graded as : (1) excellent, when there was more than 75% reduction in the lesion count, (2) good, when there was 50-75% reduction, (3) fair, when there was 25-50% reduction, and (4) poor, when there was less than 25% reduction. In addition, the mean of the reduction in the NI and I lesion counts was calculated for all the patients in each of the therapeutic groups. The data was analysed using the Student's t-test. A p value of <0.05 was considered significant.

Results

A total of 87 patients (44 males and 43 females) between the ages of 14-23 years, having acne vulgaris were taken up for the study. Seventy four of the 87 patients completed the stipulated 12-week follow-up.

Table I shows the results of treatment with the three regimes. Twenty three patients on RA completed the stipulated follow-up of 12 weeks. Two patients were excluded from the study because they developed an irritant reaction, and four others were lost to follow-up. Twelve (52%) of the 23 patients showed an excellent response at 12 weeks. One (4.5%) of these showed an excellent improvement at 6 weeks itself. Only 2 (8.7%) of the patients showed a poor response. At 12 weeks the mean reduction of the NI lesion count was 27.4 (92.5%) and of the I lesion count was 7.10 (64.7%) (Table II).

Table I. Response of acne patients to therapy with 0.05% retinoic acid cream, 2% erythromycin lotion and 95% rectified spirit.

Treatment schedule (Number of patients)	Number (percentage) of patients showing response at 12 weeks			
	Excellent	Good	Fair	Poor
Retinoic acid 0.05% (23)	12 (52%)	7 (30.4%)	2 (8.7%)	2 (8.7%)
Erythromycin lotion 2% (23)	15 (65.2%)	2 (8.7%)	4 (17.4%)	2 (8.7%)
Rectified spirit 95% (28)	15 (53.6%)	4 (17.9%)	1 (3.6%)	7 (25%)

Table II. Mean reduction of non-inflammatory and inflammatory lesion counts at 12 weeks.

Therapeutic group	Non-inflammatory lesions	Inflammatory lesions	p value
Retinoic acid 0.05%	27.48 (92.5%)	7.10 (64.7%)	>0.05
Erythromycin lotion 2%	25.43 (82.7%)	9.35 (80.3%)	
Rectified spirit 95%	14.13 (40.5%)	4.17 (44.0%)	<0.01

Twenty three patients using EM lotion were followed-up for 12 weeks. Two patients were lost to follow-up. Two patients developed mild erythema and burning but these symptoms did not require discontinuation of therapy. Fifteen (65.2%) patients showed an excellent response at 12 weeks. Five of these patients showed an excellent response at 6 weeks itself. Only two (8.7%) patients showed a poor response. The mean reduction of the NI lesion count was 25.43 (82.7%) and of the I lesion count was 9.35 (80.3%) at 12 weeks (Table II).

Twenty eight patients on RS could be followed-up for 12 weeks. Five patients were lost to follow-up. No patient developed any local side effects. Fifteen (53.6%) patients showed an excellent response and 7 (25%) patients showed a poor response at 12 weeks. At 12 weeks, the mean reduction of the NI lesion count was 14.13 (40.5%) and in the I lesion count was 4.71 (44%) (Table II).

Comments

Retinoic acid topically has been used for the treatment of acne vulgaris in different concentrations.[6,7] It was generally believed that RA is effective only against non-inflammatory lesions. Pedace and Stoughton[14] demonstrated that while 85% of their patients on 0.05% RA showed a good to excellent reduction in comedones, only 25% of their patients showed good to excellent reduction in pustular lesions. However, Mills and Kligman[9] found RA to be effective against inflammatory acne including acne conglobata. In the present study, though the NI lesions showed a greater mean reduction (92.5%), the I lesions also showed a significant mean reduction of 64.7%. The overall results of the present study are comparable to the results of Pedace and Stoughton,[14] 77% of whose patients showed a good to excellent response at 12 weeks in a comparable response grading scale. In the present study 82% of patients showed a good to excellent response at 12 weeks.

Local irritation is a known side effect of RA therapy. Two (7.12%) out of 29 patients developed this side effect. The incidence of these side effects is similar to that seen by other workers,[14] using 0.05% RA preparations. A higher incidence of irritant reactions is found with 0.1% RA.

The response seen with topical EM lotion in the present study is similar to that seen by earlier workers.[11,12] The response of acne vulgaris to EM lotion was statistically similar to that of retinoic acid ($P>0.05$). However, there was a suggestion that the response was earlier with EM as compared to RA. With RA, one patient showed an excellent response at 6 weeks and this patient had mild acne. On the other hand five (21.6%) patients on EM showed an excellent response at 6 weeks and 2 of these had moderately severe acne. However, the number of patients is really too small to be statistically evaluated. Results of Mills and Kligman[16] were similar when they compared the relative efficacy of RA and EM. No patient on EM developed any significant local irritation, as also observed earlier.[17]

The response of acne to EM lotion was statistically superior to RS which was the vehicle used. Though the percentage of patients who showed a good to excellent response was similar for EM (73.9%) and RS (71.5%), the percentage of patients who showed a poor response was significantly higher with RS (25%) as compared to EM lotion (8.7%) ($P<0.05$). There was also a suggestion that the response was earlier with EM as compared with RS. While only 7.1% of patients on RS showed an excellent response at 6 weeks, 21.6% of patients on EM lotion showed an excellent response. But the number of patients is very small to be evaluated statistically. The mean reduction of NI and I acne lesions was significantly higher with EM lotion as compared to RS ($P<0.01$).

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