COMPARATIVE EVALUATION OF TOPICAL BENZOYL PEROXIDE, METRONIDAZOLE AND BENZOYL PEROXIDE - CLINDAMYCIN COMBINATION IN TREATMENT OF ACNE VULGARIS

V K Jain, K L Chopra, Surabhi Dayal

Forty patients of moderately severe acne were treated with either 5% benzoyl peroxide -1% metronidazole (Group I- 20 patients)or 5% benzoyl - 1% clindamycin (group II 20 patients) for 8 weeks. The patients were evaluated at 2 weekly intervals by spot counting of the lesions. The mean reduction in noninflammatory lesion counts was 75.4% in group I and 76.73% in group 11 and the mean reduction in inflammatory lesion counts was 73.80% in group I and 76.41% in group II. Both the topical combinations were found to be equally and highly effective in the treatment of moderately severe acne. Side effects in the form of dryness and scaling were seen in 15% patients of each group. Our study also supports the combination of topical antimicrobial agents to prevent irritation and broaden the therapeutic spectrum by using agents with different mechanisms of action which are effective against different types of acne lesions.

Key words: Acne vulgaris, Benzoyl peroxide, Clindamycin, Metronidazole

Introduction

Managment of acne vulgaris includes many therapeutic modalities. Although oral antibiotics continue to be the mainstay of acne therapy, the last decade has seen the introduction of more effective topical therapies like vitamin A acid, benzoyl peroxide, erythromycin, miconazole, clindamycin and metronidazole. [1-5] Several studies have shown that the use of combination of antimicrobial agents is more efficacious in reducing inflammatory lesions than the use of either agent alone. [6-8]

The combination therapy of benzoyl peroxide and clindamycin phosphate has shown superior efficacy by decreasing irritation and broadening the therapeutic spectrum by using agents with different mechanisms of action which are effective against different types of acne lesions.[7] Combination of topical benzoyl peroxide and metronidazole have also been found to be significantly superior to placebo cream and benzoyl peroxide alone and as effective as systemic tetracycline. [5]

The present study was undertaken to compare the efficacy of topical benzoyl peroxide - met-

From the Department of Skin, V.D. and Leprosy Pt.B.D. Sharma P.G.I.M.S., Rohtak-124 001

Address correspondence to: Dr. V.K. Jain, II/9J, Medical Campus, Rohtak - 124001, Haryana, India.

ronidazole combination and benzoyl peroxide-clindamycin combination in treatment of moderately severe acne.

Material and Methods

Forty patients suffering from moderately severe acne were included in the study. Patients having lesions on the face were selected. Patients on antiacne treatment within one month or having serious concomitant illness or endocrinal problems like hirsutism, menstrual dysfunction, diabetes or females on oral contraceptives were excluded from the study. A detailed history and examination was recorded. At the first visit the severity of acne was judged by spot counting of the noninflammatory lesions (NI) i.e. comedones and Inflammatory lesions (IN) i.e. papules, pustules, nodules and cysts on the face above the jawline. The patients having up to 50 N I. lesions and/ or 5 IN lesions were graded as mild acne; patients having 5-15 IN lesions were taken as moderately severe acne and patients with more than 15 IN lesions including nodulocystic acne were graded as severe acne.

Out of 40 patients, 20 each were allocated randolmly to one of the following treatment schedules for eight weeks. Group I, 1% metronidazole gel in the morning and 5% benzoy1 peroxide in the evening; group II -1% clindamycin phosphate gel in the morning and 5% benzoyl peroxide in the evening.

Patients were assessed at 2 weekly intervals and were instructed not to use any other medicine during the treatment period. At the end of the treatment, clinical response was assessed by the percentage reduction of lesions and was graded as: excellant reduction in total lesion count more than 75% good reduction by 50-75%; Fair-reduction by 25-50%;Poor-reduction less than 25%; Worse-if there was increase in lesion count. Any adverse effect exprienced by the patients was recorded. Response was evaluated using paired and unpaired 't' test.

Results

Out of 40 patients, 20 were males and 20 females. In both groups the age of the patients ranged from 16-22 years and male to female ratio was equal. The mean duration of illness in group I was 18.40+11.24 months and in group II was 22.45+15.12 months.

Table 1 shows the results of treatment with the two regimes. Before start of therapy, the mean number of comedones i.e. noninflammatory lesions were 46.75 in group I and 59.30 in group II. After 8 weeks of therapy the mean number of comedones in group I was reduced to 11.50 i.e. a mean percentage reduction of 75.40% was achieved while in group II the number of comedones reduced to 13.80 i.e. a mean percentage reduction of 76.73% was observed. The reduction was statistically significant ($p<0.001$) in both the groups, but between the two treatment groups no significant difference was observed.

Mean number of papules reduced to 3.15 from 11.05 in group I and 11.90 in group II after 8 weeks of therapy. Thus a mean percentage reduction in the number of papules was 71.49% and 73.53% in group I and group II respectively. The mean number of pustules reduced to 0.40 from 2.50 in group I and 0.20 from 2.30 in group II. Thus the mean percent reduction in the number of pustules was 84% in group I and 91.30% in group II. Hence the reduction in the number of papules and pustules after 8 weeks of therapy in both the groups was statistically significant($p<.01$). Between

the groups the comparison however showed no significant difference.

of the patients using clindamycin complained of gastrointestinal symptoms.

Table 1.Change in number of acne lesions after 8 weeks of therapy

	Group I (n=20)				Group II (n=20)			
	Mean no. of lesions		Mean % reduction	p value	Mean no. of lesions		Mean % reduction	P value
	Before Treatment	After 8 weeks treatment			Before treatment	After 8 weeks treatment		
NI	46.75	11.50	75.40	p<.001	59.30	13.80	76.73	P<.001
IN	13.55	3.55	73.80	p <.001	14.20	3.35	76.41	P<.001

NI=Non - inflammatory lesion, IN=Inflammatory lesion

Considering all the inflammatory lesions as a whole it was found that in group I the number of inflammatory lesions reduced from 13.55 to 3.55 after 8 weeks of therapy thereby achieving a mean % reduction of 73.80% which was statistically significant (p<.001). In group II the inflammatory lesions reduced from 14.20 to 3.35 with a mean percentage reduction of 76.41% which was also statistically significant (p <.001). But no statistically significant difference was seen between the two treatment groups.

On evaluating the overall response of the patients to the therapy at the end of 8 weeks (Table II) we found that in group I, 14 patients (70%) showed excellent response, 4 (20%) showed good response while 1 patient each (5%) showed fair and worse response. In group II, 13 patients (65%) showed excellent response, 6 patients (30%) showed good response while 1 patient (5%) showed fair response. None of the patients in group II showed worsening after treatment.

The side effects noted were mild dryness and scaling in 3 patients (15%) in each group but did not require discontinuation of therapy. None

Table II. Response of acne patients to therapy at end of 8 weeks

Group weeks	Number of patients	Number of patients showing response at8weeks				
		Excellent	Good	Fair	Poor	Worse
Group I	20	14(70%)	4(20%)	1(5%)	0	1 (5%)
Group II	20	13(65%)	6(30%)1	(5%)	0	0

Discussion

Topical antibiotics have assumed a major role in the treatment of acne vulgaris.[4,9,10] A combination therapy of two or more antimicrobial agents provides additional benefits of bactericidal synergism,[6] prevention of irritation, broadening of therapeutic spectrum[7] and avoidance of bacterial resistance.[11] A recent study on combination of topical antibiotics, one of which was benzoyl peroxide, has shown absence of this phenomenon of bacterial resistance for *Propionibacterium* acnes.[11]

In our study the combination of benzoyl peroxide and clindamycin showed an excellent to good response in 95% of cases. Tucker et al,[7] have also reported improvement in 96% of cases using this combined therapy. Other workers have shown excellent to good response varying from 62% to 75% by using either benzoyl peroxide or clindamycin alone.[3,4] Thus combination therapy

of benzoyl peroxide and clindamycin was highly effective in treatment of moderately severe acne due to synergistic action of antiinflammatory and antimicrobial properties of benzoyl peroxide and antichemotactic activity and inhibiton of production of free fatty acids by clindamycin.

Nielsen, [5] studied the efficacy of a combination of 5% benzoyl peroxide and 2% metronidazole in acne and observed reduction of papules and pustules by 70% with a good to excellent result in 85% cases. Combined therapy with benzoyl peroxide and metronidazole in the present study showed reduction in inflammatory lesions by 73.80% with excellent to good response in 90% of cases. The overall results were comparable with above workers. [5]

However, on comparing the two combination therapy regimes with each other we did not find any statistically significant difference.

Dryness and scaling were the side effects noted in 3(15%) patients in each group which is similar to the incidence of side effects noted by other workers after using clindamycin or benzoyl peroxide.[2,4] But irritation was not observed in either group, which is one of the important side effects after use of benzoyl peroxide alone as reported by other workers. [7,12] Decrease in irritation with benzoyl peroxide by using combination with clindamycin has been earlier reported.[7] In the present study also absence of irritation in both the groups may be due to use of combination therapy.

References

1. Vaswani N, Pandhi RK, Bhutani LK, et al. Topical therapy of acne vulgaris with retinoic acid and erythromycin lotion. Ind J Dermatol Venereol Leprol 1989; 55:230-233.

2. Cunliffe WS, Holland KT. The effect of benzoyl peroxide on acne. Acta Derm Venereol (Stockh) 1981;61:267-269.

3. Guimaraes M, Ramos S, Tavares MR, et al . A double blind clinical trial with a lotion containing 5% benzoyl peroxide and 2% miconazole in patients with acne vulgaris. Clin Exp Dermatol 1989;14;357-360.

4. Vaswani N. Topical clindamycin hydrochloride 1% in acne vulgaris. Ind J Dermatol Venereol Leprol 1990;56;377-380.

5. Nielsen PG. Topical metronidazole gel: Use in acne vulgaris. Int J Dermatol 1991;30:662-666.

6. Bossche VH, Cornelissen F, Vancutsem J. Synergism of the antimicrobial agents miconazole and benzoyl peroxide. Br J Dermatol 1982;107:343-348.

7. Tucker SB, Tausend R, Cochran R, et al. Comparison of topical clindamycin phosphate, benzoyl peroxide and a combination of the two for the treatment of acne vulgaris. Br J Dermatol 1984; 110: 487- 492.

8. Albert M, Packman AM, Robert H et al. Treatment of acne vulgaris: Combination of 3% erythromycin and 5% benzoyl peroxide in a gel compared to clindamycin phosphate lotion. Int J Dermatol 1996;35: 209-211.

9. Fulton JE Jr., Pablo G. Topical antibacterial therapy for acne study of the family of erythromycins. Arch Dermatol1974;110:83-86.

10. Padilla SR, MaCabe JM, Becker LE. Topical tetracycline hydrochloride versus topical clindamycin phosphate in the treatment of acne. Int J Dermatol 1981;20: 445-448.

11. Rapaport M, Puhvel SM.Combined use of a benzoyl peroxide wash and topical erythromycin in treating acne vulgaris. J Dermatol Aller 1993;6:35.

12. Mills OH, Kligman AM, Pochi PE, et al. Comparing 2.5%,5% and 10% benzoyl peroxide on inflammattory acne vulgaris. Int J Dermatol 1986;25:664-667.