CLINICAL EVALUATION OF DESOXYMETHASONE — A NEW CORTICOSTEROID

MOHAN B. GHARPURAY * AND MEENA L. DAVE †

Summary

In a double blind paired comparison study, the patients with steroid responsive dermatoses received desoxymethasone 0.25% on lesions on both sides of the body for first 4 days, and desoxymethasone 0.25% on one side and 0.05% on the other side for the next 10 days. There was no significant difference in the percent reduction in severity scores of symptoms, in global assessment or patient preference between the two treatments.

Desoxymethasone (desoximetasone; 9∝-fluoro-11β, 21-dihydroxy 16∝-methyl-pregna-1,4-diene-3,20-dione) is a fluorinated glucocorticoid derived from dexamethasone, differing from that by the absence of hydroxyl group in the C-17 position (Fig-1), thus increasing its lipophilic properties compared with the parent compound. It has shown marked anti-inflammatory activity in a variety of experimental models[1,2].

In a human pharmacological study, desoxymethasone 0.25% produced a greater blanching effect than 0.12% betamethasone valerate, 0.025% fluocinolone acetonide, 0.1% triamcinolone acetonide and 0.05% dexamethasone[3].

Extensive therapeutic trials have been undertaken for this compound. In open studies of upto one month's duration, about 75 to 100% of patients with inflammatory dermatoses are reported to have improved during treatment with 0.25% desoxymethasone[4,5]. In controlled double blind studies it has been shown to have a significantly earlier onset of action and greater effect on various signs and symptoms of dermatoses than other comparative drugs[6,7,8]. This product has been comprehensively reviewed by Heel et al[9].

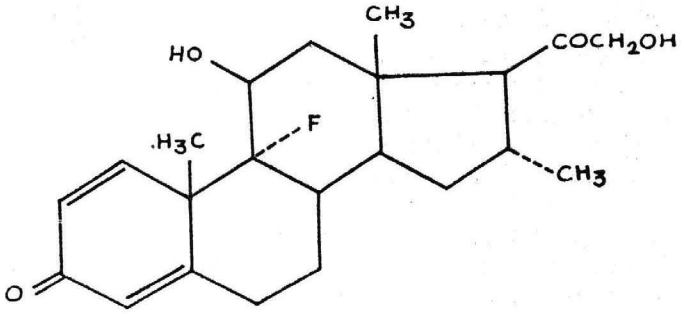

Fig. 1 Structure of desoxymethasone

The debit side of powerful corticosteroids is now-a-days being increasingly considered. Local side effects to topical steroids include atrophy of skin,

* Professor of Dermatology and Venereology, B. J. Medical College and Sasson General Hospital, Pune

† Medical Adviser Hoechst Pharmaceuticals Limited Bombay

Received for publication on 3—5—79

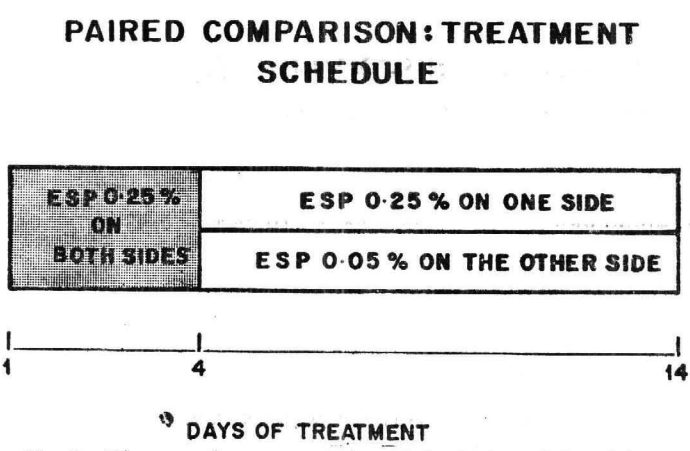

Fig. 2 Diagramatic representation of the design of the trial

worsening of rosacea[10,11], suppression of the signs of fungal infection[12], aggravation of perioral dermatitis or pyogenic folliculitis[11], etc. Systemic effect like lowering of plasma cortisol level after the application of powerful steroids to extensive areas of the skin has also to be considered[13]. This has led to the present trend of research for lower concentrations of potent corticosteroids. The present study compares two different strengths of desoxymethasone, 0.25% and 0.05% in emollient cream base in a double blind paired comparison study.

Material and Methods

Design of the trial

The design of the trial and the treatment schedules are shown in Figure 2. Each patient received desoxymethasone 0.25% on one side of the body during the entire period of 14 days, whereas on the other side he received desoxymethasone 0.25% for the first 4 days followed by desoxymethasone 0.05% for the next 10 days. In order to keep the trial double-blind, the patients were given identical looking coded tubes even for the first 4 days. These tubes were replaced with another set of identical looking tubes to be used from 5th to 14th day. All the tubes were marked with the patient number and the side for which it was to be used. For ease of identification, all tubes meant for right side of the body had red labels.

Clinical material

Adult patients of either sex, seen at the outpatient Skin and V.D. Department of B. J. Medical College and Sassoon General Hospital, Pune, were admitted to the study. The diagnosis of bilateral, symmetrical steroid responsive dermatoses was based on clinical examination. Patients having any local or systemic infection, diabetes mellitus, osteoporosis or peptic ulcers were excluded from the study. Due care was taken not to admit pregnant women into the trial. Those patients who had received any local or systemic corticosteroids or antihistamines within two weeks of the commencement of the study were also excluded.

Methodology

Patients were asked to apply the treatment three times a day for a period of 14 days. They were evaluated before the treatment and on Day 2, 4, 7, 10

TABLE 1
Demographic data of patients

Total No. of patients admitted to the trial	Drop outs	No. of cases analysed	Sex		Mean age (years)	Area of lesion (mean)
			M	F		
60	11	49	27	22	27.99±3.36	6.68±0.38%

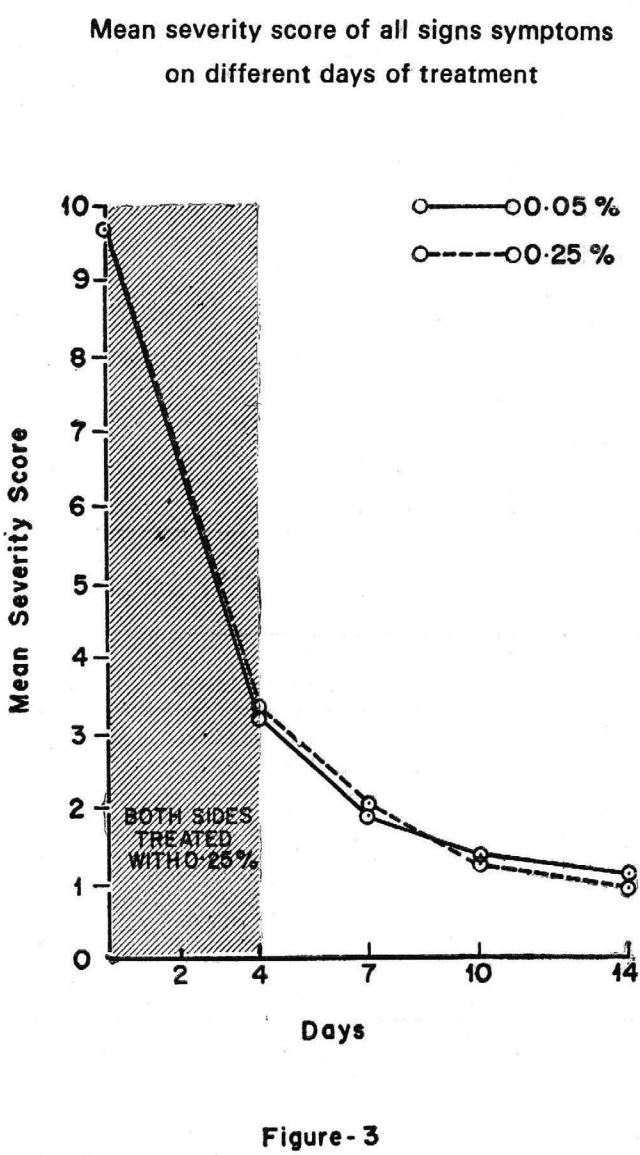

Fig. 3 Mean severity scores of signs-symptoms on different days of treatment

and 14 of the treatment. The severity scores of + + + for very severe, + + for moderate, + for mild and 0 for absent were given to clinical scales like redness, swelling, vesicles, scaling, itching and burning. On the basis of overall improvement, global assessment was given as complete disappearance of lesions, marked, moderate and no improvement and worsening. Patient preference was recorded for one treatment over the other.

Results

Out of the 60 patients included in the study, 11 were lost to the follow-up. The demographic data and the clinical features of the 49 cases available for analysis are given in Tables 1, 2 and 3.

TABLE 2

Diagnosis of patients

Diagnosis	Number of patients
Lichenified chronic eczema	5
Discoid eczema	8
Infantile eczema	2
Shoe dermatitis	2
Irritant dermatitis	2
Neurodermatitis	2
Eczemoid dermatitis	1
Flexural dermatitis	8
Contact dermatitis	1
Solar dermatitis	5
Atopic dermatitis	10
Discoid + Atopic dermatitis	1
Psoriasis	2
Total	49

Severity of clinical scales

The percent reduction in the severity scores of different signs and symptoms on the last day of treatment varied from 76.64 to 98.15 with desoxymethasone 0.25% and 71.96 to 98.15 with desoxymethasone 0.25% followed by 0.05% (Table 4). The mean severity scores

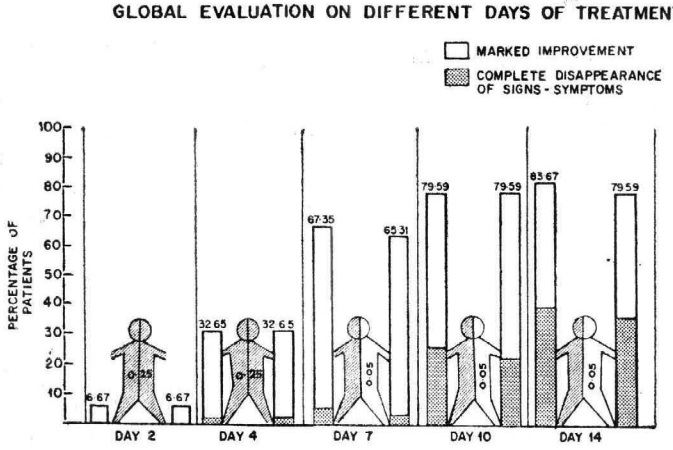

Fig. 4 Global evaluation on different days of treatment

being 83.67 for desoxymethasone 0.25% and 79.59 for desoxymethasone 0.25% for 4 days followed by desoxymethasone 0.05% for the next 10 days.

Patient preference

Patient preference for the two treatments is shown in Figure 5. For majority of the patients, both the treatments were equally preferred, showing excellent patient acceptability.

TABLE 3
Duration of disease in patients

Duration	Less than one month	1 — 6 months	6 — 12 months	1 — 2 years	10 years
No. of patients	11	28	5	4	1

TABLE 4
Percent reduction in the severity scores of signs-symptoms on different days of treatment

Signs and symptoms	Percent reduction on side receiving desoxymethasone 0.25% on 1-4 days followed by 0.05% on 5-14 days				Percent reduction on side receiving desoxymethasone 0.25% from 1-14 days			
	Day 4	Day 7	Day 10	Day 14	Day 4	Day 7	Day 10	Day 14
Redness	72.50	91.25	92.50	91.25	71.25	88.75	90.00	90.00
Swelling	85.19	94.44	96.30	98.15	83.33	92.59	96.30	98.15
Vesicles	86.89	96.72	96.72	95.08	86.89	95.08	96.72	96.72
Scaling	44.86	55.14	66.36	71.96	43.93	55.14	68.22	76.64
Itching	57.76	72.41	84.48	90.52	56.03	71.55	87.93	92.25
Burning	80.70	94.74	94.74	96.49	80.70	92.98	92.98	94.74

of all the signs and symptoms also showed an identical pattern in case of both the treatment schedules (Fig. 3).

Global assessment

Percentage of patients having either complete disappearance of lesions or marked improvement were almost identical in case of both the treatment schedules (Fig. 4) on the last day of treatment, the percentage

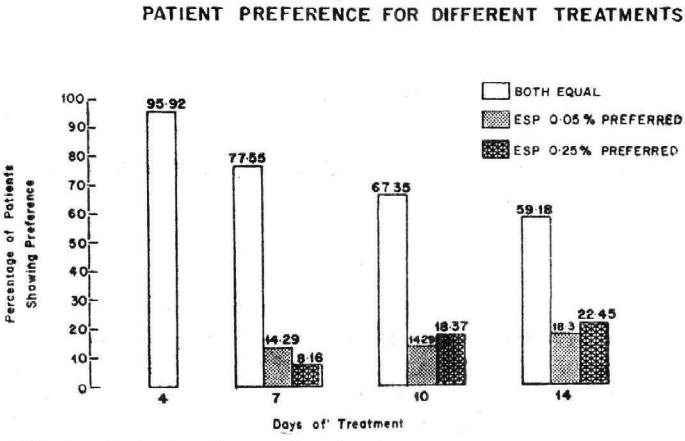

Fig. 5 Patient preference for the two treatments

Side effects

Three patients developed pustules and one had an abscess at the site of application of desoxymethasone 0.25%. Of these four, two patients also developed mild pustules on the other side of the lesions receiving 0.05% desoxymethasone. All the four patients were suffering from dermatitis of ten days to six months duration. These side effects indicated secondary bacterial infection commonly seen with topical steroids[11],[14].

Discussion

This study clearly shows the value of a lower strength of desoxymethasone as a maintenance treatment in steroid responsive dermatoses. When the treatment was initiated with desoxymethasone 0.25% and was substituted after 4 days with desoxymethasone 0 05% on one side of the lesions, the progress of improvement was identical with the other side of the lesions receiving 0.25% continuously. There was no relapse or worsening. On the contrary, the severity scores of various clinical scales progressively decreased to achieve a desirable therapeutic benefit.

The importance of a lower concentration of a steroid cannot be over emphasised. Dilution of a powerful corticosteroid has been advocated[11]. However, a possibility that a steroid might become inert if diluted in an inappropriate vehicle has to be kept in mind[13]. The vehicle in which the steroid is incorporated can have an important influence on the bioavailability of the steroid[15] and on its ultimate clinical efficacy[16]. Thus, a well-formulated steroid in a lower concentration is highly preferable.

References

1. Schroder HG, Babej N and Vogel HG: Tierexperimentelle Unter-suchungen mit dem lokal wirksamen 9∝-fluor-16∝-methyl-17-desoxy-prednisolon, Arzn Forsch, 24:3, 1974.
2. Fujimoto K, Hayashi S, Sakurai M et al: Pharmacological action of 9-fluoro-11β, 21-dihydroxy-16∝-methylpregna-1, 4-diene-3, 20, dione (A 41 304), Pharmacometrics 10:207, 1975.
3. Ishihara M: Studies on the vasoconstrictor activity of topical corticosteroid-especially on the influence of vehicles, Nishi Nippon Hifuka, 37:86, 1975.
4. Alvarez OJ, Conradi CS, Miotto A et al: Evaluacion clinica de un nuevo esteroide topico: desoximetasona. Estudio multicentrico. Semana Medica (Buenos Aires), 150 : 38, 1977.
5. Sala CD: Ensayo clinico comparativo intraindividual en dermatologia pediatrica de dos corticosteroides topicos: 17-desoximetasone y fluocortolona. Acta Pediatrica Espanola June - July 211, 1976.
6. Mulay DN and Sood BK: Double-blind trial of desoximetasone – a new topical corticosteroid, Ind J Derm and Vener, 40:271, 1974.
7. Nair BKH and Nair CHK: Clinical evaluation of desoximetasone in treatment of dermatoses and psoriasis, Int J Derm, 14:277, 1975.
8. Sehgal VN: Desoxymethasone: A new topical corticosteroid, Int J Derm, 15:770, 1976.
9. Heel RC, Brogden RN, Speight TM et al: Desoxymethasone: A review of its pharmacological properties and therapeutic efficacy in the treatment of dermatoses, Drugs, 16 : 302, 1978.
10. Sneddon IB: Adverse effects of topical fluorinated corticosteroids in rosacea, Brit Med J, 1 : 671, 1969.
11. Sneddon IB: The dangers of the indiscriminate use of topical corticosteroids, Prescribers' Journal, 14 : 1, 1974.
12. Ive FA and Marks R: Tinea Incognito, Brit Med J, 3 : 149, 1968.
13. Sneddon IB: Clinical use of topical corticosteroids, Drugs, 11 : 193, 1976.
14. Purdy MJ: Adverse effects of strong topical corticosteroids, Drugs, 8 : 70, 1974.
15. Stoughton RB: Bioassay system for formulations of topically applied glucocorticosteroids, Arch Dermatol, 106 : 825, 1972.
16. Ostrenga J, Steinmetz C and Poulsen B: Significance of vehicle composition. I. Relationship between vehicle composition, skin penetrability and clinical efficacy, J Pharm Sci, 60 : 1175, 1971.