

Original Article

Topical calcipotriol in the treatment of chronic plaque psoriasis in Bangladeshi skin

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Abstract *Background* Calcipotriol (DAIVONEX) ointment has been shown to be effective in the treatment of chronic plaque psoriasis.

Objective To assess the efficacy and safety of calcipotriol ointment (50µg/g) in the treatment of chronic plaque psoriasis.

Patients and methods A total of 61 patients (39 males, 22 females, age range from 18 to 76 years) of chronic plaque psoriasis were enrolled in an open prospective trial. 51 completed the study. Calcipotriol ointment was applied twice daily for up to 6 weeks on lesional area, following a 2 weeks washout phase with liquid paraffin. Efficacy, as measured by the Psoriasis Area and Severity Index (PASI), and safety were assessed at 2, 4 and 6 weeks.

Results Reduction of PASI was statistically highly significant at all visits. The mean PASI fell in 6 weeks from 10.47 to 2.18 ($P < 0.001$). Analysis of patient assessment at 6 weeks showed total clearance in 8% of patients and marked improvement in 71% of patients. The serum calcium level remained unchanged.

Conclusion Topical application of 50µg/g calcipotriol ointment was found to be effective and safe in the treatment of chronic plaque psoriasis.

Key words

Calcipotriol (DAIVONEX), psoriasis treatment, PASI

Introduction

Calcipotriol is a synthetic analogue of vitamin D₃ which has a high binding affinity to the cellular receptor for calcipotriol¹; is a potent regulator of cell differentiation and an inhibitor of cell proliferation in human keratinocytes.² It is effective as a topical treatment for chronic plaque psoriasis.^{3,4} It is as effective as or

even more effective than, 0.1% betamethasone 17-valerate ointment^{5,6} and more effective than short contact dithranol therapy in plaque psoriasis.⁷ The aim of the present study was to assess the therapeutic efficacy, topical and systemic safety, and tolerance of twice daily application of 50µg/g calcipotriol ointment in the treatment of chronic psoriatic plaque in Bangladeshi skin.

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Patients and methods

A prospective, non-controlled, open clinical trial of calcipotriol ointment

(50µg/g) was conducted in the department of Dermatology and Venereology, Bangabandhu Sheikh Mujib Medical University, formerly Institute of Postgraduate Medicine & Research, Dhaka, Bangladesh, during July 1999 to June 2000. Sixty one outpatients (39 males, 22 females), aged 18-76 years (mean age 41.10), suffering from chronic plaque psoriasis were enrolled and fifty one completed the study. Patients were required to provide signed consent. The exclusion criteria were: acute guttate, pustular or erythrodermic psoriasis, unstable psoriasis during the washout period, systemic antipsoriatic treatment or ultraviolet therapy during the 16 weeks preceding the study, pregnancy, wish to become pregnant during the study period or lactating mother, concurrent medication with > 400 i.u. vitamin D daily, calcium tablets, or any other medication which could affect the course of the disease (e.g. lithium, beta-blockers, captopril, thiazide diuretics), abnormal renal and hepatic function and hypercalcemia. The first phase of the study was a 2-week wash-out period during which patients applied white soft paraffin as an emollient twice a day. If the psoriasis remained stable, patients then proceeded with topical application of calcipotriol ointment twice daily for up to 6 weeks on lesional area except the head and skin folds. The maximum amount allowed was 100gm/week. Low potency topical steroids were advised for treatment of lesions on head or skin folds. Patients were assessed at entry into the study and every two weeks during the treatment phase. At each visit, the investigator assessed the extent (graded 0-6) and severity of the psoriasis (graded 0-4) with

Table 1 Parameters assessed in this study

Assessment of extent of psoriasis	
0.	No involvement
1.	< 10%
2.	10-29%
3.	30-49%
4.	50-69%
5.	70-89%
6.	90-100%
Assessment of severity of psoriasis (erythema, thickening, scaling)	
0.	Absent
1.	Slight
2.	Moderate
3.	Severe
4.	Very severe
Overall efficacy assessment	
1.	Worse
2.	No change
3.	Minimal improvement
4.	Moderate improvement
5.	Marked improvement
6.	Cleared
Assessment of acceptability	
1.	Very poor
2.	Poor
3.	Acceptable
4.	Good
5.	Excellent

scaling by means of a modified Psoriasis Area and Severity Index (PASI)⁸ scoring system (**Table 1**). The areas assessed were trunk and limbs. The head was excluded from the assessment. Overall efficacy assessment was undertaken by the investigator and the patient, after 2, 4 and 6 weeks treatment using a six point scale (**Table 1**). An overall cosmetic acceptability assessment was made by the patient at week 6 (graded 1-5; **Table 1**). Blood samples for serum calcium levels were estimated on entry and at the end of treatment.

Results

Sixty one patients entered the study (39 males, 22 females). The mean age was 41.1 (range 18 to 76 years). Ten patients withdrew from the study (4 defaulted, 3 unacceptable responses, 3 adverse events). There was a statistically significant reduction in the mean (\pm SD) PASI which fell from 10.47 ± 4.24 at the start of treatment to 2.18 ± 0.54 at the end of treatment ($p < 0.001$). Among patients who completed the study, total clearance of psoriasis (PASI score reduced to zero from baseline) at the end of treatment occurred in 8% of patients. Marked, moderate and minimal improvement was observed respectively in 71%, 9%, and 7% of patients (Figure 1). Worsening of psoriatic lesions in 3% and no change in psoriatic lesions in 2% of patients were found (Figure 1). Cosmetic acceptability of calcipotriol ointment was found to be good or excellent in 88% of patients. Fifteen patients reported adverse events, the most common being local irritation (8 patients) which was mild and transient. Calcium level remained normal in all patients after completion of treatment.

Discussion

Twice daily 50 μ g/g calcipotriol ointment for 6 weeks resulted in total clearance of psoriasis (PASI score reduced to zero from baseline) at the end of treatment occurred in 8% of patients. Our results showed that there was marked improvement of lesions in approximately 71% patients (Figure 1). These results are similar to those obtained previously.^{2,3,4} There was a highly significant reduction in the mean PASI at

Table 2 PASI score during the 6 weeks of treatment phase

Baseline	10.47 ± 4.24
2 weeks	5.92 ± 3.12
4 weeks	3.15 ± 1.42
6 weeks	2.18 ± 0.54

Data are expressed as mean \pm SD. Differences between treatments are statistically significant, $p < 0.001$ (paired t test).

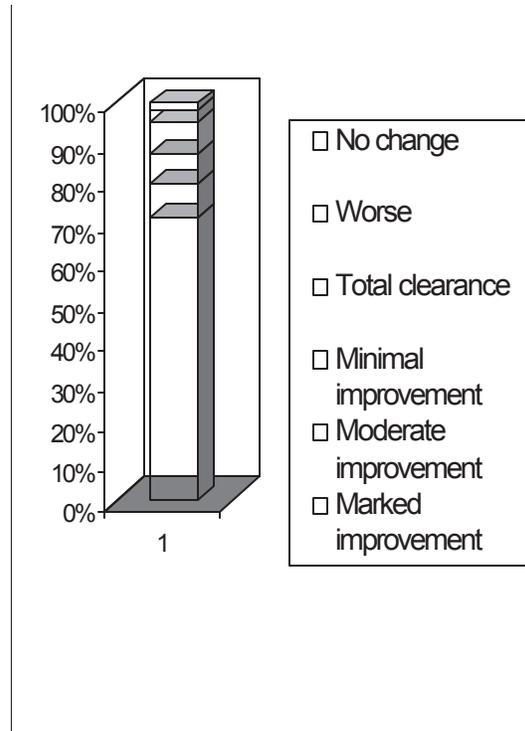


Figure 1 Investigator's overall efficacy assessment at the end of 6 weeks of treatment.

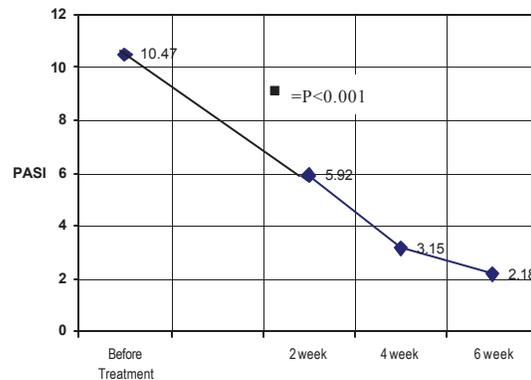


Figure 2 Mean PASI (\pm standard error of the mean) before and during treatment.

each visit, compared with baseline. The most rapid reduction occurred in the first 2 weeks of treatment (**Figure 2** and **Table 2**) which is comparable with other studies.^{9,10} Maximal reduction in mean PASI found at 6 weeks which was also noticed by other researchers.^{6,7,11}

No serious adverse events were reported or observed. Some irritation of lesional and perilesional skin was not uncommon. In our study, irritation occurred in approximately 16% of patients which was also reported in other studies.^{6,7} Worsening of psoriasis while on treatment in three and no change in psoriatic lesions were found in one patient (**Figure 1**). In the present study, ten patients withdrew from the study; four defaulted, three were unacceptable responses and three had adverse events. At the end of treatment, overall acceptability was good or excellent in 88% of patients. Serum calcium level remained within the normal range in all patients in our study and no significant change in serum calcium levels were also reported in numerous studies.^{1,3,5,6,9,12,13} Studies with calcipotriol have shown that application of up to 100g (50µg/g) per week carries no risk of hyperglycemia. In conclusion, this open study demonstrated that twice-daily application of 50µg/g calcipotriol ointment is safe and well tolerated in the treatment of chronic plaque psoriasis.

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