Sindh Univ. Res. Jour. (Sci. Ser.) Vol. 42 (1) 69-72 (2010)

SURJ

Sindh Univ. Res. Jour.

TO COMPARE THE ROLE OF CALCIPOTRIOL ALONE VERSUS COMBINATION WITH BETAMETHASONE IN MILD TO MODERATE PSORIASIS

G.M. Dahri, A. J. Samdani*, N. Qazi**, M. J. Laghari**, G. R. Mashori*** and M. A. Wagan**

Department of Pharmacology, Mirpurkhas Medical College, Mirpurkhas, Sindh, Pakistan
(Received 19th Feb. 2010 and Revised 27th Mar. 2010)

Abstract

Background: Calcipotriol is a vitamin D analogue is now a day has been used as monotherapy in mild to moderate Psoriasis as daily application. We conducted an open label comparative study to assess the efficacy of calcipotriol local application as monotherapy v/s the Calcipotriol plus Betamethasone combination to observe any significant change.

Aim: To Assess the efficacy of Calcipotriol in combination with Betamethasone and alone in mild to moderate psoriasis.

Methods and Materials: The Psoriatic Patients (mild to moderate) were enrolled (60) and divided into two groups received Calcipotriol (Group-A) and Calcipotriol and Betamethasone (Group -B) for three months. At the end of study period the parameter (PASI) scores was examined for any change.
Results: The significant change in ± SEAM values for the period from day 0- 90 in group -A seen (Calcipotriol) v/s group -B (Calcipotriol plus Betamethasone).A reduction of 67.89% in PASI, while 81.49% in group -B. The results of both groups are highly significant ($P < 0.001$).
Conclusion: Calcipotriol in combination with Betamethasone is superior to as monotherapy in terms of efficacy and safety.

Keywords: Calcipotriol, Betamethasone, Psoriasis, PASI.

1. Introduction

Psoriasis is an autoimmune dermatological condition which is debilitating in nature. There are sharply demarcated red papules with silvery white scales. It affects 2% of the population and is inherited in a polygenic fashion. It is an autoimmune disease with chronic course, manifests systematically in the joints (as psoriatic arthritis) as well as the skin.[2] Although the effect of psoriasis on a person's quality of life can be substantial, it is not well correlated with the extent of cutaneous involvement of the estimated 4.5 million adults in the United States who have psoriasis, but 500,000 adults describe their psoriasis as being a substantial problem. It is one of the commonest important diseases in dermatological practice which produces profound effects on patient quality of life with significant morbidity. With the passage of time the extent and location of the disease change. It is classified into several subtypes, among all approximately 90 percent of cases are of chronic plaque (psoriasis vulgaris). Sarply demarcated erythematosus silvery scaling plaques occur on the extensor surface of the elbows, knees, scalp, sacral, and groin regions with most common plaque-type psoriasis. having, hypertrophic erythematosus well-demarcated plaques with scaling. Psoriasis is characterized by parakeratosis (nucleated cells in stratum corneum) and acanthosis (thickened epidermis) with benign hyperplasia. The dermal blood vessels are dilated and abnormally tortuous with lymphocytic infiltration frequently seen in the dermis and occasionally in the epidermis. There is increased antigen formation and up-regulation of type 1 helper T cytokines with enhanced cutaneous T lymphocyte activity**.**

The treatment options for psoriasis depend on many factors, and there is optimal therapy varying over patient to patient for decades during which a person has the disease. Mostly patients having mild disease are benefited with topical applications such as emollients, topical corticosteroids, and topical vitamin D analogues, tars, anthralin, tazarotene (a retinoid), and phototherapy.[3] Conventional treatment of psoriasis is based on the degree of severity. [5]

This study evaluated the role of Calcipotriol alone v/s Calcipotriol in combination with Betamethasone as one to treatment options for psoriasis along with possible advantage of both treatments.

* Department of Dermatology, JPMC, Karachi.
** Liaquat University of Medical Health Sciences, Jamshoro
*** Department of BMSI, JPMC, Karachi.

2. Materials and Methods

This study was conducted in the Department of Pharmacology and Therapeutics, Basic Medical Sciences Institute, Jinnah Postgraduate Medical Centre Karachi with the collaboration of Department of Dermatology JPMC Karachi. The length of the study period was three months (90 days). 60 patients were enrolled for the study after taking their written consent to complete the full course of therapy and divided into two equal Groups namely Group A and Group B. The study was approved by the ethical committee.

Inclusion Criteria:

- Mild to moderate psoriasis.
- Patients of either gender (male or female) aged 18 years or above.
- Patients suffering psoriasis with percentage of body surface area (BSA) affected by psoriasis ≤ 10%.

Exclusion Criteria:

- Patients suffering from hepatic or renal diseases
- Pregnant or lactating women.
- Patients under treatment with retinoids or antibiotics.
- Patients with other skin disease.
- Any other chronic ailment requiring prolonged treatment
- Allergy to study medication.

Materials:

Drugs:

- Calcipotriol ointment
- Betamethasone and Calcipotriol combination ointment

Tools:

- Psoriasis Area and Severity Index (PASI)

Psoriasis Area and Severity Index (PASI)

It is a tool which has been used for the evaluation of measurement of the extent of the body surface area involved with consideration of the subtype of psoriasis, degree of disability and feasibility of topical therapy. PASI score can be used as a measurement of psoriasis severity. It includes the body surface area affected by psoriasis in addition to three major symptoms – scaliness of the skin lesion redness, inflammation .

Study design:

In this study a total number of 60 patients of both genders were enrolled and divided into two groups, each having 30 patients, designated as group - A Calcipotriol ointment alone. While in the group–B we applied calcipotriol plus Betamethasone combined therapy. All the values were taken as mean and ± SEM. The primary efficacy measurement was the mean change in scores (PASI), from the base line to the end point the last observation carried forward (LOCEF) approach was used and student t-test was used to analyze the data

3. Result:

Our final analysis applied to 52 patients who completed the whole study period as 08 patients were unable to complete our study. The record of age, sex, marital status, family history was also recorded as shown in **(Table I)**.

Table-1. Demographic and Baseline characteristics of Patients

Characteristics	Group -A (Calcipotriol)	Group- B (Calcipotriol +betamethasone)
Total patients		
Remaining in study	30	30
Left out	25 (83.33%)	27 (90%)
	05 (16.66%)	03 (10%)
Gender		
Male	17 (68.66%)	18 (60%)
Female	08 (32.66%)	09 (40%)
Age		
Mean	32.52	33.59
Range	18.51	18.51
Family History		
Positive	16 (64%)	18 (66.66%)
Negative	09 (36%)	09 (33.33%)

The improvement in the parameter of PASI seen during the period of Day 0 – 90 and percentage change observed in group-A is 67.89% i.e. the mean change from 14.08±0.33 to 4.52±0.22.

While improvement in the parameter of PASI seen during the period of day 0-day 90 and percentage change, observed in Group B (Calcipotriol plus Betamethasone) combination is more pronounced i.e. the change in mean from Day 0-90 is 12.81±0.35 to 2.37±0.36, with the percentage change of 81.495 ($p<0.001$) as shown in (Table 2). The results are highly significant i.e. ($p<0.001$) and showing great improvement in patient's symptoms as shown in **(Table 2).**

Table- 2 Comparison of observation in PASI among both groups from day 0-90

GROUPS	Day 0	Day 90	P-value	Percentage change
A	14.08 ±0.33	4.52 ±0.81	<0.001	67.89%
B	12.81 ±0.35	2.37 ±0.25	<0.001	81.49%

Group A (Calcipotriol), Group B (Calcipotriol plus etamethasone)
Values are expressed in mean ±SEM.

Among the side adverse, in group A, five patients reported itching and 3 of them discontinued the treatment. While in the group B no patient complained about the itching. While interpreting the data of present study advantage with the combination therapy over single therapy is that the combined form is more efficacious as well as free of the common side effect of itching due to the presence of Betamethasone.

4. Discussion

In above study we carried out a comparative clinical trial of calcipotriol and Calcipotriol with 1% Betamethasone. The parameter of our study was Psoriasis Area and Severity Index (PASI). The present study demonstrates statistically significant improvement in PASI scores in both groups. Our study is consistent with the study of Austad *et al.,* 1997, who conducted two parallel trials of 6 and 8 weeks and observed a reduction of 58.7% and 50.9% which are nearer to our results. Schwartz *et al.,* 1996[11] conducted two trials comparing twice daily and once daily regimens of Calcipotriol in 480 patients observed efficacy wise percentage change in PASI scores and found more than 60% reduction in once daily regimen which is in accordance to our study.

Katz and Colleagues in 1987; evaluated the use of Betamethasone treatment for 2-3 weeks of 38 enrolled subjects and achieved 85% improvement from the base line. Lebwohl and Colleagues in 1998[13] evaluated the use of Calcipotriol and Corticosteroids for the treatment of mild to moderate psoriasis and after two weeks of daily combination therapy 40 subjects (out of 44 demonstrated 50% are greater improvement in PASI Psoriasis area and severity index at the end of 6 months treatment 76% of subjects showed remission. The researcher in this study also found that Calcipotriol in combination was tolerable to the patients and that this combination improved remission, rates in the 2nd phase of sequential therapy. In our study about 81.49% reduction seen in PASI, scores and no patients in this group complained about itching or irritation. These results and observations are seen in accordance with the study of Lebwohl and colleagues. Other investigators were also demonstrated that combination therapy. Calcipotriol plus Betamethasone were more effective than Calcipotriol single therapy. Lamba *et al.,* 2001.The commonest side effect of Calcipotriol is skin irritation which may be reduced through concomitant use of topical Corticosteroids. Calcipotriol therefore can be used with Corticosteroids in Psoriasis therapy.

5. Conclusion

Betamethasone plus Calcipotriol therapy is more efficacious and safer as it produces less adverse effects than Calcipotriol alone, therefore it may be recommended that monotherapy can be replaced with once daily Calcipotriol Betamethasone combination.

References

Aran I.S.F. and E.P. Prens (2006) Systemic therapies for moderate to severe psoriasis. Business Briefing: European Pharmacother 62-65.

Austad, J. (1997) Clobetasol propionate followed by calcipotriol is superior to calcipotriol alone in topical treatment of psoriasis [abstract]. Aust J. Dermatol **(38):** (suppl 2): Pp 45.

Griffiths CEM., C. Clark, R.J.G. Wan and H.C. Williams (2000) A systematic review of treatments for severe psoriasis. Health Technology Assessment **(4)**: Pp 40.

Katz HI, NT, Hien SE, Prawer JC Scott, EM. Grivna (1987 Oct).Betamethasone dipropionate in optimized vehicle. Intermittent pulse dosing for extended maintenance treatment of psoriasis. Arch Dermatol 123 **(1)**: 1308-1311.

Lamba S. and M. Lebwohl (2001) Combination therapy with Vitamin D. analogues. Br. J. Dermatol.144 suppl. **(58)**: 27-32.

Lebwohl M., A. Yoles K. Lombardi and W. Lou (1998) Calcipotriene ointment and halobetasol ointment in the long-term treatment of psoriasis: effects on the duration of improvement. J Am Acad Dermatol 39 **(3)**: 447-450.

Lowe N.J. (1983) Psoriasis therapy: A current perspective. West J Med **(139)**: 184-189.

Pariser DM., J. Bagel J.M. Gelfand and N.J. Korman (2007) ational Psoriasis Foundation Clinical Consensus on Disease Severity. J. Arch Dermatol. **(143)**: 239-242.

Schwartzel E., R. Blum S. Siskin and W. A. Epinette (1996) parallel group study evaluating the safety of 30 gram per day dosing of calcipotriene (BMS181161/MC903) ointment and its vehicle in patients with plaque psoriasis [abstract]. Presented at the 54th annual meeting of the American Academy of Dermatology. Washington, DC; Pp.287.

Stern R.S. and P. Ultraviolet (2007) A Light Therapy for Psoriasis. N Eng J. Med **(357)**: 682-690.

Thawornchaisit P and K. A Harncharoen (2007) Comparative Study of Tar and Betamethasone Valerate in Chronic Plaque Psoriasis: A Study in Thailand. J Med Assoc Thai 90 **(10)**: 1997-2002.

Traub M and K. Marshall (2007) Psoriasis – Pathophysiology, Conventional, and Alternative Approaches to Treatment. Altern Med Rev 12 **(4)**: 319-330.

Turchin I. and S.P. Adams (2006) Derma Case. Canadian Family Physician. **(52)**: 1073-1080.

Zaghloul S.S. and M.J.D. Goodfield (2004) Objective assessment of Compliance with Psoriasis Treatment. Arch Dermatol. **(140)**: 408-414.