BECLOMETHASONE DIPROPIONATE — ITS EFFICACY AND PERCUTANEOUS ABSORPTION IN PSORIASIS

L. K. BHUTANI, R. K. PANDHI, T. R. BEDI, M. PARMESWARAN, A. K. SUDA AND M. M. S. AHUJA

Summary

Plasma cortisol levels in 7 patients with psoriasis of variable severity were determined. Ten patients with extensive lesions (over 10% body surface area involved) were treated with topical application of 0.025 % Beclomethasone dipropionate cream. The effect of Beclomethasone therapy on clinical condition and plasma cortisol levels was assessed at weekly intervals for 3 weeks. Clinical improvement varying between 10–80 % was seen in 4 patients; itching and burning sensation was complained of by 5 patients after 1–2 weeks of Beclomethasone therapy. One patient each developed pustular psoriasis and exfoliative dermatitis while on therapy. Plasma cortisol levels were slightly elevated in 4 out of the 7 patients and application for 3 weeks of the Beclomethasone cream did not produce any depression in plasma cortisol levels in any patient.

Introduction

Plasma cortisol levels have been shown to fluctuate with the activity of the disease in rheumatoid arthritis[1]. We wondered if similar changes in the plasma cortisol levels occur in patients with psoriasis, particularly those with arthropathy. It was, therefore, planned to estimate the plasma cortisol levels in cases of psoriasis of variable severity.

Topical corticosteroids have been advocated as a form of treatment in psoriasis. Since the barrier zone is defective in psoriasis, absorption of corticosteroids may be expected to be increased compared to that from the normal skin. It was, therefore, considered worthwhile to study the effects of local application of Beclomethasone dipropionate on adrenal functions as well as its efficacy as a therapeutic measure in psoriasis.

Subjects and Methods

Ten patients of extensive psoriasis (more than 10% skin area involvement) either untreated or treated with non-steroidal ointments were taken up for this study. Grading of severity of the disease was made separately, by two independent observers before the start and on completion of Beclomethasone therapy. Criteria for assessing the severity are given in table 1. Photographic records were made. Fasting blood sugar and serum electrolytes were estimated before the start and on completion of Beclomethasone therapy.

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Departments of Dermato-Venereology and Medicine,
All India Institute of Medical Sciences,
New Delhi-110016, India.

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TABLE 1

Criteria of grading

1.	Extent of surface area affected, calculated by the rule of 9	10 points
2.	Evolution	5 points
3.	Degree of erythema & scaling	5 points
4.	Loss of hair	2 points
5.	Pustular areas	10 points
6.	Arthritis	10 points
7.	Nail involvement	2 points
8.	E.S.R.	8 points
		(1 point for every 10 mm)

Plasma cortisol levels were estimated in 7 patients by Mattingly's method[2]. Fasting blood cortisol levels were evaluated at constant timings (8 AM) on two consecutive days before the start of Beclomethasone therapy and again at weekly intervals (at 8 AM on two consecutive days) during the next three weeks of Beclomethasone therapy.

Observations

Table 2 shows the clinical response of psoriasis to Beclomethasone. Four out of the 10 patients showed improvement in skin lesions, varying between 10–80%. In 6 patients, there was either no improvement or there was deterioration. Five patients complained of severe itching or burning sensation 1–2 weeks after the start of Beclomethasone therapy. One patient each developed pustular psoriasis and exfoliative dermatitis necessitating withdrawal of therapy (Table 3).

TABLE 2

Clinical response to Beclomethasone Cream in Psoriasis

S. No.	Surface area percentage	Clinical Improvement after 3 weeks	Score	
			Before	After
1.	20	40%	14	8
2.	60	Nil	21	20
3.	70	Nil	18	19
4.	40	Patient developed pustular psoriasis	14	16
5.	40	Nil	17	18
6.	50	Nil	17	17
7.	60	10%	19	18
8.	50	80%	13	10
9.	35	50%	11	10
10.	60	Patient developed exfoliative dermatitis	13	16

TABLE 3

Side effects of topical application of Beclomethasone Cream

S. No.	Symptoms	No. of cases
1.	Severe itching or burning sensation	5/10
2.	Pustular psoriasis	1/10
3.	Exfoliative dermatitis	1/10

Plasma cortisol levels in 4/7 patients (2 of psoriasis and 2 of psoriasiform arthropathy were slightly higher than the normal range (> 30 ug/100 ml) before the start of Beclomethasone therapy. However, no correlation was seen between the severity of the disease (expressed as scoring) and the plasma cortisol levels (Table 4). Plasma cortisol levels during the course and after the completion of Beclomethasone therapy did not show much change.

Discussion

Various topical corticosteroids have been used as an effective therapy in psoriasis because of their marked vasoconstrictor and anti-inflammatory action. Caldwell et al[3] reported a satisfactory response in 90% cases of eczema and psoriasis with 0.01%, 0.1% and 0.025% of Beclomethasone dipropionate and 0.025% Fluocinolone acetonide creams. Ashurst et al[4] also observed improvement in 85% cases of psoriasis with 0.025% Beclomethasone dipropionate and 0.1% Betamethasone 17-valerate. In the present study only 4 out of 10 cases showed clinical improvement. Itching or burning sensation as side effect of Beclomethasone cream observed in 5/10 of the cases in the present study had not been reported earlier with corticoid therapy.

TABLE 4

Plasma cortisol levels with scoring before and during the course of Beclomethasone therapy.

S. No.	Scoring before therapy	Plasma cortisol level before therapy (ug/100 ml)	Amount of Beclomethasone used in Gms	Plasma cortisol levels ug / 100 ml			Scoring after therapy
				1st week	2nd week	3rd week	
1.	14	35	525	31	35	28	8
2.	21	28	900	35	30	23	20
3.	18	32	1000	24	37	25	19
4.	14	37	625	30	28	37	16
5.	13	35	1100	34	30	38	10
6.	11	25	850	30	47	41	10
7.	13	27	500	19	20	Not done	16

Pustular psoriasis and exfoliative dermatitis seen in one patient each in the present study has been reported to develop with topical corticosteroid therapy in psoriasis[5].

Plasma cortisol levels in cases of psoriasis with varying degree of body surface involvement have been reported to be normal[6]. In the present study in 4 out of 7 patients of psoriasis (2 of psoriasiform arthropathy and 2 of psoriasis), the plasma cortisol levels were slightly raised. It is difficult to comment upon this raised plasma cortisol levels as the number of patients is small.

It is well established that the corticosteroids are absorbed percutaneously [7,8] and suppress the pituitary and adrenal functions. The suppression of pituitary-adrenal-axis had been shown with various topical corticosteroids (e.g. prednisolone, triamcinolone, flurandrenolone, fluocinolone and hydrocortisone) when used in steroid sensitive dermatoses[6,9,10]. However, pituitary-adrenal suppression has not been observed with Beclomethasone, when used in different forms of eczemas and psoriasis[11]; even with the addition of 5% propylene glycol into the ointment[12]. In the present study also, application of Beclomethasone dipropionate for 3 weeks did not produce any adrenal suppression.

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TRUE or FALSE ?

The stapylococcal exfoliation (S.E.) has a toxic effect on keratinocytes at the level of the granular layer producing the clinical features of Toxic Epidermal Necrolysis.

(Answer page No. 293)