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Original Article

Efficacy and safety of topical mometasone furoate 0.01% vs. tacrolimus 0.03% and mometasone furoate 0.01%in vitiligo

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Abstract ***Objectives*** To compare the efficacy and safety of topical mometasone furoate 0.01% vs. tacrolimus 0.03% and mometasone furoate 0.01% in vitiligo.

Patients and methods This interventional, quasi-experimental study was conducted at Department of Dermatology, Lady Reading Hospital, Peshawar, from January, 2008 to August, 2008. Patients were selected by non-probability purposive sampling method after obtaining an informed consent. Sixty patients of vitiligo (26 male and 34 female), aged older than five years and involving less than 30% of body surface area were enrolled. All the patients were randomly divided into two equal groups using random number table. Group I patients were treated with twice daily application of topical mometasone furoate 0.01%, whereas those of group II were advised to apply mometasone plus tacrolimus ointment on the lesions twice daily. The patients were followed up weekly for first month and later on fortnightly for five months to monitor the improvement and adverse effects.

Results Tacrolimus plus mometasone was effective (grade 4-5) in 70% of patients whereas topical mometasone alone was effective (grade 4-5) in none of the patients. The results of combination therapy were much better than mometasone alone. The combination therapy was also more effective in type II and type III skin than type IV skin. No side effects were observed in two groups.

Conclusion We recommend that topical mometasone has no role in the treatment of vitiligo in type IV skin but when combined with tacrolimus may potentiate its efficacy.

Key words
Vitiligo, mometasone furoate, tacrolimus.

Introduction

Vitiligo is a common idiopathic, acquired, depigmenting disease of the skin and hair that affects 0.5-2 % of the world's population.[1] Controversy still exists about its pathogenesis, because factors other than immunologic ones have been implicated, such as the early cell death of vitiligo melanocytes related to their increased sensitivity to oxidative stress.[2]

It occurs in approximately 2% of the world population.[3] In Pakistan, the reported prevalence varies from 4.4% to 7.5%.[4,5] It affects all the races and the frequency is same in both sexes.[5] The cosmetic disfigurement caused by this disorder may lead to severe depression and suicidal tendencies.[4,6]

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Different modalities of treatment have been used in vitiligo like phototherapy with psoralens, steroids, heliotherapy, lasers, vitamin D analogues and skin grafting.[7] As the pathogenesis of this disease is still obscure, the treatment of vitiligo has generally been unsatisfactory and often disappointing. Topical tacrolimus (FK506) ointment has recently been added to the armamentarium against this pigmentary disorder.[8] Potent topical steroid produce side effects like atrophy, telangiactasias and striae distensae. Mometasone furoate is considered as potent and safe steroid.

This study was undertaken to compare the efficacy and safety of topical mometasone furoate 0.01% vs. tacrolimus 0.03% and mometasone furoate 0.01% in vitiligo.

Patients and Methods

This study was a clinical trial comparing two drug regimens. It was conducted at the Department of Dermatology, Lady Reading Hospital, Peshawar. Sixty patients of vitiligo, diagnosed clinically were enrolled in the study. They were of either sex, aged older than 5 years and had stable vitiligo with involvement of less than 30% of the body surface area. Patients showed no evidence of spontaneous repigmentation. The duration of disease was less than five years. They received no treatment for the last one month.

The patients with lip-tip type of vitiligo or mucosal involvement and those who had known hypersensitivity to tacrolimus or mometasone were excluded. Patients who had history of autoimmune disease, impaired liver or renal function, hypercalcemia, hypercalciuria, urolithiasis, thyroid or parathyroid disease, photosensitivity, cataract, hypertension, cardiovascular or malignant disease, arsenic exposure, pregnancy, lactation, concomitant use of vitamin D, calcium and any other drug that can affect calcium homeostasis were also excluded.

An informed consent was taken. All the relevant details regarding history, examination, treatment, type of vitiligo, sites of involvement and extent of the disease were recorded on a proforma. The surface area involved was measured according to the rule of 9. Involved skin was photographed before the start of therapy.

The patients were divided into two groups, group I: 30 patients were treated with twice daily application of topical mometasone furoate ointment, and grade II: 30 patients were put on combination therapy with twice daily application of topical tacrolimus and mometasone furoate.

The patients were assessed weekly during the first month and then fortnightly for the next five months to monitor improvement and adverse effects. Photographs of vitiliginous skin were taken at first visit and after three and six months. At each visit pigmentation and adverse effects were noted.

The improvement was evaluated by comparing the treated areas with pretreatment photographs. Responses were graded on a scale from 0-5, as shown in **Table 1**.

Statistical analysis

Chi-square test was used to analyze the

Table 1 Grades of therapeutic improvement.

Grade	*Improvement (%)*
0	No response
1	1-25
2	26-50
3	51-75
4	76-95

Grade 0 = ineffective, grade 1-3 = partially effective, grade 4-5 = effective

results. A 0.05 level of significance in two-tailed was considered as significant.

Results

Sixty patients, 30 in each group, suffering from vitiligo with Fitzpatrick skin type IV completed the study. There were 14 males and 16 females in group I and 12 males and 18 females in group II respectively.

The duration of disease was <5 years in both groups, with a mean of 1.7±1.5 years in group I and 1.8±1.4 years in group II. In all patients, the extent of involvement was <30%. The two groups were well-matched in terms of pretreatment parameters.

In group I, 25 of 30 (83.3%) patients did not show any improvement. None of the patients had complete recovery. In group II, 21 (70%) patients had grade 4-5 (76-100%) improvement. All the patients responded in this group. This difference between the two treatment groups was statistically significant $p<0.05$.

Discussion

For the past 2 decades, monotherapy with topical steroids has been the most common treatment for vitiligo in children and adults. The range of response has been between 20% and 90% improvement, usually not a complete cure.[9] Adverse effects and poor efficacy have led to the search for new alternatives. While treatment with combinations of steroids and retinoids can avoid atrophy, retinoids are not well tolerated by children because of skin irritation. Therapy with systemic psoralens and UV-A irradiation is not used in children, and the topical variant is cumbersome and carries some risk. The new phototherapeutic approach with narrow-band UV-B irradiation may prove useful for children with vitiligo.[10]

The present study was conducted to improve the treatment of vitiligo by assessing the role of topical mometasone alone or in combination with tacrolimus in terms of efficacy and safety.

The main point was the absence of atrophy and other side effects in lesions treated with tacrolimus and mometasone. The hyperpigmented borders frequently seen in the repigmented skin of patients treated with clobetasol did not occur in those treated with tacrolimus and mometasone.[11]

We found that topical mometasone alone (group I) was ineffective as compared to topical mometasone plus tacrolimus (group II) for the treatment of vitiligo in type IV skin. About 83% of patients in group I showed no improvement at all, whereas all patients responded in group II ($p<0.001$). Complete repigmentation was seen in patients in group II, whereas none of the patients in group I had total recovery ($p<0.05$).

Results of tacrolimus were comparable with studies done internationally. Study carried out by Almeida *et al*.[12] showed repigmentation of over 50% in their patients

treated with tacrolimus. Similarly thirteen patients (68%) treated with tacrolimus by Grimes *et al*.[13] had greater than 75% repigmentation of face and neck lesions. In study by Travis *et al*.[14] no repigmentation was seen after use of mometasone for three months. Mometasone was similarly not found effective in our study.

Limitations of study included small sample size, non availability of treatment modalities to non affordable patients. Results cannot be generalized as sampling technique was nonprobability purposive. Studies need to be carried out on larger sample involving other areas of body, as well.

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