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ORIGINAL ARTICLE

An open study of efficacy and safety of long-term treatment with mometasone furoate fatty cream in the treatment of adult patients with atopic dermatitis

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ABSTRACT

Background Atopic dermatitis is a severe chronic skin disease often deteriorated by the presence of microorganisms and often responds well to treatment with potent corticosteroids. However, the long-term use of potent topical corticosteroids are accompanied by side-effects such as skin atrophy.

Objective To study the effect and safety of prophylactic treatment with mometasone furoate fatty cream (contains hexylene glycol) for 6 months in patients with atopic dermatitis.

Results Sixty-one of 68 (90%) patients were still free of their disease after 6 months of twice weekly treatment and only one showed possible treatment related signs of skin atrophy. The number of *Staphylococcus aureus* and *Pityrosporum ovale* were significantly reduced in cleared patients.

Conclusions Mometasone furoate fatty cream is effective and safe both for treatment and as a prophylaxis in patients with atopic dermatitis.

Key words: atopic dermatitis, long-term treatment, mometasone furoate

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Introduction

Atopic dermatitis is one of the most common skin disorders in children and young adults. The atopic patient has a tendency to become sensitized due to genetic factors, allergen dose and time of exposure.[1] The role of environmental allergens as triggering factors in patients with atopic dermatitis has become an important research field, as in the pathogenesis of atopic dermatitis dermal sensitization within the IgE system to aeroallergens, foods and microorganisms seems important.[2,3] The role of *Staphylococcus aureus* in atopic dermatitis is still unclear.[3,4] It is well known that patients with atopic dermatitis are colonized with *S. aureus* and that clinical signs of infection of a patient's dermatitis will often worsen the disease and that clearing of the skin infection often will improve the disease.[3,4] However, the role of *S. aureus* and other microorganisms in atopic dermatitis may also be immunogenic. Earlier studies have shown that several patients may react to various extracts from *Candida albicans* and *Pityrosporum ovale*.[5,6] One study has shown that patients with atopic dermatitis localized to the head and neck area and with a positive prick test to *P. ovale* were improved or cleared in their disease when treated with oral ketoconazole.[5]

Mometasone furoate is a potent topical steroid with proven efficacy in atopic dermatitis,[7] equal to or exceeding betamethasone.[8] Mometasone furoate fatty cream contains hexylene glycol, which has antimicrobial properties and excludes the need for any other preservative. The effects of hexylene glycol on microorganisms could potentially be of benefit in the treatment of atopic dermatitis with effects on microorganisms, possibly leading to better treatment and a longer relapse free period.

In a previous study we have shown that both hexylene glycol and mometasone furoate fatty cream were effective *in vitro* against *S. aureus*, *S. epidermidis* and *P. ovale*.[9] In the clinical part of that study we treated patients with atopic dermatitis once daily for 3 weeks with mometasone furoate fatty cream. Patients who were cleared continued with the cream twice weekly for 2 weeks and then the final visit was 4 weeks after completely stopping therapy. This study clearly demonstrate the good effect of mometasone furoate fatty cream, which

contains 12% hexylene glycol, in the treatment of atopic dermatitis paralleled by a significant reduction in the number of *S. aureus* and *P. ovale*.[9] Eighty-three per cent were cleared after 6 weeks, but 4 weeks after completely stopping only one patient was completely cleared.

The aim of the present study was to investigate the effect and safety of mometasone furoate fatty cream twice weekly as a maintenance treatment in patients with atopic dermatitis and to investigate whether this treatment was effective in preventing the increase in number of microorganisms during this period.

Materials and methods

Patients

Ninety patients (52 females and 38 men) were included in the study; they had a mean age of 31 years (range, 17–63 years) with a history of atopic dermatitis of minimum 6 months and a combined assessment score of at least 7 (minimum 0 and maximum 12; see later in the assessment of lesions part).

Assessment of lesions

The parameters assessed were erythema, infiltration and the number of lesions. These parameters were judged by a 0–3 scale. For erythema 0 means no erythema and 3 severe erythema. For infiltration 0 means no infiltration and 3 intense infiltration. For the number of lesions 0 means no lesions and 3 more than 12 lesions. Itching was assessed by the patient using a visual analogue scale and transferred to a 0–3 scale, where 0 indicates no itching and 3 indicates severe itching. Therapeutic response was assessed, at every visit, using a 1–5 scale where 1 is excellent, 2 good, 3 fair, 4 poor and 5 treatment failure.

Experimental design

This was a multicentre study in five centres in Sweden. Patients were, first, in an open, controlled run-in study treated once daily with mometasone furoate 0.1% fatty cream (Elocon) for 3 weeks. Patients who after the run-in period had a score of 3 or less were included in the long-term prophylactic and safety study. They were not allowed to have a score of more than 1 of any of the variables. This part was an intention-to-treat study. Patients were treated for 6 months, twice weekly, with mometasone furoate 0.1% fatty cream. During the long-term study the patients were examined once a month. If, at any visit, an increase of 1 unit in at least two symptom scores in comparison with the start of the long-term period, or, an increase to >1 for any symptom was observed, the patient was considered as a clinical relapse. During the entire study patients were allowed to use Essex cream or Essex lotion with 5% urea as moisturizers.

Assessment of adverse events

All adverse events were recorded and it was noted if they were treatment related or not.

Microbiology

Qualitative cultures for bacteria and fungi and semiquantitative cultures for *P. ovale* were taken in all centres. Cultures were taken from the same target lesion at all visits. Bacteria were cultured aerobically on sheep-blood agar at 37 °C and read after 1 and 2 days. *P. ovale* cultures were obtained using a contact plate (*P. ovale* Maxiplate, Max Lab Diagnostic, Kållered, Sweden).[10] It was pressed against the skin for 15 s, incubated in a plastic bag at 37 °C and read after 6 days. The plate covers a 25-cm^2 skin area and results were expressed as numbers of colony-forming units per plate. In one centre (Department of Dermatology, Sahlgrenska University Hospital, Gothenburg), quantitative cultures for bacteria and fungi other than *P. ovale* were taken quantitatively using a modification of the Williamson–Kligman model for culturing skin bacteria.[11] Bacteria were cultured aerobically on sheep-blood agar at 37 °C and read after 1 and 2 days. Fungi were cultured on Sabouraud's agar medium at 37 °C and read after 1, 3 and 7 days.

Statistics

Patients were followed according to the intent-to-treat analysis. For the evaluation of changes, the Wilcoxon sign rank test was applied.

Results

Sixty-eight (78%) patients of the evaluable patients had a score of or below 3 after 3 weeks of once-daily treatment and were included in the long-term prophylactic and safety study. Two patients did not return for follow up after the run-in period and 20 patients had a score above 3.

The results of the 6-month long-term study are shown in Table 1. Sixty-one (90%) patients had no relapse after 6 months of prophylactic treatment twice weekly for 6 months. Only seven patients were deteriorated compared with week 3 or the start of prophylactic treatment.

Table 1 Results of prophylactic treatment of atopic dermatitis twice weekly for 24 weeks

Patients without relapse (%)	Patients with relapse (%)
61 (90)	7 (10)

Table 2 Results of bacteria culture in patients treated prophylactically with mometasone furoate fatty cream twice weekly for 6 months

	Week 0	Week 3	Week 24 (last visit)
No. of patients with:			
S. aureus	23/68	13/68	26/68
S. epidermidis	24/68	31/68	41/68
Mean no. of bacteria (n = 19):			
S. aureus	2.1×10^5	3.0×10^1	1.3×10^4
S. epidermidis	2.0×10^4	9.0×10^4	2.0×10^4

Table 3 Results of *P. ovale* culture in patients treated prophylactically with mometasone furoate fatty cream twice weekly for 6 months

	Week 0	Week 3	Week 24 (last visit)
No. of patients with *P. ovale*	40/68	20/68	30/68
Mean no. of *P. ovale* (n = 68)	11	1	11

The results of qualitative bacteria culture are shown in Table 2. The number of patients with positive culture for *S. aureus* was significantly reduced after the run-in period but returned to baseline at the end of the prophylactic study. The result of quantitative bacteria culture is shown in Table 2. The number of *S. aureus* was significantly reduced after 3 weeks ($P < 0.01$) and it was still 10 times lower at the end of the study compared with baseline. The number of *S. epidermidis* was not significantly changed during the study indicating either that *S. epidermidis* was more resistant to treatment and/or that it grew better when *S. aureus* was reduced in number.

The result of quantitative and qualitative *P. ovale* culture is shown in Table 3. Both the number of patients with positive cultures and the number of yeasts were significantly ($P < 0.01$) reduced after the first 3 weeks of once-daily treatment. At the end of the prophylactic treatment the number of yeasts were back to baseline but the number of patients with positive cultures was still lower compared with baseline. Both the number of patients with positive cultures and the number of yeasts were low, even at baseline. However, several cultures were taken from the extremities where the number of *P. ovale* is low compared with the scalp, face or upper trunk.

Adverse events were found in eight of 68 patients; however, in only four patients these were or might be related to the treatment with mometasone furoate fatty cream. Folliculitis was seen in two patients, a sensation of increased warmth in the skin after application was seen in one and signs of skin atrophy possible related to the use of mometasone furoate fatty cream was seen in one.

Discussion

In an earlier study we treated patients with atopic dermatitis with mometasone fatty cream once daily, followed by a short maintenance therapy with a twice-weekly application and finally no treatment for 4 weeks.[9] We found that patients responded very well to every-day treatment but of interest was that several patients were not only in a steady state during maintenance therapy but improved until treatment was completely stopped where after the majority relapsed. This is the background for the present study. In this study patients with moderate to severe atopic dermatitis were first cleared in their dermatitis after 3 weeks of once-daily treatment with mometasone furoate fatty cream. Cleared patients were prophylactically treated with the same cream twice weekly for 6 months. The result of the prophylactic treatment was excellent with 90% being free or almost completely free of their dermatitis. Four patients had adverse events that might be related to treatment and only one had possible treatment-related signs of skin atrophy.

The importance of microorganisms in exacerbations of atopic dermatitis is well known.[3–5] The reduction in the number of these microorganisms is probably one explanation for the good effect of the treatment. In another open study mometasoner furoate has been effective in the treatment of patients with chronic hand eczema.[13] Fluticasone propionate ointment has also, in a double-blind placebo-controlled study, been used effectively for prophylactic treatment of adult patients with atopic dermatitis.[14]

In conclusion, mometasone furoate fatty cream is an effective and safe treatment for patients with atopic dermatitis. This includes eradication of the dermatitis and an effective and safe method for the long-term use in maintenance therapy of this chronic, recurrent disease. The tachiphylazia phenomenon described and often observed in the treatment of psoriasis with a potent topical corticosteroid do not seem to exist in atopic dermatitis, even during a 6-month maintenance therapy. The lack of this phenomenon is a clear advantage and indicate that a potent corticosteroid such as mometasone furoate fatty cream is valuable in prophylactic maintenance therapy of atopic dermatitis.

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