Clinical Trial

A comparison of once-daily application of mometasone furoate 0.1% cream compared with twice-daily hydrocortisone valerate 0.2% cream in pediatric atopic dermatitis patients who failed to respond to hydrocortisone

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Two hundred and nineteen patients completed this multicenter, randomized, evaluator-blind, parallel-group study evaluating the efficacy and safety of once-daily application of mometasone furoate 0.1% cream compared with twice-daily hydrocortisone valerate 0.2% cream in children with moderate to severe atopic dermatitis.

Enrolled patients were between 2 and 12 years of age and had failed to respond to at least 7 consecutive days of treatment with a topical hydrocortisone preparation, with the last application of hydrocortisone occurring within a week before enrolling in the current study.

Patients were randomized to treatment from 10 centers in the USA with either mometasone furoate 0.1% cream ($n = 109$) or hydrocortisone valerate 0.2% cream ($n = 110$) for up to 3 weeks. At enrollment, a target area of dermatitis (not the face or forehead) of at least 20 cm^2 was selected by the investigator for specific evaluation of the effects of treatment on disease signs and symptoms. Additionally, patients had to present with at least 15% total body surface involvement, excluding the face and forehead, with the current exacerbation of atopic dermatitis. The severity of erythema, induration/lichenification, scaling/crusting, exudation, excoriation, and pruritus was graded on the following scale: 0 = none; 1 = mild; 2 = moderate; 3 = severe. A total sign/symptom severity score (sum of six individual sign/symptom severity scores) of $\geqslant 8$ was required in the target area (maximum = 18), with a severity score of $\geqslant 2$ required for erythema and for one other sign. Patients were examined on return visits on days 4, 8, 15, and 22 of treatment and the severity of the signs and symptoms present in the target area was rated by the investigator at each visit. Areas outside the target area were also treated with the study medications and evaluated by the investigator in the global response to treatment. The criteria for global clinical response compared to baseline were as follows: cleared (100% improvement); excellent (75–99% improvement); good (50–74% improvement); fair (25–49% improvement); poor ($< 25\%$ improvement); exacerbation (a flare-up at a treatment site). No other therapies for atopic dermatitis were permitted.

Results

Both medications demonstrated an early onset of efficacy by the day 4 visit when the mean percentage improvement from baseline of the total sign/symptom severity scores was 41.9% in the mometasone furoate treatment group and 41.5% in the hydrocortisone valerate treatment group (P = not significant). At the day 8 evaluation, a further improvement in the sign/symptom score was seen in both treatment groups (66.6% and 63.3% in the mometasone furoate and hydrocortisone valerate groups, respectively; P = not significant). At day 15, however, the mean percentage improvement in the sign/symptom score was significantly greater in the mometasone furoate group than in the hydrocortisone valerate group (80.3% and 71.7%, respectively; $P = 0.013$). This more favorable improvement

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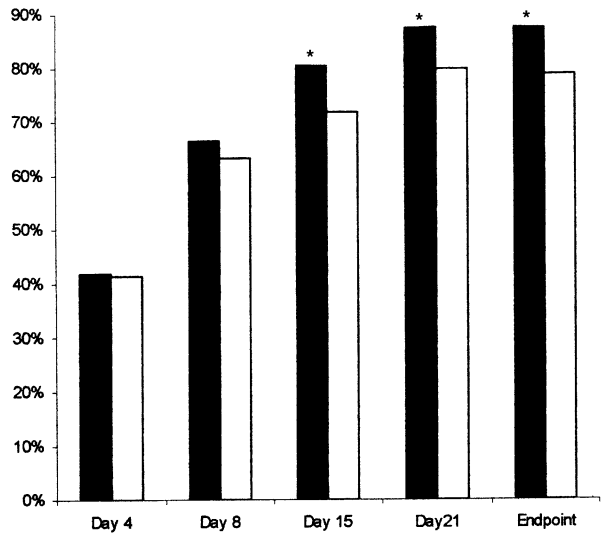

Figure 1 Percentage improvement in total sign/symptom severity scores compared to pretreatment evaluation. Black bar, mometasone; white bar, hydrocortisone; $*P < 0.05$

Table 1 Improvement in total sign/symptom severity scores (erythema, induration/lichenification, exudation, scaling/crusting, excoriation, pruritus) and global evaluation of overall change in disease state compared to pretreatment evaluation (percentage of patients with 100% clearance)

Visit	Treatment	No. of patients	Mean improvement in severity score (%)	Global* evaluation score
Day 4	MOM	83	41.9	0
HYD	81	41.5		0
Day 8	MOM	94	66.6	4.3
HYD	94	63.3		5.3
Day 15	MOM	90	80.3	12.2
HYD	90	71.7†		4.4‡
Day 21	MOM	77	87.4	28.8
HYD	86	79.7‡		14.0‡
Endpoint	MOM	102	87.2	36.3
HYD	107	78.6‡		19.6‡

*P values based on six-point scale for global response. †$P<0.05$. ‡$P<0.01$. MOM, mometasone furoate; HYD, hydrocortisone valerate.

was maintained through to the day 22 visit ($P = 0.018$). At the end of the study assessment, the mean percentage improvement in total sign/symptom severity scores was 87.2% in the mometasone furoate group and 78.6% in the hydrocortisone valerate group ($P = 0.011$) (Fig. 1 and Table 1).

The results of the physician's assessment of global clinical response compared to baseline also indicated that mometasone furoate cream was significantly more effective than hydrocortisone valerate cream at day 15 ($P = 0.009$), day 22 ($P = 0.011$), and at the endpoint evaluation ($P = 0.003$) (Table 1).

A total of 43 patients in the safety population discontinued the study early (prior to the 21-day treatment period; mometasone furoate, $n = 24$; hydrocortisone valerate, $n = 19$). The predominant reason for patients discontinuing study participation was the clearance of signs and symptoms, which occurred in 18 patients receiving mometasone and in nine patients using hydrocortisone. Other reasons for discontinuation included treatment failure (mometasone furoate, $n = 0$; hydrocortisone valerate, $n = 1$), noncompliance (mometasone furoate, $n = 3$; hydrocortisone valerate, $n = 4$), and failure to return for assessment (mometasone furoate, $n = 2$; hydrocortisone valerate, $n = 5$). One patient in the mometasone group was not eligible for enrollment and was removed from the trial.

Safety

A total of 21 out of 109 patients (19.3%) in the mometasone furoate group and 19 out of 110 patients (17.3%) in the hydrocortisone valerate group reported adverse effects. Of these, only application site reactions, reported by 3.7% (4 out of 109) and 1.8% (2 out of 110) of the mometasone furoate and hydrocortisone valerate treated patients, respectively, were judged by the investigators to be "probably, possibly, or related to treatment." All of these were rated as "mild" adverse reactions, and none resulted in patient discontinuation. The remaining reported adverse events were considered not to be related to the treatment medications by the investigators. No treatment related atrophy was seen in patients from either treatment group.

Discussion

The use of mild or medium potency topical steroids can be associated with systemic and/or local adverse effects (hypopigmentation, striae, skin atrophy, and adrenal suppression) if they are used for prolonged periods.[1,2] Therefore, newly developed formulations of topical corticosteroids should be effective clinically as soon as possible after the onset of treatment. Mometasone furoate was developed as a topical steroid for the treatment of severe dermatitis, and has been shown to have an excellent adverse event profile.[3–7]

Previous work has shown that mometasone furoate is effective in the treatment of children with moderate to severe atopic dermatitis.[8] Our group has recently found that mometasone furoate 0.1% cream is more effective in the treatment of pediatric atopic dermatitis than 2.5% hydrocortisone valerate cream in another pediatric patient

population. In the current study, we have demonstrated that, in those patients who fail to respond to initial treatment with topical hydrocortisone creams or ointments, switching to mometasone furoate cream is associated with more rapid clearing of signs/symptoms than is treatment with hydrocortisone valerate, with similar rates of treatment-related adverse events (mometasone furoate, 3.7% (4 out of 109); hydrocortisone valerate, 1.8% (2 out of 110)).

Applied once daily, mometasone furoate cream (0.1%) was very well tolerated and significantly more effective (percentage change of total sign/symptom scores and physician's global evaluation at days 15, 22, and at the end of the study) than twice-daily hydrocortisone valerate cream (0.2%). The few treatment-related adverse events in children were mild in both groups and no patient in either treatment group left the study due to treatment-related adverse events. Complete clearance of signs/symptoms occurred more often in children treated with mometasone than in those treated with hydrocortisone.

Conclusion

In pediatric atopic dermatitis patients who failed to respond to treatment with topical hydrocortisone creams or ointments, treatment with mometasone furoate cream (0.1%) was significantly more efficacious than treatment with hydrocortisone valerate cream (0.2%) with a similarly mild adverse event profile.

References

1 Hepburn D, Yohn JJ, Weston WL. Topical steroid treatment in infants, children and adolescents. *Adv Dermatol* 1994; **9:** 225–255.

2 Yohn JJ, Weston WL. Topical glucocorticoids. In: Weston WL, ed. *Current Problems in Dermatology*, Vol. 2. Chicago: Year Book Medical Publishers, 1990: 37–63.

3 Bressinck R, Williams J, Peets E. Comparison of the effect of mometasone furoate ointment 0.1%, and hydrocortisone ointment 1%, on adrenocortical function in psoriasis patients. *Today Ther Trends* 1988; **5:** 25–35.

4 Viglioglia P, Jones ML, Peets EA. Once-daily 0.1% mometasone furoate cream versus twice-daily 0.1% betamethasone valerate cream in the treatment of a variety of dermatoses. *J Int Med Res* 1990; **18:** 460–467.

5 Medansky RS, Brody NI, Kanof MS, *et al.* Clinical investigations of mometasone furoate—a novel, nonfluorinated, topical corticosteroid. *Semin Dermatol* 1987; **6:** 94–100.

6 Medansky RS, Bressinck P, Cole GW, *et al.* Mometasone furoate ointment and cream 0.1% in treatment of psoriasis: comparison with ointment and cream formulations of fluocinolone acetonide 0.025% and triamcinolone acetonide 0.1%. *Cutis* 1988; **42:** 480–485.

7 Rosenthal D, Duke E. A clinical investigation of the efficacy and safety of mometasone furoate ointment 0.1% vs. betamethasone valerate ointment 0.1% in the treatment of psoriasis. *Curr Ther Res* 1988; **44:** 790–801.

8 Vernon HJ, Lane AT, Weston W. Comparison of mometasone furoate 0.1% cream and hydrocortisone 1.0% cream in the treatment of childhood atopic dermatitis. *J Am Acad Dermatol* 1991; **24:** 603–607.

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