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HYDROCORTISONE OINTMENT IN THE TREATMENT OF CHILDREN WITH ATOPIC DERMATITIS

By

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It is generally accepted that the management of atopic dermatitis in children is one of the greatest problems of dermatologic therapy. The treatment is a most time-consuming task demanding the greatest patience. *Nexmand* (1948) concluded his review of available therapeutic measures pointing out that no entirely satisfactory therapy of this disease had yet been devised. At the same time he stressed the tendency to spontaneous remissions, the influence of allergens of the environment, and the consequential erratic course of the disease, for instance seasonal variations and changes occurring during journeys abroad and hospitalization. These factors must be taken into consideration when the effect of a new remedy on atopic dermatitis is to be evaluated.

Initial experiences with ACTH and Cortisone presented a most promising outlook for the control of atopic dermatitis, but it soon became apparent that treatment with these drugs was symptomatic in effect, and that relapses were almost invariably the rule after discontinuation of therapy (*Sulzberger, Witten and Yaffe* (1951), *Glaser, Siegel, Goldstein and Meltzer* (1951), *Søbye and Reymann* (1952)).

Furthermore, because of the well known side effects, treatment with ACTH and Cortisone involved certain ha-

zards, not least in children with atopic dermatitis. The relief of itching and the more or less complete recession of eczematous cutaneous changes seemed, however, to justify courses of ACTH or Cortisone therapy in the most severe cases (*Sulzberger and Baer, 1953*).

Local Cortisone therapy gave negative results. It was with the greatest expectations, therefore, that we greeted the first report (1952) of favourable results of local hydrocortisone therapy i.a. in atopic dermatitis (*Sulzberger and Witten*). With hydrocortisone ointment it seemed possible to produce an effect comparable to that of administration of corticotropic hormone or Cortisone, but to avoid the systemic effect which these drugs are bound to exert.

In April 1953 therapeutic studies of hydrocortisone were initiated at Rudolph Bergh's Hospital and the branch of this hospital at Welanderhjemmet, Copenhagen. In a preliminary report (*Heilesen, Kristjansen and Reymann, 1953*) we presented the results of hydrocortisone ointment in the therapy of 38 children and 13 adults with atopic dermatitis. In 21 children and 8 adults the therapeutic effect could be described as favourable, but mention was made of the observation of relapses on cessation of therapy, equal in violence to those seen on withdrawal of ACTH, and of reduction in local resistance to infection during treatment.

A continued study of these patients has confirmed our first impression. Hydrocortisone ointment fails in a number of cases, but to the patients in whom freedom of itching and recession of eczema is obtained, the ointment offers a real improvement of well-being, not only because of the effects just mentioned, but also because the prolonged treatment that is necessary in these cases, gives a minimum of discomfort, as the ointment is odourless, easy to apply and causes no soiling of clothes and linen. The importance of this is self-evident, especially when viewed against the background of the present-day shortage of hospital beds, trained nursing staff and domestic help.

To illustrate the load of work which the treatment of

atopic dermatitis imposes upon a dermatologic out-patient clinic we have counted the number of new cases registered at the out-patient clinic of Rudolph Bergh's Hospital in the years 1951-1953 (Table I).

TABLE I
New patients with atopic dermatitis registered at the out-patient clinic.

	New cases	Cases seen previously	Total	Hospitalized
1951	59	18	77	35
1952	57	26	83	22
1953	43	43	86	20
Total	159	87	246	77

Previously we made exclusive use of the well known therapy with tar alone or as an addition to pastes of zinc oxide and various ointments and occlusive dressings—a procedure which required a numerous, well-trained staff and a large consumption and frequent laundering of dressings. Realizing that the treatment of the young children entails the greatest amount of work, we studied the age incidence of the 159 new patients at the time of their first visit to the clinic (Table II).

It appeared that approximately one half of the children were taken to the clinic for treatment before the age of 2, and 69 per cent before the age of 5. Atopic dermatitis is thus a disease making heavy demands on the clinic, as its treatment is time-consuming and necessitates frequent consultations. New methods capable of shortening the period of treatment and reducing the number of consultations must therefore be regarded as a definite improvement, not only from the medical but also from the social point of view.

Several investigators have published studies of short term therapy with hydrocortisone ointment, but we have been unable to find any reports of studies evaluating the effect of long term therapy in children with atopic dermatitis.

The following is a presentation of the results obtained in

TABLE II

Distribution by age of 159 patients with atopic dermatitis at the time of the first visit to the out-patient clinic.

Years	Number of patients	Percent.	Girls	Boys
0-1	28	44	7	21
1-2	42		15	27
2-3	20	25	10	10
3-4	14		9	5
4-5	6		6	0
5-6	7	17	3	4
6-7	1		1	0
7-8	4		3	1
8-9	7		4	3
9-10	8		5	3
10-11	6	14	3	3
11-12	7		4	3
12-13	8		4	4
13-14	1		1	0
14-15	0			
Total	159	100	75	84

our patients who were treated with hydrocortisone ointment for several months (from 2 to 12 months). A summary of results is given in Table III.

We considered the effect favourable when the itching, eczematized and lichenified skin became free of itching, smooth, and assumed a normal colour during therapy. Lichenification, on the other hand, did persist in some cases. The effect was considered questionable if flare-ups were seen during an otherwise successful course of therapy or if the therapeutic response was doubtful, that is to say that there was some alleviation but not complete disappearance of itching and the skin alterations. It seems reasonable to assume—and so far this assumption has been confirmed in a few instances—that at least some of the patients in whom hydrocortisone ointment (1 per cent) produced only a questionable

TABLE III
Results of long-term therapy with hydrocortisone ointment (1%).

Effect:	Favourable	Questionable	No effect
	23	9	7
Total: 39 patients			

effect would have been improved if a higher concentration had been employed. For reasons of economy we have used a concentration of 2 per cent only in a few cases, while investigators for instance in the U.S.A. have used concentrations up to 5 per cent and consider that the optimum effect is obtained with 2.5 per cent of hydrocortisone in ointment.

Some of our patients received initial therapy during hospitalization and, as the normal rule, their treatment was continued in the out-patient clinic; others were given ambulant treatment exclusively. The distribution of hospitalized patients and out-patients is shown in Table IV.

TABLE IV

Effect of therapy	Number of patients hospitalized	Number of out-patients
Favourable	10	13
Questionable	7	2
None	2	5
Total	19	20

The numbers of patients are too small to allow definite conclusions as to the differences of effect observed in the two groups, but there appeared to be a few more failures in the group of out-patients and a slightly higher number of questionable results in the group of hospitalized patients. It seems to have been established, however, that hospitalization played no role in the attainment of a favourable effect of treatment with hydrocortisone ointment in our patients. The two groups in Table IV differ in regard to age distribution, the average age of the 19 hospitalized patients being 2.8 years as com-

pared with 5.3 years in the 20 out-patients. This age difference is perhaps attributable to the fact that especially the very young children are not easily managed as out-patients. The average age was 3.4 years in the children showing a favourable effect, 5.8 years in the children showing a questionable or no effect. It would thus appear that the older cases present a greater therapeutic problem. No definite conclusions should be drawn from this age difference, however, as our results in adults were much more favourable than in the children.

The patients included in the present study were selected preferably among the severe, recalcitrant cases in which hydrocortisone was resorted to when all other procedures had failed. The fact that our patients represent a selected group should therefore be kept in mind when the present results are evaluated. The following case records will give an impression of our principles of therapy:

Case 1.

R.B.H. 1601/53, ♂, born Mar. 4, 1952.

Before hydrocortisone treatment (0-17 months old).

Itching eczema of face shortly after birth, 14 months old additional involvement of hands and flexor surfaces of knees. Hospitalized for 6 weeks. Lesions cleared up nicely. Prompt relapse after dismissal.

With hydrocortisone ointment (17-28 months old).

Treated as an out-patient. The skin promptly became smooth. Protective dressings required only at night.

19 months old: Hydrocortisone ointment withdrawn. Prompt, extensive recurrence.

Resumption of hydrocortisone ointment after 3 weeks of increasingly severe eczema. The skin promptly became pale and smooth.

20½ months old: Hydrocortisone ointment replaced by ointment base alone: Recurrence within 2 days. Treatment with h. o. during the following 8 months: No itching, skin pale at sites of previous eczematisation, but persistence of slight infiltration.

Case 2.

R.B.H. 1347/52, ♂, born May 7, 1951.

Before hydrocortisone treatment (2-33 months old).

2 months old: Eczema of scalp and face. 9 months old: First hospitalization, eczema involving face, hands, flexor surfaces of elbows and knees, legs. 5 subse-

quent hospitalizations (total 669 days) at intervals totalling only 111 days. 20 months old: Pustulosis varioliformis Kaposi. Initial hydrocortisone ointment, vaseline base, not tolerated.

With hydrocortisone ointment (34-36 months old).

- Feb. 28: The skin red with marks of scratching and oozing eczema. Treatment of forehead with hydrocortisone ointment prescribed.
- Mar. 3: Forehead smooth. Treatment of right cheek with h. o. and of left cheek with phenegan cream prescribed.
- Mar. 10: "Right cheek looks decidedly better than left cheek".
- Mar. 13: "Left side still looks worse than right".
- Mar. 16: Beneficial effect of h. o. justifies discontinue.
- Apr. 13: Insignificant itching, but persistence of red, slightly lichenified, eczematous patches on the head.
- May 18: Remains practically symptom-free under the influence of continuous therapy.

Case 3.

R.B.H. 484/43, ♂, born Sep. 11, 1942.

Before hydrocortisone treatment (1-10 years old).

Attended the out-patient clinic frequently since 1943, hospitalized 1945, 1946 and 1949. Eczema localized especially to hands, flexor surfaces of elbows and knees. Referred to the clinic again on Apr. 4, 1953, because of extensive eruption which remained full of scratches and oozing during the following months.

With hydrocortisone ointment (11-12 years old).

- Dec. 17, 1953: Initiation of therapy. Healing of the lesions within a few days.
- Jul. 5, 1954: Remains symptom-free if h. o. is employed.

It will appear from these three case records the way we have carried out certain control measures, namely

- (1) In the case of multiple lesions, treatment of some of the affected areas with hydrocortisone ointment and of others with ointment base or other ointments to obtain comparative data.
- (2) Transition to ointment base alone, and
- (3) Experimental withdrawal of hydrocortisone therapy.

Improvement was seen in only 59 per cent of the children in our series, while 84 per cent of the 38 adult patients experienced a beneficial effect. This difference may be ac-

counted for by the fact that treatment "lege artis" is not always practicable in children, or that children should perhaps be treated with an ointment of a higher concentration.

Hydrocortisone ointment affords prompt relief of itching, but there is no doubt that treatment with tar produces a more rapid disappearance of lichenification. The prompt relapses seen on withdrawal of the ointment indicate the need for treatment over a long period, but—as previously pointed out—this form of therapy offers a number of advantages and must therefore be regarded as a definite improvement. Occasionally the effect can be maintained with an ointment of the concentration 0.5 per cent. The reasonable price at which the ointment is now obtainable permits effective implementation of long term therapy. To many patients with atopic dermatitis this means that they can now be kept symptom-free, while their disease previously handicapped them in school or prevented them from doing regular work. Hydrocortisone is not only an excellent antipruritic, it also exerts an anti eczematous effect. The prompt and acute flare-ups that are frequently seen on cessation of therapy are indicative of this. The blocking of the eczematous reaction ceases as soon as treatment is stopped. Thus, the treatment is symptomatic in effect and will hardly alter the course and gravity of the disease.

The ointment base plays an important role in the results of therapy. In this connection reference is made to our previous publications on the subject, and it will suffice to mention that after various experiments the ointment of our choice is one of the following composition:

Hydrocortisone	cg 10
Glyceryl monooleate	cg 25
Vaselinum album	g 4.25
Adeps lanae	cg 50
Citrate buffer solution pH 5	g 5

In the initial phases of therapy the ointment is applied 2-4 times daily in a thin layer, later only once or twice daily

or at intervals of several days. Dressings are usually unnecessary.

After the completion of the present study we have started to use hydrocortisone ointment as a supplement to the generally accepted method with tar, thus utilizing the ability of the former method to produce prompt relief of itching and the beneficial effect which the latter method has on lichenification. Sensitization to hydrocortisone has not occurred in our patients.

SUMMARY

Prolonged therapy with hydrocortisone ointment 1 per cent was carried out in 39 children with atopic dermatitis. The therapeutic effect was favourable in 23, questionable in 9, while 7 failed to respond to therapy. The treatment is easy, clean and odourless and is recommendable as supplement to the methods in common usage.

REFERENCES

- Glaser, J., Siegel, S. C., Goldstein, J. D. & Meltzer, R. S.*: Ann. Allergy, 9, 292, 1951.
- Heilesen, B., Kristjansen, Aa. & Reymann, Fl.*: Ugeskrift for Læger, 115, 1830, 1953.
- — — Arch. Dermat. & Syph., 70, 360, 1954.
- Nexmand, P.-H.*: Clinical Studies of Besnier's Prurigo, Copenhagen 1948.
- Sulzberger, M. B. & Baer, R. L.*: Present Status of ACTH, Cortisone and Compound F in Dermatologic Management. The 1952 Year Book of Dermatology and Syph., p. 7, Chicago, 1953.
- & *Witten, V. H.*: J. Invest. Dermat., 19, 101, 1952.
- — & *Yaffe, S. N.*: Arch. Dermat. & Syph., 64, 573, 1951.
- Soby, P. & Reymann, Fl.*: Acta derm.-ven. Vol. 32, suppl. 29, 360, 1952.

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