Betamethasone 17-Valerate: a New Alcoholic Formulation for Psoriasis of the Scalp

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The treatment of dermatoses of the scalp is often made more difficult by the unpleasantness of the preparations commonly in use. Women in particular are loath to apply creams and ointments which leave the hair darkened, greasy, smelly, and in need of frequent washing.

Psoriasis of the scalp, a frequent and sometimes the only manifestation of the disease, can often be treated successfully with ointments containing tar. However, the application of tar ointments results in all the cosmetic disadvantages we have mentioned. Betamethasone 17-valerate (Betnovate) has been shown to be the most effective topical steroid in the treatment of psoriasis (Williams *et al.*, 1964), and McKenzie and Atkinson (1964) have demonstrated that this steroid is highly active in an alcoholic solution. It was felt that an alcoholic formulation of betamethasone 17-valerate would thus provide a more acceptable treatment for psoriasis of the scalp.

A double-blind clinical trial was carried out with a lotion containing 0.1% betamethasone 17-valerate in 50% isopropyl alcohol. The alcohol was slightly gelled, to render the lotion less mobile and thus easier for the patient to control when applying it to the scalp.

As it was thought that the cosmetic advantages of this preparation might in part be offset by the patient's having to wear a dressing on the head at night, the formulation was not used under polyethylene occlusion.

Design of the Trial

Each patient was issued with two forms of treatment—the steroid alcoholic gel and the unmedicated alcoholic gel base. Patients used one formulation for two weeks, then changed to the alternative for a further two weeks. The order in which the preparations were used was determined at random. Patients were instructed to use the lotions night and morning and to shampoo the hair twice a week with Genisol (Coal-tar fractions ; hexachlorophane). Progress was assessed weekly and recorded as healed, improved, static, or worse.

The amount of clinical material available made it possible to continue the trial beyond the limit originally envisaged. In all, 37 patients were admitted to the trial, two of whom were ultimately omitted because they did not use the lotions as instructed. In the remaining 35 the disease had been present for an average of 12 years. Their ages ranged from 11 to 67 years, with an average of 35 ; the series included 27 females and eight males.

Results

Patients in whom there was no detectable difference in response to the two formulae were designated tied-pairs. The remaining results were analysed by the restricted sequential method of Armitage (1960) with a design designated by the factors $2\alpha=0.05$, $1-\beta=0.95$, $\theta_1=0.85$ (see Chart).

The "active" boundary was reached when 14 non-tied pairs had been recorded. This result was statistically significant at the 5% level, and indicated that the betamethasone 17-valerate lotion was more effective than its unmedicated base.

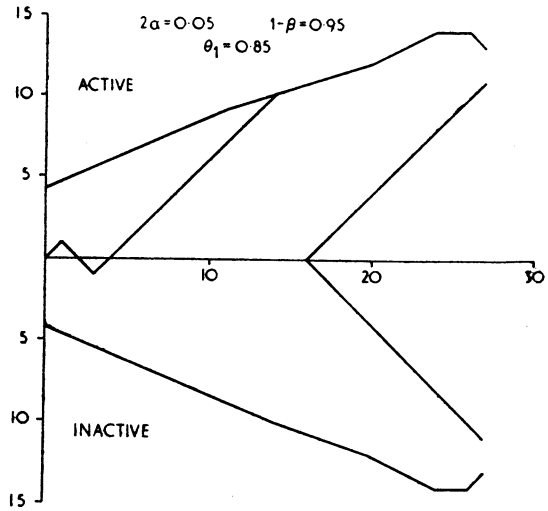

Chart showing analysis of results.

In seven of the 35 patients no difference between the medicated and the unmedicated lotions was observed—four showed improvement on both formulations, in two the condition remained static, and one became worse.

Nine patients showed an apparent preference for the unmedicated formulation. In the remaining 19 the superiority of the steroid lotion was clearly seen.

Most patients found that the small plastic container of 30 ml. was sufficient to last one to two weeks when used twice daily.

Discussion

Some of the patients noticed transient stinging when the lotion was applied, but all preferred it to an ointment or a cream. Most of them thought the steroid lotion superior to any previous treatment in that it was clinically more effective and cosmetically more acceptable.

It was thought that the apparent effectiveness of the unmedicated lotion reported by some patients might be attributable to the descaling effect of the alcohol.

Summary

A double-blind trial was carried out with betamethasone 17-valerate in slightly gelled alcohol in the treatment of

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psoriasis of the scalp. Patients found it cosmetically superior to ointments and creams, and the preparation was effective compared with the inert base.

NOTE.—Since this work began Hagerman (1965) has reported the successful use of an alcoholic solution of triamcinolone in psoriasis of the scalp. The preparation he used contained salicylic acid and benzalkonium chloride in addition to the steroid, and his patients used an occlusive dressing on the head at night.

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Preliminary Communications

Host Defences to Burkitt Tumour

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The possibility that host factors or immunological agents play a part in the results achieved in the treatment of the Burkitt tumour has long been suspected. Thus Burkitt (1962), in East Africa, showed that adults living in regions where this lymphoma was prevalent did not suffer from the tumour, whereas adults who had come from non-endemic regions were apt to contract the lesion. Moreover, the overall long-term survivals achieved in the treatment of the Burkitt lymphoma are much better than those achieved with other lymphomas (Chemotherapy of Burkitt Tumour, 1966) even with small doses of drugs. Regressions of the Burkitt lymphoma have even occurred when treatment was abandoned or refused (Burkitt *et al.,* 1965).

Ngu (1965) suggested that if host factors were involved in some of the remissions seen such factors would theoretically be easier to detect in those who had had long remissions than in those who had succumbed early to their tumour. Such early deaths might be taken as presumptive evidence of failure or inadequacy of host defence factors, whatever the reasons for this failure might be. Hence it was decided to search for a humoral factor in patients with long remissions.

MATERIAL AND METHOD

Blood was donated by two Burkitt tumour patients with uninterrupted remissions of over two and a half years who had not received cytotoxic drugs in the preceding year. Control blood was donated by a young healthy English doctor who had spent nine months at Ibadan and a healthy young American scientist who had spent only 72 hours in Nigeria. Two factors were taken into account in the design of the trial. Firstly, it was thought prudent to exclude from the donors of immune plasma patients with remissions of less than two years, since recurrences of the tumour after nearly a year's remission had been seen. With a further year of remission the risk of infusing live tumour cells or whatever their causative agents might be was minimized. Secondly, plasma was preferred to serum because it avoided waste in separating serum from the small volumes of blood donated by children. Moreover, as the recipients were themselves generally anaemic, it was always possible that they might need the red cells as well. The donated blood was thus stored as whole blood, but the plasma was separated and stored frozen shortly before its expiry date.

"*Immune*" *Plasma Donor I.*—A 10-year-old girl (blood group O, Rh-positive) was first seen in February 1962, at the age of 6, weighing 41 lb. (18.6 kg.) with a lymphoma (Burkitt tumour) of the right cheek, confirmed by *x*-ray and histological examination. She received 5.5 mg. of mustine hydrochloride into the right external carotid artery and a further dose of 6.2 mg. into the arch of the aorta via a femoral artery catheter. Six weeks later regression of the tumour was rapid, and she has remained completely symptom-free to the present time with no evidence of tumour anywhere in the body.

"*Immune*" *Plasma Donor II.*—A boy (blood group B, Rh-positive), now aged 14, was first seen in December 1962 with Burkitt tumour of the right maxilla and was treated by intravenous cyclophosphamide (490 mg. daily × 7). The response of the tumour was good, but because of persistent bony deformity he was started six weeks later on a maintenance course of 50 mg. of cyclophosphamide by mouth daily. This was continued intermittently for a year and then stopped. There is now no evidence of disease on clinical and radiological examination.

CASE 1

A 4-year-old boy (blood group B, Rh-positive) was admitted to hospital on 2 September 1965, with a 20-day history of swelling of the left cheek and right upper eyelid and some respiratory difficulty. On examination he was a very ill child weighing 22 lb. (10 kg.) with bilateral involvement of both maxillae and both mandibles by tumour masses. The maxillary tumour had ulcerated into the nostrils, from which a moderate amount of bleeding was observed. Nasal obstruction and extension of tumour into the mouth had rendered normal breathing difficult. A tracheostomy was therefore established on admission. The perlorbital tissues were involved by tumour, more extensively on the right side than on the left. The rest of the physical examination did not reveal obvious tumour masses elsewhere in the body.

X-ray examination of the facial bones showed extensive destruction of both maxillae and mandibles with displacement of the teeth (anarchie dentaire). There was a loss of dental lamina dura.

Biopsy examination of the tumour on the left cheek showed the presence of Burkitt tumour cells.

On 3 September 150 ml. of immune plasma I was transfused into the child. Next day he looked infinitely better, though he had a temperature of 102° F. (38.9° C.). The patient's general condition remained satisfactory, but his temperature continued to swing until 12 September, when it settled. Because of occasional epistaxes, however, and a haemoglobin of 6.9 g./100 ml. (47%), he was transfused with 350 ml. of whole blood obtained from a local adult Nigerian who had not suffered from Burkitt tumour. On 12 September it was noticed that the jaw tumour was regressing fairly rapidly, and next day the serum uric acid had risen to 9.6 mg./100 ml. Throughout this period no cytotoxic drug had been given.

He remained well until 26 September, about three weeks after the plasma infusion, when it was noticed that the tumour in the left cheek had recurred. A week later it was 3 cm. in diameter, and intravenous cyclophosphamide (10 mg./kg. body weight) was started,