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Allergic contact dermatitis and conjunctivitis to corticosteroids

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This is a report of two patients suspected of having allergic dermato-conjunctivitis due to corticosteroids. Both were tested with the constituents of the ointments they were using, that is, corticosteroids, antibacterial agents, preservatives, and other active ingredients of the ointment bases. Both patients showed positive allergic patch test reactions to the respective corticosteroid betamethasone valerate, and one to hydrocortisone, neomycin, and a rubber additive.

The importance of routine patch testing in ophthalmic practice to detect sensitizers in cases of allergy is mentioned. Hydrocortisone (25 %) in petrolatum is recommended for patch testing.

Key words: Allergic conjunctivitis – allergic contact dermatitis – betamethasone sensitivity – corticosteroid sensitivity – hydrocortisone sensitivity – neomycin sensitivity – routine patch testing – rubber additives sensitivity.

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In the past few years several investigators have reported allergic sensitivity to topical hydrocortisone (Comaish 1969, von Burckhardt 1959, von Dorn 1959, Kooij 1959, von Sonnichsen 1962, Bonu & Zina 1967), hydrocortisone alcohol (Edwards & Rudner 1970), methyl prednisolone (Coskey 1967), triamcinolone acetonide (Bandmann et al. 1966, Wulf 1967) and to 6-alpha-chlorprednisone (Vermeulen et al. 1963). Ingredients of ointment bases (Sams & Smith 1957) or by-product impurities (Church 1960) may also act as sensitizing agents.

In a previous communication we reported 21 patients with allergic patch test reactions to hydrocortisone, three to triamcinolone, two to betamethasone, and 10 to hydrocortisone (Alani & Alani 1972).

This report describes two patients with sensitivity to corticosteroids and the skin patch tests which were performed to discover the offending sensitizers.

Case 1

A 54-year-old man, with a history of folliculitis of the neck, had been treated by a general practitioner with a combined ointment of betamethasone valerate and neomycin. Initially the treatment had a good effect, but later the condition relapsed and worsened in spite of continued treatment with the same ointment.

The patient was treated by the same practitioner with eye drops containing prednisolone phosphate and neomycin for chronic conjunctivitis. The patient used the eye drops for 6 weeks, during which the eye symptoms became worse. At first he complained of dryness and ocular irritation. Later, after using the eye drops, he suffered

Table 1. Results of patch tests with components of steroid preparations used by Case 1

Test substances	*Concentration*	*Reaction*
Ointment:		
Betamethasone valerate	10 % in petrolatum	++
Neomycin sulfate	40 % in petrolatum	+++
Lanolin	as is	–
Eye drops:		
Prednisolone phosphate	10 % in petrolatum	–
Benzalkonium chloride	0.1 % aqueous	–
Disodium edetate	1 % aqueous	–
Others:		
Hydrocortisone	15 % in petrolatum	+
Hydrocortisone	25 % in petrolatum	++
Rubber additives:		
T M T D	2 % in petrolatum	–
M B T	2 % in petrolatum	++
T M M S	2 % in petrolatum	–

T M T D: Tetramethylthiuramdisulfide
M B T: Mercaptobenzthiazole
T M M S: Tetramethylthiurammonosulfide

from intense itching and swelling of the lower eyelids. The patient was referred to the Ophthalmology Department for consultation.

The skin of the eyelids was erythematous and swollen. The lower eyelids were intensely swollen. The conjunctiva was chemotic and injected. The conjunctiva palpebrae and that of the lower fornix showed papillary reaction and there were many vesicles, thus indicating an acute allergic reaction. The patient complained of smarting pain with epiphora but the dominant complaint was intense itching.

The eye drops were discontinued and the patient was left without medication. Ocular discomfort ceased during the next 2 days. The dermatitis receded during the next 2 weeks. Patch testing was performed a month later (Table 1).

Case 2

A 65-year-old woman, with a history of a stasis ulcer, had been treated by a practitioner with different corticosteroid ointments. She was referred to the Ophthalmology Department for consultation because of periorbital dermatitis and edema of the eyelids, without any obvious history of contactants. At that time she was using topical betamethasone valerate with iodochlorhydroxyquinoline ointment for her ulcer.

On examination, the skin of the orbital region was erythematous and swollen. The upper eyelids were more swollen than the lower ones. The conjunctiva was injected and chemotic. The patient complained of severe itching, epiphora and occasional stabbing pain.

Treatment of the stasis ulcer was discontinued. The conjunctival reaction disappeared during the first week and the dermatitis receded completely before the end of the second week. One month later patch testing was performed (Table 2).

Method

In the first case the patient was using a corticosteroid ointment containing beta-

Table 2. Results of patch tests with components of stereoid preparation used by Case 2

Test substances	*Concentration*	*Reaction*
Ointment:		
Betamethasone valerate	10 % in petrolatum	++
Iodochlorhydroxyquinoline	10 % in petrolatum	−
Lanolin	as is	−
Others:		
Hydrocortisone	15 % in petrolatum	−
Hydrocortisone	25 % in petrolatum	−
Rubber additives:		
T M T D	2 % in petrolatum	−
M B T	2 % in petrolatum	−
T M M S	2 % in petrolatum	−

T M T D: Tetramethylthiuramdisulfide
M B T: Mercaptobenzthiazole
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methasone valerate for the folliculitis of the neck and corticosteroid eye drops containing prednisolone phosphate. He was patch-tested with the constituents of both preparations. The concentrations of the test substances are found in Table 1.

In the second case the patient was using a corticosteroid ointment containing betamethasone valerate. She was patch-tested with the constituents of that ointment (Table 2).

Evaluation of the patch test results was according to the recommendations of the International Contact Dermatitis Research Group (Fisher 1973).

Results

In the first case the patch testing showed allergic reactions to betamethasone valerate, hydrocortisone, and neomycin. The patient was found to have an unexpected allergic positive skin-test reaction when tested with mercaptobenzothiozole (MBT) a rubber additive. In the second case the patch testing showed positive allergic reactions to betamethasone valerate.

Comment

Allergic contact sensitivity to topical corticosteroids is being reported with increasing frequency. We have in a previous communication reported a 0.3 % incidence of corticosteroid sensitivity (Alani & Alani 1972). In the future, the incidence will probably increase because of the tendency to use higher concentrations of steroids. Potent corticosteroids applied to stasis ulcers seem to be particularly sensitizing.

In ophthalmic and dermatologic practice, the corticosteroid preparations are popular in the treatment of simple conjunctivitis and dermatitis, because usually there is prompt symptomatic relief and improvement. Persistence or exacerbation of the eczematous dermatitis, however, should cause one to suspect the presence of secondary contactant. Sensitivity to one or more of the components of the preparation, such as parabens, lanolin, antibacterial or other additives such as humectants and surfactants should always be suspected, and if these can be excluded, patch testing may then reveal the parent steroid to be the

sensitizer (Fisher 1973). This is especially likely when the dermatitis fails to recede in spite of intensive therapy with topical corticosteroids. In cases of contact sensitivity to one of the constituents of a corticosteroid preparation, the steroid may modify the patch test reactions or may cause negative results. Because of the anti-inflammatory activity of corticosteroids, the clinical manifestations of infections or fungal invasion may be masked, and when contact sensitivity to a steroid coexists, the usual local response to inflammation and sensitivity may be modified (Alani 1972).

Patients with contact dermatitis should be tested with all the medicaments which have been used on them. Any active ingredients should be tested in concentrations higher than are used for therapeutic purposes. Hydrocortisone (25 %) in petrolatum is recommended for patch testing. With this concentration irritant reactions are rare (Alani & Alani 1972).

Patch tests should include lanolin, possibly wool alcohols, and some preservatives such as paraben esters, merthiolate and chlorocresol. At present, the contents of proprietary preparations are not stated on the packages and only in Sweden are they given in the catalogues (Hjorth & Fregert 1968). Reputable firms will supply the required information on request. In order to reduce the risk of relapses, analysis of a sensitivity to a proprietary ointment or eye drops should be the rule, and any ophthalmologist or dermatologist should at least have a full knowledge of the composition of the preparations used by him.

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