

Allergic contact dermatitis from *N*-acetylcysteine eyedrops

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Topical ophthalmics are a common cause of allergic contact dermatitis and conjunctivitis. Allergens identified include antibiotics, antivirals, beta-blockers, mydriatics, preservatives, antihistamines and anaesthetics (1).

Case Report

A 30-year-old woman with lifelong atopic eczema had a 10-year history of peri-orbital eczema, associated with severe atopic keratoconjunctivitis and keratoconus. Her left eye was blind from previous corticosteroid glaucoma, and her right eye had moderately advanced glaucoma, which had been controlled surgically. In addition to glaucoma, topical corticosteroids had resulted in early

cataracts. Her treatment at presentation consisted of fluorometholone and sodium cromoglycate eyedrops, in addition to hypromellose and *N*-acetylcysteine drops as tear replacement.

She was patch tested to an extended European standard series, facial series, medicament series, ophthalmic series including 1% ethylenediamine tetraacetate and 0.05% phenylmercuric acetate, and her own eyedrops. Positive results are shown in Table 1. Patch testing with 10% aq. *N*-acetylcysteine was negative in 14 controls. A marked reduction in redness and itching of the eyes was noted by our patient within a week of discontinuation, and this clinical improvement has been maintained at 4 months.

Discussion

N-Acetylcysteine is a mucolytic agent and, in combination with hypromellose eyedrops, is commonly used to alleviate the chronic soreness associated with dry eyes (2, 3). To the best of our knowledge, this is the first report of *N*-acetylcysteine causing contact hypersensitivity, although somewhat paradoxically both systemic and topical *N*-acetylcysteine has been shown to inhibit contact hypersensitivity reactions in animal models through its anti-tumour necrosis factor- α action (4).

Phenylmercuric acetate provides

antipseudomonal activity to several ophthalmic preparations (5). However, as our patient denied using any such products, contact allergy to this agent was not considered clinically relevant, though may have been so in the past. Additionally, fragrance contact allergy was not thought to be relevant to our patient's current problem.

References

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Table 1. Positive patch test results

Patch test substance	Day 2	Day 4
<i>N</i> -Acetylcysteine eyedrops (10% aq. preservative-free)	+	+
Phenylmercuric acetate	+	+
Fragrance mix	+	+
Balsam of Peru (Myroxylon Pereirae resin)	+	+