

Positive use test in contact dermatitis from betaxolol hydrochloride

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Betaxolol hydrochloride is a cardioselective beta-blocker (beta₁-adrenoceptor selective), which is used in treatment of primary open-angle glaucoma and ocular hypertension. Its chemical structure is 1-(4-(2-(cyclopropylmethoxy) ethyl)phenoxy)-3-((1-methylethyl)amino)-2-propanol hydrochloride.

Betaxolol has been associated with local stinging, burning or itching on instillation in up to 40% of patients (1). Betaxolol ophthalmic solution has been associated with periocular skin hyperpigmentation (2). However, allergic contact dermatitis from betaxolol hydrochloride is infrequent (3).

Case Report

An 87-year-old non-atopic housewife, with a history of jewelry intolerance and of 17-year primary open-angle glaucoma treated in past years with betaxolol (Betoptic®, suspension) and dorzolamida (Trusopt® solution,). Severe dermatitis of the eyelids and periorbital areas had appeared 5 years after starting on previous ophthalmic preparations. She developed itching bilateral erythematous-squamous oedematous plaques on the upper and lower eyelids. These lesions persisted for 3 months in spite of topical corticosteroid treatment.

Patch testing with the Spanish standard series, the patient's ophthalmic preparations and individual constituents of Betoptic showed positive (+ +) reactions to nickel sulphate and cobalt chloride at D2 and D4. Patch tests with Betoptic suspension showed a doubtful positive (? +) reaction at D2 and D4, but its individual components were all negative (Table 1). The Betoptic suspension alone was discontinued and the skin lesions completely resolved with 2 weeks. A ROAT was performed with Betoptic suspension on the volar aspect of the forearm for 15 days, which gave a negative result.

A month later, we performed a use test with Betoptic eyedrops. Erythematous-oedematous plaques on the upper and lower eyelids were noted hours after receiving a drop in each eye of this medication. The ocular reaction resolved within 3 days of stopping the betaxolol-containing eyedrops. Subsequently, a sterile ophthalmic solution was prepared by our Pharmacy Department, containing the excipients at the same concentrations as found in the commercial ophthalmic preparation. The patient used this ophthalmic solution for a week at a twice-daily dosage of drops in each eye. No positive reactions were noted.

Discussion

Allergic contact dermatitis from topical beta-blocking agents or combinations of them is infrequent in glaucoma patients (4). Allergic contact dermatitis from betaxolol has rarely been confirmed by patch testing with the ophthalmic solution (3). In our

case, after discontinuing the Betoptic eyedrops, the periocular dermatitis resolved, confirming that the doubtful positive patch test was relevant. Use test with Betoptic eyedrops gave a positive reaction. Re-exposure to the excipients of Betoptic eyedrops showed no periocular dermatitis, confirming that betaxolol was the responsible contact allergen.

Patients with allergic contact dermatitis from topical beta-adrenergic blocking agents can have false-negative patch tests to them (5–8). The concentrations and vehicles for patch testing topical beta-adrenergic blocking agents have yet to be standardized. Besides the ROAT, various alternative techniques have been reported with which to diagnose contact allergy to topical beta-blocking agents. Authors have suggested patch testing with higher concentrations of beta-blockers than contained in ophthalmic solutions (8), enlargement of the patch test area (6), patch tests on stripped or scarified skin (7), or after pricking the skin (9), and intradermal testing (3), as well as use testing (5, 7). No consensus yet exists as to the best approach.

References

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Table 1. Patch test results

	D2	D4
Spanish standard series		
nickel	++	++
cobalt	++	++
Trusopt® solution	–	–
Betoptic® suspension betaxolol hydrochloride	?+	?+
1% aq.	–	–
5% aq.	–	–
benzalkonium chloride 0.1% aq.	–	–
disodium edetate 1% pet.	–	–
mannitol 2% alc.	–	–
Amberlite IRP-69 1% o.o.	–	–
Carbomer 934 P 10% aq.	–	–

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