

Patch Testing Detection of Contact Allergens in Medical Treatments for Allergic Conjunctivitis

To the Editor:

Standard treatment for allergic conjunctivitis involves topical decongestants, corticosteroids, antihistamines, and mast cell stabilizers. Patients who fail to respond and/or develop lid symptoms should raise suspicion for allergic contact dermatitis (ACD).^{1,2} Although allergens in ophthalmic products have been reported, the frequency of allergens in medications for allergic conjunctivitis has not.³ This study aims to determine the prevalence of allergens detected by standard patch testing in treatments for allergic conjunctivitis and the utility of expanded series testing in cases of ACD to ophthalmic products.

A list of topical ophthalmic products indicated for allergic conjunctivitis was populated using independent Epocrates search criteria for “ophthalmic” + “corticosteroids,” “antihistamine,” and “mast cell stabilizer.” Ingredients were compiled using the US National Library of Medicine's DailyMed tool and secondarily verified by manufacturer package inserts. Ingredients considered allergens or associated cross-reactors on the 2018 American Contact Dermatitis Society (ACDS) Core Allergen Series, 2015 to 2016 North American Contact Dermatitis Group Standard Allergen Series,

the T.R.U.E. test, allergEAZE eyelid dermatitis (grouping), corticosteroids (category), external agents/emulsifiers (category), and eye medicaments (category) expanded series trays were noted.

Of 37 topical ophthalmic products, 20 were corticosteroids, 9 antihistamines, and 8 mast cell stabilizers. Across all products, 60 unique ingredients and 11 total allergens were identified. One hundred percent ($n = 37$) of the products had 1 or more allergens detected by standard trays. As seen in Table 1, combining the ACDS series with eyelid medicaments provides the broadest detection achievable with 2 trays; adding external agents/emulsifiers covers all potential allergens identified in this study.

Despite containing 2 potential allergens (a corticosteroid and white petrolatum), loteprednol etabonate (Lotemax Ophthalmic Ointment) may be a good choice to consider in patients who are not steroid-allergic. Petrolatum is also a rare source of allergy and may only cause reactions on damaged skin.⁴ Currently, specific cases of allergies to loteprednol have not been reported.

Although seemingly paradoxical, allergies to ingredients in products that treat allergic conjunctivitis are prevalent. Considering ACD in patients unresponsive to standardly recommended medications and choosing patch testing trays that provide the highest diagnostic yield may lead patients toward an informative diagnosis.

TABLE 1. Allergens Present in Ophthalmic Medications Detected by Various Allergen Series

Potential Allergens Identified in Products	No. Products with Allergen	Commercial Allergen Series/Groupings/Categories*						
		Series			Grouping	Categories		
		T.R.U.E. Test	ACDS	NACD G	Eyelid Dermatitis	Corticosteroids	External Agents/Emulsifiers	Eyelid Medicaments
Benzalkonium chloride	33							
Desoximetasone	2							
Disodium edetate	26							
Hydrocortisone-17-butyrate	8							
Lanolin/wool alcohol	2							
Paraben mix	1							
Petrolatum	3							
Polyethylene glycol	2							
Propylene glycol	2							
Sorbitan sesquioleate	11							
Tixocortol-21-pivalate	10							

*All commercial allergen trays referenced are produced by allergEAZE. Shading indicates presence of allergen on tray. NACD G, North American Contact Dermatitis Group.

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Cement and Retarder-Associated Systemic Contact Dermatitis in a Chromium-Negative Patch-Tested Patient

To the Editor:

A year before referral, a 44-year-old male Japanese concrete worker developed widespread pruritic rashes, especially while sweating at work (Fig. 1A). He had no medical history. He had been using a retarder (CSE-pro GmbH, Sonthofen, Germany) at work over the past 2 years and typically used a dust

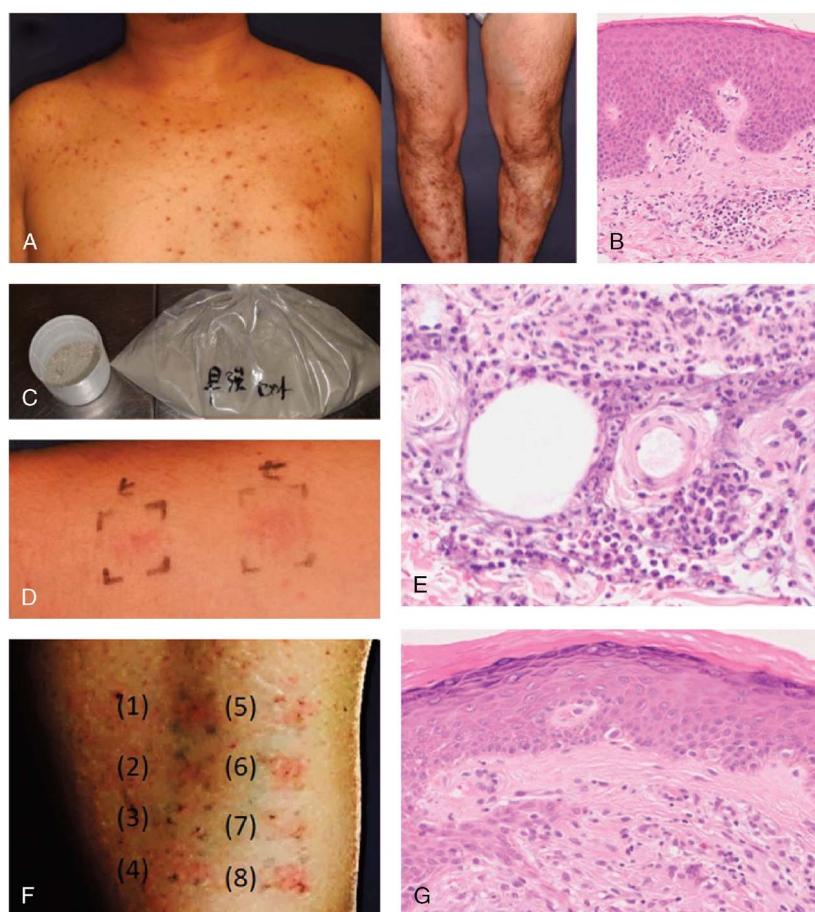


Figure 1. A, Clinical images at his first visit. Pruritic dark brown hyperpigmented nodules on the whole body. B, The skin biopsy from the chest showed epidermal mild acanthosis, a few necrotic epidermal cells, and basal hyperpigmentation (hematoxylin-eosin stain, original magnification $\times 100$). C, The retarder (left) and cement (right) used in his workplace. D, Clinical images at open patch test of the retarder and cement showed irritant reactions on the right arm. E, The closed patch test from areas numbered 6 showed on higher power from positive reactions on open patch test of cement. There is mixed inflammatory infiltrate composed of lymphocytes, neutrophilic inflammation, and few eosinophils around the sweat glands (hematoxylin-eosin stain, original magnification $\times 400$). F, Closed patch tests of cement and a retarder to check for allergic reactions, using concentration gradients of 1/1000, 1/100, and 1/10 dissolved in white Vaseline (Syowa Pharmaceutical, Co, Ltd). Positive patch test results to cement and a retarder, determined at day 7 as per the International Contact Dermatitis Research Group. Positive reactions on areas numbered 1, 2 (+), 6, and 8 (? +). G, Partial epidermal necrosis, spongiosis, dermal eosinophilia, and perivascular dermatitis (hematoxylin-eosin stain, original magnification $\times 200$).