

Contact Dermatitis to Both Tropicamide and Phenylephrine Eye Drops

To the Editor:

The eye drops most frequently used in ophthalmology for diagnostic purposes are phenylephrine eye drops administered in combination with other mydriatic agents such as tropicamide and cyclopentolate (anticholinergic agents that produce mydriasis and cyclopegia).

Referral of patients to our allergy department for the evaluation of allergy to mydriatic eye drops, drugs used both in diagnosis for retina scan and refraction due to ciliary muscle relaxant action, and in treatment of inflammatory diseases, is becoming increasingly frequent.

Negative patch testing to eye drops is common, even with a positive history of an allergic reaction.¹ Allergic contact dermatitis to phenylephrine is an infrequent but well-known complication.² Despite similarities in the chemical structure of the offending substances, cross-reactivity between different sympathomimetic agents has not been well defined.³

We report a case of an 84-year-old man with conjunctival itching and hyperemia after instillation of eye drop containing phenylephrine, tropicamide, and double anesthetic (oxybuprocaine, tetracaine) for diagnostic purposes. The physical examination showed eyelid edema and desquamation 24 hours after the instillation.

Epicutaneous tests were performed with 3 different phenylephrine reagents, a commercial battery of eye drop reagents (Marti Tor, Barcelona, Spain), and different commercial eye drops from Alcon Cusi (Barcelona, Spain), shown in Table 1.

Results of patch tests were negative after 48 and 96 hours for all of the reagents. To confirm these negative results, the patient underwent a conjunctival challenge test following a method previously reported,⁴ using the eye drops involved in the reaction at intervals of 2 weeks after obtaining written informed consent. The results of the conjunctival challenge test were positive to Colircusi Fenilefrina and Colircusi Tropicamida eye drops eliciting substantial itching, periorcular erythema, conjunctival hyperemia, and eyelid edema 8 hours after the instillation accompanied by eyelid desquamation in the following days. The result of the conjunctival challenge test

was negative to Colircusi Anestésico Doble (oxybuprocaine, tetracaine), Colircusi Ciclopléjico, Colircusi Fluoresceína, and Tobrabact eye drops.

We report a case in which a challenge test was used to successfully detect contact dermatitis to 2 mydriatic eye drops involved in an allergic reaction despite negative skin-test results to both substances.

The diagnosis was based on a conjunctival challenge test to phenylephrine and tropicamide eye drops. Nonspecific reaction to eye drops in this patient was ruled out because the results of the challenge tests with double anesthetic, cyclopentolate, fluorescein, and tobramycin were negative. In addition, an adverse reaction to preservatives contained in the eye drops was ruled out because the results of a patch test and conjunctival challenge test with fluorescein and tobramycin eye drops were negative.

This case report highlights the need to perform challenge tests using eye drops involved in allergic reactions to detect false-negative results obtained through skin testing. A positive finding of challenge tests to 1 substance does not rule out the possibility of a reaction to other mydriatic agents despite a patch test with negative findings. For this reason, in cases in which several mydriatic agents are involved, challenge tests should be performed to all substances.

TABLE 1. Epicutaneous Test Reagents

Commercial Battery (Marti Tor) Reagents	Commercial Eye Drops (Alcon Cusi) Reagents	Phenylephrine Reagents
Phenylephrine hydrochloride 10% in aqueous	Colircusi Tropicamida 1% (tropicamide, benzalkonium chloride)	Phenylephrine 10% in aqueous (Marti Tor)
Atropine sulfate 1% in aqueous	Colircusi Anestésico Doble (oxybuprocaine 4 mg/mL, tetracaine 1 mg/mL)	Phenylephrine 20% in petrolatum (homemade reagent)
EDTA-sodium 1% in petrolatum (Alcon Cusi)	Colircusi Atropina 1%	Colircusi Fenilefrina 10%
Benzalkonium chloride 0, 1% in petrolatum	Colircusi Ciclopléjico 1%	
Thimerosal 0, 1% in petrolatum		

Table 1 shows epicutaneous test reagents used for the diagnosis in this patient.

EDTA indicates Ethylenediaminetetraacetic acid.

From the Allergy Department, Río Hortega University Hospital Valladolid, Spain

Address reprint requests to Elisa Haroun-Díaz, MD, Allergy Department, Fundación Jiménez Díaz, Avenida Reyes Católicos s/n, 28040, Madrid, Spain. E-mail: elisaharoun@hotmail.com.

The authors have no funding or conflicts of interest to declare.

DOI: 10.1097/DER.0000000000000043

© 2014 American Contact Dermatitis Society. All Rights Reserved.

Elisa Haroun-Díaz, MD
Allergy Department
Fundación Jiménez Díaz
Madrid, Spain

Mónica Ruíz-García, MD
Allergy Department
Imperial College of London
London, United Kingdom

Sol De Luxán de la Lastra, MD
Ophthalmology Department
Fundación Jiménez Díaz
Madrid, Spain

Carlos Pastor-Vargas, PhD
Immunology Department
Fundación Jiménez Díaz
Madrid, Spain

Manuel De las Heras, MD
Joaquín Sastre Domínguez, MD, PhD
Javier Cuesta-Herranz, MD, PhD
Allergy Department
Fundación Jiménez Díaz
Madrid, Spain

REFERENCES

1. Corazza M, Massieri LT, Virgili A. Doubtful value of patch testing for suspected contact allergy to ophthalmic products. *Acta Derm Venereol* 2005;85:70–71.
2. Herbst RA, Maibach HI. Contact allergy caused by allergy to ophthalmics: an update. *Contact Dermatitis* 1992;27:335–336.
3. Moreno-Ancillo A, Muñoz-Robles ML, Cabañas R, et al. Allergic contact reactions due to phenylephrine hydrochloride in eyedrops. *Ann Allergy Asthma Immunol* 1997;78:569–572.
4. Möller Ch, Björkstén B, Nilsson G, et al. The precision of the conjunctival provocation test. *Allergy* 1984;39:37.

Occupational Allergic Contact Dermatitis From Potassium Metabisulfite

To the Editor:

Potassium metabisulfite (PMS) is a common additive in the winemaking industry. When added to the wine, a sulfur dioxide gas forms, which prevents yeast and bacteria proliferation. In addition, it is a strong antioxidant that allows less oxidized

wines, with better color and flavor. Occupational allergic contact dermatitis caused by other sulfites such as sodium metabisulfite is relatively common, mainly related to food, pharmaceutical, cosmetic, and photographic industries,^{1,2} but from PMS, it has been rarely observed.

A 26-year-old woman had been working in the wine-making industry for years. In the last season, 1 of her tasks was to prepare a solution of PMS 10% water. Sometimes, she negligently made it with her hands without protection with rubber gloves. Potassium metabisulfite was used at different stages (when the grapes enter the wine cellar, at the end of alcoholic fermentation, and when cleaning the wooden casks). After several weeks, she developed an itchy vesicular eczematous reaction on her both hands and forearms. The dermatitis had relapses coinciding with the use of the dilution. Cessation of the work resulted in a resolution of the dermatitis. The patient had no previous history of eczema or problems with the intake of beverages and foods containing sulfites.

Her eczema was cleared when the patient came to us. She was patch tested on the upper back with Curatest (Lohmann & Rauscher, Rengsdorf, Germany) on Hypafix (Smith & Nephew, Hamburg, Germany) to the standard series of the Spanish Contact Dermatitis and Skin Allergy Research Group (GEIDAC) of Chemotechnique Diagnostics (Vellinge, Sweden), an agriculture series, sodium and potassium metabisulfite (1% petrolatum). Readings were performed at day 2 and day 4 and scored according to the standards of the International Contact Dermatitis Research Group. Skin prick testing with aeroallergens, grape, and yeast was performed. Her only positive patch test reaction was to PMS at day 2 (++) and day 4 (+++). Prick tests were negative. Ten controls that were tested with PMS were all patch test negative.

Sulfites have been used in winemaking for centuries as a preservative, PMS being preferred because it does not contribute sodium to the diet. Exposure to sulfites can induce a variety of clinical effects in sensitive individuals. They are well recognized as a cause of bronchospasm in patients with asthma, but there also have been reported cases of dermatitis, urticaria, flushing, hypotension, abdominal pain, diarrhea, anaphylactic shock, and death.³ In particular, occupational allergic contact dermatitis to PMS has been rarely reported. In 1968, Nater⁴ described the case of a woman with hand dermatitis due to PMS exposure while working in a pharmaceutical industry. More recently, in 2009, Stingeni et al⁵ reported a case of occupational airborne contact dermatitis in a wine maker exposed to PMS during the grape harvest and grape fermentation period. We also found 2 cases of occupational contact dermatitis to sulfites in wine workers in 2 studies that investigated the prevalence of positive patch test reactions to sodium metabisulfite in large series of patients with

From the Allergy Department, Río Hortega University Hospital, Valladolid, Spain. Address reprint requests to José Carlos García Ortiz, MD, Allergy Department, Río Hortega University Hospital, C/Dulzaina nº 2, 47012 Valladolid, Spain. E-mail: jc.garciao@hotmail.com.

The authors have no funding or conflicts of interest to declare.

DOI: 10.1097/DER.0000000000000042

© 2014 American Contact Dermatitis Society. All Rights Reserved.