

Allergy to Phenylephrine Hydrochloride Eyedrops: A Case Report

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Abstract

The Dermatitis around eyes is a common problem. Allergic contact reactions from phenylephrine are rare despite extensive use by ophthalmologists. Here we report a case of allergic contact reaction (dermato-conjunctivitis) to phenylephrine eye drops. This suspected patient of Contact Allergic Dermatitis (AD) was confirmed by patch testing with implicated drug. It was done with 10% aqueous dilution of commercial preparation of drug and 10% aqueous dilution of other eye drops containing the same composition of preservative and vehicle except phenylephrine, which was taken as control. This is the first case of AD with most commonly used mydriatic drug from India and previously only eight case series/ report(s) are available worldwide.

Key words: Eyedrops, Phenylephrine hydrochloride, Allergy, Contact Dermatitis

INTRODUCTION

Phenylephrine is a sympathomimetic agent and is frequently used in ophthalmology, in topical preparations for its vasoconstriction and mydriatic properties. The most frequent side effects of phenylephrine hydrochloride in eye drops are blurred vision, burning or stinging, tearing, conjunctival irritation, liberation of iris pigment into anterior chamber and corneal edema. Systemic reactions, mainly hypertensive crisis, are less frequent. Phenylephrine hydrochloride is a rather rare but well identified ophthalmic allergen causing peri-orbital allergic dermatitis.¹ Despite being widely used, there are very few reports on allergic contact dermatitis to phenylephrine eye drops. On Medline search we could

find only 8 case report(s) or case series studies published till date and no such case was reported from our country to the best of our knowledge. Here we report a case of allergic contact dermato-conjunctivitis due to phenylephrine hydrochloride in eye drops due to its rarity and clinical interest. The case was diagnosed by patch testing, which is essential for the accurate diagnosis of the contact allergic dermatitis.

CASE REPORT

A 25 year old male patient (unaided vision: 6/9 OD; 6/9P OS) was instilled tropicamide IP 0.8%, phenylephrine hydrochloride IP 5%, benzalkonium chloride NF (as preservative) 0.01% for cycloplegic refraction in both eyes. After 3-4 hours of instillation the patient complained of severe burning in eyes, swelling and erythema of both eyelids along with hyperemia of conjunctiva. He also complained of severe itching on the temporal side of the left eye along with erythema. On examination, the vision was

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unaffected, conjunctival congestion was present in both the eyes, along with vesicular rashes in a peculiar linear fashion from the lateral canthus of the left eye up to the left ear lobule (Fig. 1). Patient has history of use of similar drug in past but with no adverse event.

Oral antihistamines and topical ophthalmic corticosteroids were administered to treat the reaction but the symptoms increased to a maximum in 12 to 24 hours with marked eczema around the eye and kerato-conjunctivitis. Oral corticosteroid (prednisolone) was added to the treatment with initial dose of 40 mg/ day which was tapered rapidly over the next 14 days. Suspecting the cutaneous adverse drug reaction to the eye drops, the patient was asked to come for follow-up after 4 weeks, with complete resolution of symptoms for patch testing which was performed at specialty clinic of referral institute after taking informed consent of the patient.

Patch testing or epicutaneous testing is the diagnostic technique of applying specific substances to the skin with the intention of producing a small area of allergic contact dermatitis. The standard guidelines for patch testing were followed². The patch test was performed with 10% aqueous dilution of commercial preparation of suspected eye drops and control with similar dilution of another eye drops with similar pharmacological content except the phenylephrine. Patient's back was used for patch testing. The test material was taken in a piece of gauze which was placed over the intact skin on the back and was covered with transpore tape. After 48 hours, the patches were removed, and after a gap of 30 to 60 minutes the reaction was read. All test sites were re-examined after 72 hours. The reading was directed to the center of the patch where the skin was not in contact with the tape. The patch test was positive in this patient with intense reaction at 48 hours as well as at 72 hours. (Fig. 2)



Fig. 1. Peri-orbital erythema, conjunctival congestion and vesicular rashes in linear fashion from lateral canthus to left ear lobule



Fig. 2. Patch Test on the back with phenylephrine hydrochloride drug and control

DISCUSSION

The agent responsible for hypersensitivity reaction in our patient, as confirmed by clinical findings and patch test was phenylephrine hydrochloride. This patient had previously used this drug at least 2-3 times, but gave no history of any adverse reaction to this drug or any medication - ophthalmic or systemic. Onset of symptoms was quick and showed maximal intensity between 12-24 hours after eye drop administration as reported by others³. These facts and results of patch testing are consistent with a type IV hypersensitivity reaction. In contact dermatitis, specifically sensitized CD₄ T helper cells provide the immunologic memory that accounts for the more rapid and intense response that occurs after re-exposure with the allergen. The finding that excluded the possibility of irritant contact dermatitis and confirmed an allergic mechanism in this patient was evident by the fact that the response of control agent was negative patch test. The positive patch reaction persisted for several days.

Contact dermatitis of and around eye is reported to be around 6% in a large Japanese study and a similar incidence was also reported from a French study.⁴⁻⁵ Since the first description of allergic contact dermatitis with phenylephrine in 1979⁶, further⁷ cases were described later. However, it seems to be a rare condition despite extensive use by ophthalmologists. In one prospective survey done in hospital milieu regarding the contact allergic reactions due to all eye drops used in the hospitalised patients, the risk of phenylephrine eyedrops was reported⁵ to be 2.6%. Of all eyedrops, the allergic or toxic reactions of antiglaucoma drugs are most common.⁷ However, among the mydriatic eyedrops used, phenylephrine is the most common drug responsible for contact allergic reaction - 53.8 % and 93.5 %, as reported in two different studies,^{8,9} and is a true ophthalmic allergen as per the patch test results evaluation of the Information Network of the Departments of Dermatology.¹

Skin prick testing is not sufficient to diagnose allergic dermatitis of the eye because most cases are

caused by a delayed hypersensitivity mechanism. Hence patch testing is essential for diagnosis⁹. In those patients, where the diagnosis of this is not made on patch testing conjunctival challenge test can be done which is safe and helpful in diagnosing the contact allergic reactions to eyedrops⁹.

Despite being most commonly used mydriatic drug, no case has been earlier reported from India. Worldwide only eight case series/ report(s) are available. Because of its rare occurrence and good clinical suspicion, prompt management of such cases is required.

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