

doi: <http://dx.doi.org/10.18203/2319-2003.ijbcp20150397>**Case Report****Ketorolac eye drop induced allergic wheal and chemosis****H. Mohan Kumar¹, H. G. Kavya^{2*}, R. Shubha²**¹Department of Ophthalmology, Sapthagiri Institute of Medical Sciences & Research Centre, Bengaluru, Karnataka, India,²Department of Pharmacology, Sapthagiri Institute of Medical Sciences & Research Centre, Bengaluru, Karnataka, India**Received:** 07 June 2015**Accepted:** 03 July 2015***Correspondence to:**Dr. H. G. Kavya,
Email: drkavyapreetham@gmail.com**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.**ABSTRACT**

Ketorolac is a non-steroidal anti-inflammatory drug which is prescribed rampantly in the treatment of seasonal allergic conjunctivitis due to its clinical efficacy of providing rapid relief from symptoms of allergy. There is a potential for cross sensitivity to aspirin. Hence, a leading question on aspirin allergy must be taken before prescribing the drug ketorolac.

Keywords: Ketorolac, Aspirin allergy, Allergic wheal**INTRODUCTION**

Seasonal allergic conjunctivitis (SAC) is one of the most common conditions encountered by ophthalmologists.¹ Patient usually presents with itching, watering of eyes, conjunctival redness, chemosis, and eyelid swelling. Pathogenesis of ocular inflammation and allergy results from mast cell activation, which subsequently leads to cascade of events.²

Pharmacological treatment includes anti-histaminics, non-steroidal anti-inflammatory drug (NSAIDs) and mast cell stabilizers. Among these, topical NSAIDs are considered to be most safe and well-tolerated drug for allergic conjunctivitis, with few ocular side effects.³ Among NSAIDs, ketorolac is preferred for relief of ocular itching associated with SAC.⁴

Ketorolac tromethamine 0.5% ophthalmic solution is a highly potent non-steroidal anti-inflammatory agent that decreases the synthesis of prostaglandins by inhibiting the enzyme, cyclo-oxygenase (COX). The prostaglandins account for many of the signs, symptoms and events associated with experimental, and clinical allergic conjunctivitis.⁵

Here is a case of ketorolac tromethamine induced allergic wheal and chemosis in a patient with allergic conjunctivitis, after a single dose application to the eye.

CASE REPORT

A female patient aged 20 years, weighing 45 kg visited ophthalmology outpatient department with the history of itching, redness, and watering in both eyes since a week.

Detailed history revealed no significant allergy to any drug or food and was diagnosed, as allergic conjunctivitis. She was prescribed with ketorolac tromethamine 0.4% eye drops four times daily for 5 days.

After instilling a single drop of ketorolac tromethamine 0.4% to both eyes, within 1 hr patient developed chemosis, lower lid edema, and allergic wheal in both eyes and immediately reported to the doctor. On examination, vitals were in normal range. There were no signs of difficulty in breathing and no evidence of central or peripheral signs of cyanosis. Systemic examination of the respiratory system, cardiovascular systems and abdomen were within normal limits. She was immediately taken to the casualty where she was treated with injection adrenaline (0.5 ml of 1 in 1000 solution) subcutaneously and Injection betamethasone (4 mg) intramuscularly. Within ½ hr, the signs and symptoms reduced in intensity and patient recovered. She was kept under observation in the casualty for next 3 hrs and then discharged. She was then prescribed with chlorpheniramine maleate 25 mg tablets for the next 2 days. The offending drug was stopped. Suspected adverse drug reaction reporting form was filled and causality assessment was reported as probable.

After the patient's recovery from the adverse event, an additional thorough inquiry by asking leading questions into the patient's drug history revealed past experience with the aspirin allergy.

DISCUSSION

SAC is also known as hay fever is a common allergic disease. The etiology remains the airborne allergens such as pollen, grass, weeds, and animal scales. In response to these antigens, Type 1 hypersensitivity reaction occurs which is mediated by IgE. The principal symptom of SAC is ocular itching.² This symptom is associated with other signs and symptoms such as conjunctival hyperemia, watering of eyes, mucus discharge, chemosis, and lid edema.

Mast cells are the important mediators of the pathophysiological process of SAC. The specific allergens trigger the sensitized mast cells in the conjunctiva leading to the degranulation of mast cells, the release of preformed (histamine and eosinophil chemotactic factor) and newly synthesized mediators (prostaglandins, leukotrienes). All these mediators lead to the signs and symptoms of SAC.⁶

Prostaglandin D2 and E2, which are the important mediators produced by the arachidonic acid pathway. They induce conjunctival hyperaemia, oedema, and mucus discharge. They also contribute to the pruritogenic effect on the conjunctiva.⁵

The principle treatment of SAC includes topically applied ophthalmic agents. Currently, available topical drugs for the pharmacotherapy are antihistamines, mast cell stabilizers,

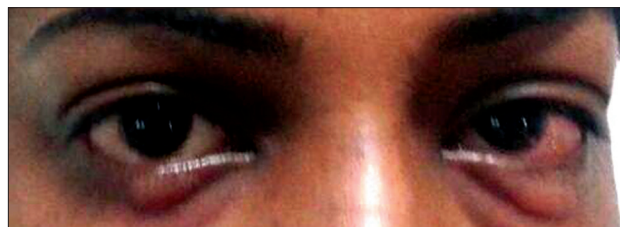


Figure 1: Allergic wheal and chemosis in both eyes

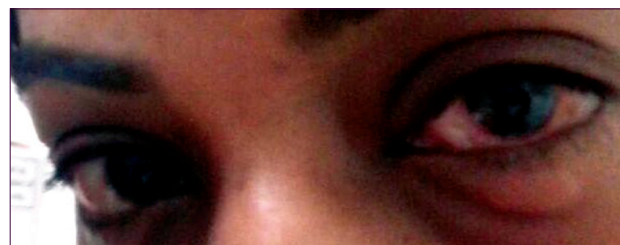


Figure 2: Allergic wheal and chemosis in both eyes

and NSAIDs. In severe cases of SAC, steroids are the most effective drugs.

Ketorolac is prescribed rampantly in the treatment of SAC due to its clinical efficacy of providing rapid relief from itching during SAC.⁷⁻⁹ There needs to be a check on the usage of ketorolac eye drops, as it is not favorable to every patient. A leading question on aspirin allergy in the past must be adopted by every ophthalmologist/clinician.

In the present case scenario, when the past history on allergy was asked during the diagnosis, the patient didn't reveal any such history. Only after the adverse event, on further inquiry into her past medical history, hypersensitivity to aspirin was admitted. This allergy is not a true allergy (not an immunoglobulin E-mediated event) as there is a potential for cross sensitivity to acetylsalicylic acid, phenyl acetic acid derivatives, and other non-steroidal anti-inflammatory medicines who share the same mechanism of COX-1 inhibition in the prostaglandin synthesis pathway.^{9,10}

NSAIDs induced drug allergy occurs sporadically in both children and adults.¹¹ As per 2014 update by world allergic organization, aspirin and other analgesic-antipyretics are one among the drugs which are frequently implicated in allergic drug reaction. Hence, it becomes mandatory to take history of aspirin allergy, whenever ketorolac is prescribed for any patient to avoid such adverse events.

CONCLUSION

Ketorolac is the most commonly prescribed drug in the treatment of SAC and also safe and alternate drug to steroids. Since, aspirin is commonly prescribed drug for prophylaxis of ischemic heart disease in adults, allergy to this drug can sensitize to other NSAIDs, as well. Hence, this report emphasis on asking a leading question on NSAIDs allergy. It must be confirmed and reconfirmed before prescribing this drug.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. La Rosa M, Lionetti E, Reibaldi M, Russo A, Longo A, Leonardi S, et al. Allergic conjunctivitis: a comprehensive review of the literature. *Ital J Pediatr.* 2013;39:18.
2. Abelson MB, Schaefer K. Conjunctivitis of allergic origin: immunologic mechanisms and current approaches to therapy. *Surv Ophthalmol.* 1993;38 Suppl:115-32.
3. Dehar N, Gupta A, Singh G. Comparative study of the ocular efficacy and safety of diclofenac sodium (0.1%) ophthalmic solution with that of ketorolac tromethamine (0.5%) ophthalmic solution in patients with acute seasonal allergic conjunctivitis. *Int J Appl Basic Med Res.* 2012;2(1):25-30.
4. Yaylali V, Demirlenk I, Tatlipinar S, Ozbay D, Esme A, Yildirim C, et al. Comparative study of 0.1% olopatadine hydrochloride and 0.5% ketorolac tromethamine in the treatment of seasonal allergic conjunctivitis. *Acta Ophthalmol Scand.* 2003;81(4):378-82.
5. Woodward DF, Nieves AL, Hawley SB, Joseph R, Merlino GF, Spada CS. The pruritogenic and inflammatory effects of prostanoids in the conjunctiva. *J Ocul Pharmacol Ther.* 1995;11(3):339-47.
6. Berdy GJ, Abelson MB, George MA, Smith LM, Giovanoni RL. Allergic conjunctivitis: a survey of new antihistamines. *J Ocul Pharmacol.* 1991;7(4):313-24.
7. Raizman MB. Results of a survey of patients with ocular allergy treated with topical ketorolac tromethamine. *Clin Ther.* 1995;17(5):882-90.
8. Ballas Z, Blumenthal M, Tinkelman DG, Kriz R, Rupp G. Clinical evaluation of ketorolac tromethamine 0.5% ophthalmic solution for the treatment of seasonal allergic conjunctivitis. *Surv Ophthalmol.* 1993;38 Suppl:141-8.
9. Leonardi A, Busato F, Fregona I, Plebani M, Secchi AG. Anti-inflammatory and antiallergic effects of ketorolac tromethamine in the conjunctival provocation model. *Br J Ophthalmol.* 2000;84(11):1228-32.
10. Risser A, Donovan D, Heintzman J, Page T. NSAID prescribing precautions. *Am Fam Physician.* 2009;80:1371-8.
11. Stevenson DD, Sanchez-Borges M, Szczeklik A. Classification of allergic and pseudoallergic reactions to drugs that inhibit cyclooxygenase enzymes. *Ann Allergy Asthma Immunol.* 2001;87(3):177-80.

Cite this article as: Kumar HM, Kavya HG, Shubha R. Ketorolac eye drop induced allergic wheal and chemosis. *Int J Basic Clin Pharmacol* 2015;4:808-10.