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ALCAFTADINE 0.25% VERSUS OLOPATADINE 0.2% IN ALLERGIC CONJUNCTIVITIS

Ophthalmology

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ABSTRACT

Introduction: The efficacy and safety of the once-daily topical ophthalmic solutions, alcaftadine 0.25% and olopatadine 0.2%, in preventing ocular itching associated with allergic conjunctivitis were evaluated. Ocular itching, the hallmark symptom of allergic conjunctivitis, is often accompanied by tearing, conjunctival redness, eyelid swelling, and chemosis. Both olopatadine and alcaftadine are classified as dual-action antiallergic agents

Materials & Method: After patient selection of suspected allergic conjuctivitis sociodemographic data risk factors and clinical symptoms were recorded. Ophthalmic examination was performed including records details of symptoms, drugs used, visual acuity and slit lamp examination. Patients categorized according symptoms and prescribed them alcaftadine 0.25% in one eye and olopatadine 0.2%in another eye and Drug original label are removed and drug is label as 1 or 2. Patient were be followed up at 1 hour, 3 rd days, 1 week and 3week.

Results: Male preponderance was seen in the ratio 2.33:1.Mean age was 25.8 years. Itching and redness is present in all 100% cases . 100% improvement in all sign and symptoms at last follow up(3week).

Conclusion: Compared with olopatadine 0.2% ophthalmic solution, treatment with alcaftadine 0.25% ophthalmic solution provided greater relief of ocular itching at post-administration with a similar safety profile. But statically not significant (p value >0.05) difference in no. of patients which shows improvementin sign and symptoms, treated with alcaftadine 0.25% compare of olopatadine 0.2%.

KEYWORDS

Introduction

Allergic conjunctivitis is one of the most common conditions requiring treatment by ophthalmologists, optometrists, and allergists [1]. While prevalence studies of conjunctivitis alone are limited, epidemiologic data have been derived from studies of the commonly coexisting nasal symptoms or rhinoconjunctivitis and are wide ranging with large global variations [2, 3]. In the United States, the Allergies in America survey conducted in 2006 estimated that 14.2% of the adult population had been affected by allergic rhinoconjunctivitis, while a more recent analysis based on National Health and Nutrition Examination Survey III data in a sample size of 20,010 adults found that 40% of participants were affected by allergic rhinoconjunctivitis in a 12-month period [2, 4, 5]. The International Study of Asthma and Allergy in Childhood spanning 52 countries reported that allergic conjunctivitis affects 1.4–39.7% of children and adolescents [6].

Ocular itching, the hallmark symptom of allergic conjunctivitis, is often accompanied by tearing, conjunctival redness, eyelid swelling, and chemosis [7]. Allergic conjunctivitis is mediated by immunoglobulin E-activated degranulation of mast cells and the release of a cascade of inflammatory mediators, including histamine, in response to allergens [8, 9]. Histamine release and activation of histamine H1 receptors in the conjunctiva leads to ocular itching, while stimulation of H2 receptors on the ocular surface results in vasodilation and is associated with ocular redness, eyelid swelling, and chemosis [10, 11]. Recent evidence suggests that histamine binding to and activation of H4 receptors also play a role in allergic conjunctivitis [12, 13]. Topical ophthalmic antihistamines are the primary treatment options for allergic conjunctivitis. Currently, alcaftadine 0.25% and olopatadine 0.2% are the only approved once-daily ophthalmic solutions for allergic conjunctivitis in the United States [14–19]. Both olopatadine and alcaftadine are classified as dual-action antiallergic agents, directly inhibiting histamine receptor activation and indirectly reducing allergic responses by stabilizing mast cells [20].

Clinical studies evaluating alcaftadine and olopatadine as treatment options for allergic conjunctivitis have used the conjunctival allergen challenge (CAC) model to assess clinical efficacy [21, 22]. The CAC model was designed to mimic the signs and symptoms of an ocular allergic response in a controlled setting, providing an alternative to environmental allergy trials that are subject to variable allergen exposures. The model has been established as the standard for demonstrating efficacy and safety of topical ophthalmic antiallergic solutions seeking approval from the United States Food and Drug Administration [21]. CAC testing consists of instillation of the study drug or comparator(s) into the eye followed by an allergen challenge at a predetermined time post-instillation. The effect is then graded using a standardized severity scale, allowing assessment of both the onset of action and duration of effect [15, 17, 22)

Methods & materials

The study was conducted in 40 eyes of 20 patient of either sex and any age suffering from allergic keratoconjunctivitis who were presented or referred to ophthalmology outdoor at Ophthalmology Department, at MBGH, Udaipur and undergone complete clinical evaluation and complete ophthalmic examination and treated under treatment protocol.

Patient selection

Patient with allergic keratoconjunctivitis presenting in ophthalmology outdoor at MBGH, Udaipur in 2017 included in the study.Patient were recorded and devided in four grade according to severity of sign & symptoms (like itching,watering,redness,lid oedema&chemosis and photophobia) (David et al, Survey of ophthalmology,1983)

Grading of sign and symptoms:

Symptoms &sign	Grade I	Grade II	Grade III	Grade IV
Itching	Mild	Occasional	Frequently	Continous
Watering	Absent	Occasional	Frequently	Continous
Photophobia	Absent	Mild grade	Moderate grade (unable to open eye in intense light)	Severe grade(unable to open eye in normal light)
Lid oedema & chemosis	Absent	Absent	Only mild oedema	Oedema with chemosis
Conjunctival hyperemia	Mild congestion	Pinkish discoloration of conjunctiva	Reddish discoloration of conjunctiva	Bright red conjunctiva

Clinical procedure

40 eyes of 20 patient of allergic keratoconjunctivitis were taken and divided into two groups

Groups	Concentration of Topical drops	Number of Eyes	Dosage
ISTEye	0.2%Olopatadine eye drop	20	Once daily
IIndEye	0.25% Alcaftadine eye drop	20	Once daily

In Ist eye we instillation of 0.2% Olopatadine eye drop and in 2nd eye of

same patient instillation of 0.25% Alcaftadine eye drop. Drug original label are removed and drug is label as 1 or 2. Patient were be followed up at 1 hour, 3 rd days, 1 week and 3week and improvement in sign and symptoms were recorded an graded

RESULTS:-

Our observation are based on 3 week follow up study of 20 patients diagnosed as cases of allergic conjunctivitis at Ophthalmology Department, at MBGH, Udaipur . The patients were divided into four grades according to severity of sign & symptoms. In I st eye we instillation of 0.2% Olopatadine eye drop and in 2nd eye of same patient instillation of 0.25% Alcaftadine eye drop . Out of 20 patient 14(70%) were male and 6(30%) were female. The overall male to female ratio was 2.33:1.

Maximum patients are adults . Mean age 25.8 years.The minimum age was 9 years and the maximum age was 62 years. Age distribution showing in fig.1 . Maximum patients are student followed outdoor workers(fig.2)

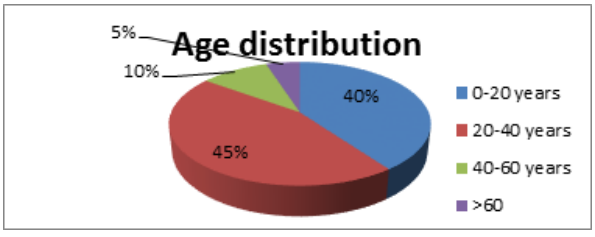


Fig.1

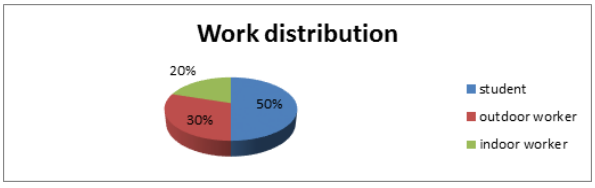


Fig.2

Family or personal history of atopy was negative in all patients. All patients both eye have equally grading of all sign and symptoms. Itching and redness is present in all 100% cases, watering is present in 90% of cases, photophobia is present in 65% cases, lid oedema and chemosis is present in only 25% of all cases.

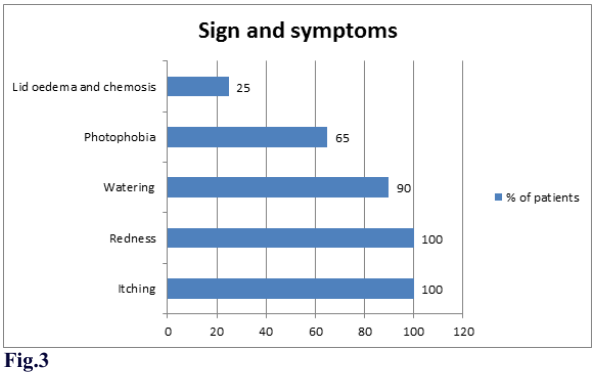


Fig.3

Out of 20 patients according to their sign and symptoms 9 are categorized in grade 3 , 4 in grade 4 , 4 in grade 2 and 3 in grade 1 at initial of treatment

Table 1

Grade	Drug treatment given	No.of patients				
		At starting	At 1st visit	At 2nd visit	At 3rd visit	At 4th visit
0	Olopatadine 0.2%	0	0	6	15	20
	Alcaftadine 00.25%	0	0	7	18	20
I	Olopatadine 0.2%	3	3	6	5	0
	Alcaftadine 00.25%	3	3	8	3	0
II	Olopatadine 0.2%	4	4	8	0	0
	Alcaftadine 00.25%	4	4	5	0	0
III	Olopatadine 0.2%	9	9	0	0	0
	Alcaftadine 00.25%	9	9	0	0	0
IV	Olopatadine 0.2%	4	4	0	0	0
	Alcaftadine 00.25%	4	4	0	0	0

Improvement in sign and symptoms(itching,watering,redness,lid oedema&chemosis and photophobia) was 0% in intial follow up (1hr).Improvement was noted 100% in all sign and symptoms in last follow up(3 wk). There was highly significant decrease in symptoms (p=<0.001)

DISCUSSION

This study was conducted to compare the efficacy and safety of alcaftadine 0.25%, olopatadine 0.2% in relieving ocular itch and symptoms related to allergic conjunctivitis. The study confirmed the treatment outcome differences between alcaftadine 0.25% and olopatadine 0.2% in preventing signs and symptoms of allergic conjunctivitis at 2nd and 3rd visit (3rd day and 7 days) of post-treatment instillation . In the analysis, alcaftadine 0.25%treated subjects experienced significantly lower mean ocular itch scores than olopatadine 0.2%treated subjects at 2nd and 3rd follow up.

Alcaftadine is unique among ocular antihistamines in that it exhibits antagonistic activity against H1,H 2, and H4 receptors (although with lower affinity than H1 and H2) . The role of H4 receptors in allergic conjunctivitis has not been fully elucidated; in vitro studies suggest that histamine binding to H4 receptors mediates eosinophil chemotaxis . In addition to this greater magnitude of effect, in a previous study, alcaftadine 0.25% had a rapid onset of action as measured at 3rd day of post-treatment instillation, which was superior to that of olopatadine 0.1%, and sustained duration of action up to 16

In a murine model of allergic conjunctivitis, alcaftadine demonstrated a greater effect than olopatadine on eosinophil recruitment and stability of the epithelial junctional protein, zonula occludens1[32]. Overall, these in vivo results suggest that differences observed clinically between alcaftadine and olopatadine may reflect a greater ability of alcaftadine to prevent allergen-activated disruption of the epithelial barriers . Similar to other reports of alcaftadine and olopatadine treatment with alcaftadine 0.25% and olopatadine 0.2% was found to be generally well tolerated.None of the adverse events were related to study treatment. In addition, there were no serious adverse events reported at any time during either studies

CONCLUSION

Evidence supports the use of alcaftadine 0.25% for the prevention of itching associated with allergic conjunctivitis, a condition affecting a significant number of individuals worldwide. Compared with olopatadine 0.2% ophthalmic solution, treatment with alcaftadine 0.25% ophthalmic solution provided greater relief of ocular itching at post-administration with a similar safety profile. Additional studies are warranted to fully elucidate the underlying mechanisms responsible for the observed differences in treatment outcomes between the alcaftadine 0.25% and olopatadine 0.2% once daily ophthalmic solutions.

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