

Comparison between Topical Olopatadine Hydrochloride 0.1% and Ketotifen Fumarate 0.025% for the Relief of Symptoms of Vernal Keratoconjunctivitis (VKC)

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Purpose: To compare the topical administration of Olopatadine HCL 0.1 % and Ketotifen fumarate 0.025% for the relief of symptoms of VKC.

Material and Methods: From April 2010 to September 2010, this randomized controlled trial was conducted on 120 diagnosed patients of VKC from out-door patient department of Bahawal Victoria Hospital Bahawalpur, equally and randomly enrolled in two groups. In group A patients were given topical Olopatadine HCL 0.1% QID and in group B topical Ketotifen fumarate 0.025% QID. Regular follow up of all the patients were done for relief of symptoms on day 0, 7 and 28. Final outcome was determined at the end of 4th week from start of the treatment.

Results: All 120 patients completed the study with regular follow up. Patients presented with multiple symptoms and clinical types of VKC. All the patients felt early and significant relief in their symptoms, but the effectiveness and tolerability of Olopatadine HCL 0.1% was significantly more ($P < 0.05$) as compared to ketotifen fumarate 0.025%.

Conclusion: Both topical Olopatadine HCL 0.1% and ketotifen fumarate 0.025% are effective in treating the VKC. However, Olopatadine HCL 0.1% provides greater symptomatic relief in patients of VKC as compared to Ketotifen fumarate 0.025%.

Ocular allergies are the most common conditions affecting the external ocular adnexa throughout the world¹. These allergies are type 1 hypersensitivity reactions mediated by Ig-E in response to various environmental allergens such as pollens, mites, molds, dust, grass, weeds and animals dander^{2,3}.

Vernal Keratoconjunctivitis (VKC) is a bilateral, recurrent allergic conjunctivitis affecting the children and young adults in 5-15 years age group usually². VKC rarely persists till puberty². VKC is associated with genetic predisposition, history of atopy and non-specific hypersensitivity. VKC is an Ig-E and cell-

mediated immune response in the conjunctival mucosa to exogenous allergens². It usually occurs at the onset of hot weather (spring season) and subsides during winter². Seasonal recurrences with exacerbations and remissions are common². Symptoms of VKC consist of: intense itching, lacrimation, redness, foreign body sensation, photophobia, thick mucoid discharge².

The clinical signs of VKC on slit lamp examination are; conjunctival hyperemia, chemosis, papillary hypertrophy, macro papillae, gelatinous thickening of limbal conjunctiva and punctuate epithelial erosions². Conjunctival mast cells play the main role in the pathophysiology of VKC. When a specific allergen

Table 1: Symptomatic Relief in (%)

Symptoms	Drug Prescribed	Symptomatic Relief n (%)		
		Day 0	Day 7	Day 28
Itching	0.1% Olopatadine HCL	16.66	66.6	100
	0.025% Ketotifen fumarate	15	50	83.33
Redness	0.1% Olopatadine HCL	8.33	75	96.66
	0.025% Ketotifen fumarate	8.33	65	85
Watering	0.1% Olopatadine HCL	16.66	71.66	100
	0.025% Ketotifen fumarate	15	65	81.66
Foreign Body Sensation	0.1% Olopatadine HCL	15	75	96.66
	0.025% Ketotifen fumarate	11.66	66.6	80
Photophobia	0.1% Olopatadine HCL	8.33	56.66	65
	0.025% Ketotifen fumarate	5	48.33	50

Table 2: Comparison of relief of symptoms between two groups at the end of study

Symptoms	Relief of Symptoms % in Group A (Olopatadine 0.1%)	Relief of Symptoms % in Group B (Ketotifen Fumarate 0.025%)	P-value
Itching	60 (100)	50 (83.33)	< 0.05
Redness	58 (96.66)	51 (85)	< 0.05
Watering	60 (100)	49 (81.66)	< 0.05
Foreign Body Sensation	58 (96.66)	48 (80)	< 0.05
Photophobia	39 (65)	36 (60)	< 0.05

binds to the sensitized mast cells in the conjunctiva, degranulation of the mast cells and release of inflammation mediators such as histamine, eosinophilic chemotactic factor, prostaglandins, Leukotrienes, platelet activating factors occur^{1,2}. These inflammatory mediators predominantly histamine are responsible for symptoms of VKC^{1,2}. The main clinical types of VKC are: Palpebral, Limbal, Mixed, Corneal disease or keratopathy^{1,2,8}.

The rationale of the study is to compare the effectiveness of Olopatadine HCL 0.1% and Ketotifen fumarate 0.025% for the relief of symptoms of VKC.

MATERIAL AND METHODS

From April 2010 to September 2010, this randomized controlled trial was conducted on 120 diagnosed patients of VKC from out-door patient department of Bahawal Victoria Hospital Bahawalpur, equally and randomly enrolled in two groups. 120 patients included in the study, 62 were male and 58 patients were female. The age varied from 5-20 years in both groups. Mean age of the patients was 9.10 ± 3.90 years.

In group A patients were given topical Olopatadine HCL 0.1% Qid and in group B topical Ketotifen fumarate 0.025% Qid. Regular follow up of all

the patients were done for relief of symptoms on day 0, 7 and 28. Final outcome was determined at the end of 4th week from start of the treatment.

The efficacy of two drugs was determined by the relief of symptoms of VKC. Symptoms included in this study were; itching, redness, watering, foreign body sensation, photophobia. Relief of the symptoms was considered as resolution of disease.

DATA ANALYSIS

The collected data was entered and analyzed by using the SPSS version 10. The data was analyzed and presented in univariate and bivariate tables. For categorical variables like gender, frequencies & percentages were presented. Effect modifiers like age & gender were controlled to observe the effect on outcome between two groups. The level of statistical significance was $p < 0.05$. Chi-Square Test was used as the test of significance to compare the proportion of relief of symptoms between the two groups.

RESULTS

All 120 patients were included in two study groups (each group consisting of 60 patients). Group A was treated with topical Olopatadine HCL 0.1% and the Group B was treated with topical ketotifen fumarate 0.025%.

Among 120 patient included in the study, 62 were male and 58 patients were female. The age varied from 5-20 years in both groups. Mean age of the patients was 9.10 ± 3.90 years.

All patients completed the study and came for follow up. Drug compliance was very good among the patients and they followed the directions very well. All the patients were followed up until the resolution of their complaints of allergy (Table 1). Patients presented with multiple symptoms and clinical types of VKC. All the patients felt early and significant relief in their symptoms, but the effectiveness and tolerability of Olopatadine HCL 0.1% was significantly more ($P < 0.05$) from ketotifen fumarate 0.025% (Table 2).

DISCUSSION

Ocular allergies affects more than 20% of the world's population and impairs their daily activities. The number of ocular allergy symptoms is increasing day by day along with the environmental pollution. Allergic conjunctivitis hampers the quality of life. The

goal of treatment of VKC is to rapidly and effectively resolve the clinical signs and symptoms and improve the quality of life.

As the mast cells degranulation and release of Histamine and other inflammatory mediators is the main event in the ocular allergic cascade, so the aim of treatment of VKC is to antagonize the histamine activity and to maintain stability of mast cells. The pharmacotherapy of allergic conjunctivitis consists of several classes of drugs, antihistamines, mast cells stabilizers, dual acting agents, NSAIDS and steroids^{2,6,8}.

Ketotifen is a mast cell stabilizer with inhibitory effects upon the release of inflammatory mediators and eosinophilic chemotaxis. It has been shown to offer great efficacy in controlling the symptoms of VKC. It is the only drug available in unit dose form without preservatives. Olopatadine in turn possess dual action and better tolerability^{7,8}.

In this study Olopatadine HCL 0.1% and Ketotifen fumarate 0.025% ophthalmic solutions were instilled as a dose of 1 drop QID in two sets of 60 patients each and their effects in relieving the symptoms of VKC were studied and compared. This study showed that Olopatadine was significantly more effective and well tolerated as compared to ketotifen.

This study also revealed that Olopatadine is significantly more effective ($p < 0.05$) against symptoms of VKC as compared to ketotifen after four weeks.

This is the first comparative study between 0.1% Olopatadine and 0.025% ketotifen in treatment of vernal keratoconjunctivitis in Pakistan. The results of our study favour the Olopatadine for treatment of VKC. The use of Olopatadine provides quick recovery to eyes suffering from VKC with no apparent risk of side effects. As this study was conducted on a limited number of patients and was a single centre trial, so further prospective interventional multicentered placebo controlled trials may be needed for better assessment of efficacy and safety of these new treatment modalities in management of VKC.

CONCLUSION

Both topical Olopatadine HCL 0.1% and ketotifen fumarate 0.025% are effective in treating the VKC. However, Olopatadine HCL 0.1% provides greater symptomatic relief in patients of VKC as compared to Ketotifen fumarate 0.025%.

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