Additive Effect of Supratarsal Olopatadine HCL 0.1% Injection In Patients of Vernal Keratoconjunctivitis On Topical Olopatadine

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ABSTRACT

Objective — *To assess the additional effect of supratarsal injection of olopatadine in patients suffering from vernal keratoconjunctivitis, with concurrent use of topical olopatadine.*

Study design — *Interventional study.*

Place & Duration of study — *BHY Hospital Karachi, from May 2019 to October 2019.*

Methodology — *Group A included patients who were on topical treatment with olopatadine, whereas Group B included those who were on topical treatment with olopatadine as well as receiving single adjuvant supratarsal injection of olopatadine. The supportive treatment was similar in both the groups. Follow up was done on seventh and fourteenth day for the resolution of sign and symptoms. Statistical analysis was done with SPSS version 25.0. Chi square test was used to find out significance of treatment outcome. A $p < 0.05$ was considered as significant.*

Results — *This study recruited 40 patients with age from 8 year to 16 year. Two groups with 20 patients in each were made. The mean age of the patients was 12.27±2.76 year. There were 26 (65%) males and fourteen (35%) females. All patients had bilateral involvement with almost similar clinical signs and symptoms. After fourteen days nine (45%) patients in group A, and 17 (85%) in group B had excellent results. This was found significant with $p = 0.027$.*

Conclusion — *An additive effect of supra tarsal olopatadine injection with topical olopatadine eye drops had a statistically significant effect on the outcome in patients with vernal keratoconjunctivitis.*

Key words — *Supratarsal olopatadine, Topical olopatadine, Olopatadine, Vernal keratoconjunctivitis.*

INTRODUCTION:

Patients with ocular allergy frequently report to the ophthalmology clinics. It occurs due to the contact of ocular surface with a variety of allergens, making it vulnerable to allergic reactions. Itching and bilateral involvement are considered to be the hallmarks of the disease which may vary among patients. Predisposing risk factors include environmental allergens like pollens, mites, dust, grass, animal dander, genetic predisposition to atopic reactions and hot, dry environments as well as associated systemic conditions like eczema, asthma, rhinitis and hay fever.[1,2]

In 2006, International Ocular Inflammation Society (IOIS) classified ocular allergy (allergic keratoconjunctivitis) on the basis of immunopathological mechanisms comprising of seasonal and perennial conjunctivitis as well as atopic, vernal keratoconjunctivitis (VKC), giant papillary and contact dermatoconjunctivitis. All having a multitude of presentations, course, distinctiveness and varying outcome to treatment.[3]

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Patients with vernal keratoconjunctivitis show both type I along with type IV hypersensitivity response.[4] It occurs frequently in children and young adults, mainly boys, during warm weather, (spring season), subsiding as cold weather approaches with exacerbations and remissions being frequent. VKC presents with bilateral, recurrent allergic conjunctivitis, with complaints of foreign body sensation, intense ocular itching, conjunctival hyperemia, lacrimation, ocular pain and photophobia, swelling, folliculosis, gelatinous thickening of limbal conjunctival papillae, tarsal conjunctiva develop papillae and enlarge to cobblestone appearance trantas dot at limbus, thick mucoid discharge and sometimes accompanying with corneal lesions, such as corneal erosion and shield ulcer which is very severe complication and may result in loss of vision.[2]

There are multiple therapeutic ways available to manage the VKC. This includes topical steroids, antihistamines, mast cell stabilizers and cyclosporine while supratarsal steroid injections are used for resistant cases. A realistic and convenient treatment has yet to be recognized. This study was carried out to find out a useful alternative management of VKC.

METHODOLOGY:

This interventional study was carried out in the outpatient department of BHY Hospital Karachi, from May 2019 to October 2019. This study included forty patients of age from 8 year to 16 year who had VKC. All patients were explained about the study protocol and informed consent was obtained after getting approval from the Institution's Ethical Review Committee.

A form was used to document the demographics, clinical pre and post intervention observations. Investigation included a brief history of symptoms, onset, previous treatment if any and complete clinical examination included visual acuity and clinical signs on the slit lamp. Patients were divided into two groups for treatment. Patients belonging to Group A were advised to instill topical drops of olopatadine HCL 0.1 % five times a day whereas group B patients, were given topical olopatadine HCL 0.1% ophthalmic solution five times a day and also received one time supratarsal injection of olopatadine. The supportive treatment remained the same for both groups. Patients were followed at day 7 and 14 after starting treatment and evaluated for the resolution of signs and symptoms like decrease in itching, photophobia, foreign body sensation. An observer noted the decrease or elimination of hyperemia, follicles, trantas dots and classified them in categories such as excellent results (more than 80% resolution), good (more than 60%) and fair (= 50%). Statistical analysis was done with SPSS version 25.0. Chi square test was used to find out significance of treatment outcome. A $p < 0.05$ was considered as significant.

RESULTS:

This study included forty patients divided into two groups A and B of twenty each. The age of the patients was from 8 year to 16 year with the mean age of 12.27±2.76 year. There were 26 (65%) males and fourteen (35%) females. All patients had bilateral involvement with almost similar clinical signs and symptoms. On the fourteenth day after initiation of treatment, nine (45%) out of 20 patients of group A showed excellent results, whereas, in group B, seventeen (85%) patients had an excellent outcome with more than 80% resolution of signs and symptoms. (table I). This was found significant with p =0.027. None of the patients of group B developed any lid swelling or granuloma following supra tarsal injection.

DISCUSSION:

Allergic conjunctivitis disturbs the quality of life and requires a rapid and effective resolution of the associated complaints and clinical signs. The treatment of vernal keratoconjunctivitis is a challenge for the ophthalmologists as there is still no agreement about its pathogenesis. It is considered as IgE and T cell-mediated condition that leads to the activation of eosinophils and lymphocytes and may present as a chronic inflammation in tarsal, limbal and mixed forms. Degranulation of the mast cells together with release of histamine and other inflammatory mediators are considered to be the chief mechanism in the surge of ocular allergy. The management is thus targeted at the stabilization of mast cells and use histamine receptor antagonists.[5,6] Number of

Table I: Outcome Following Treatment

	Group A (n%)	Group B (n%)	Total	P value
Excellent	9 (45%)	17 (85%)	26	
Good	9 (45%)	2 (10%)	11	
Fair	2 (10%)	1 (5%)	3	
Total	20 (100%)	20 (100%)	40	0.27*

therapeutic modalities are used currently with no agreement.[7]

A meta analysis of randomized clinical trials evaluated topical treatments for VKC which concluded that the presently existing topical drugs were efficient in treating only the acute stage of the disease. Prevention from triggering factors and changes in lifestyle modifications must go hand in hand with medical treatment.[8] Nonetheless, complete treatment of VKC is still difficult owing to the long duration and severity of the ailment and even with the latest therapeutic treatments, higher doses for prolonged periods are needed which as a consequence are associated with a risk of side effects.[9]

Topical instillation of olopatadine eye drops proved to be of some relief in mild to moderate cases of VKC only. Surgical intervention has also been tried in the past for severe refractory cases by excision of the cobblestone papillae and cryotherapy of upper tarsus resulting in extensive scarring. Topical cyclosporine causes partial relief with minimal effect on cobblestone papillae and shield ulcers.[10]

A study showed that between olopatadine HCL 0.1% and ketotifen fumarate 0.025% ophthalmic solutions, olopatadine was considerably superior and efficient and better tolerated. It was also found that olopatadine was more successful in treating the symptoms of VKC as compared to ketotifen after a month.[11] Another study reported the results achieved with supra tarsal injection of triamcinolone with dramatic relief within 2 to 5 days but this was associated with a transient rise in intraocular pressure.[12]

Another study on comparison of patients' satisfaction and clinical improvement treated with a combination of topical steroid with olopatadine and supratarsal injection of triamcinolone reported a 73.33% improvement in signs and symptoms but 20% in topical steroids group developed mild increase in intra ocular pressure.[13,14] McGhee et al observed that subsequent to every day application of corticosteroids for about four to six weeks, about one third of the normal population will be responders with an augmentation in intraocular pressure of between 6 and 15mm Hg.[15] Olopatadine has double achievement and enhanced acceptability.[12] This study found that topical olopatadine instillation was appreciably more successful when used simultaneously with supratarsal olopatadine injection with excellent results and no associated risk of rise in intraocular pressure. The limitation of the study included a small sample size in a single center. A multicenter study with larger sample size may augment findings of index study.

CONCLUSIONS:

Both olopatadine supratarsal injection and topical olopatadine ophthalmic solution were successful in managing VKC. However, adjuvant olopatadine supratarsal injection provided quicker and better symptomatic control in comparison to olopatadine ophthalmic solution alone.

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Received for publication: 14-07-2020

Accepted after revision: 26-10-2020

Author's Contributions:
Zeeshan Kamil: Concept, design, manuscript writing & final review.
Qirat Qurban: Concept, design, manuscript writing & final review.
Shela Dareshani: Data collection & final review.

Conflict of Interest:
The authors declare that they have no conflict of interest.

Source of Funding: None

How to cite this article:
Kamil Z, Qurban Q, Dareshani S. Additive effect of supratarsal olopatadine HCL 0.1% injection in patients of vernal keratoconjunctivitis on topical olopatadine . J Surg Pakistan. 2020;25 (4):139-42. Doi:10.21699/jsp.25.4.2.