European Journal of Molecular & Clinical Medicine

ISSN 2515-8260 Volume 09, Issue 01, 2022

ORIGINAL RESEARCH

Efficacy of topical 0.05% cyclosporine in Vernalkeratoconjunctivitis

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ABSTRACT

Background: Vernal keratoconjunctivitis (VKC) is a chronic recurrent non-infectious allergic disease that generally affects children and young adults. The present study was conducted to assess efficacy of topical 0.05% cyclosporine in Vernalkeratoconjunctivitis.
Materials & Methods:86 patients diagnosed with Vernalkeratoconjunctivitis (VKC) of both genderswere enrolled. All were prescribed topical 0.05% cyclosporine 4 times a day. Patients underwent complete ophthalmic examination and symptoms and signs and intraocular pressure using non contact tonometer. The patients were evaluated at weeks 4, 8 and 12 after the initiation of therapy. Symptoms and signs before and after treatment, during the four-week intervals, were recorded and scores between 0 and 3 were assigned.
Results: Out of 86 patients, males were 56 and females were 30. Median of symptoms score at baseline was 11, at 4 weeks were 4, at 8 weeks were 5 and at 12 weeks were 4. Sign score at baseline was 6, at 4 weeks were 4, at 8 weeks were 3 and at 12 weeks were 3. The difference was significant (P< 0.05).
Conclusion: Topical cyclosporine 0.05% help to reduce corticosteroid usage, is an effective and safe alternative for the treatment of resistant VKC.
Key words: Cyclosporine, Eye, Vernal keratoconjunctivitis

INTRODUCTION

Vernal keratoconjunctivitis (VKC) is a chronic recurrent non-infectious allergic disease that generally affects children and young adults. Its onset is common in spring and summer season nevertheless VKC may occur at any time of the year.[1]

Itching, burning, foreign body sensation, photophobia, lacrimation, hyperaemia and mucoid discharge may occur in VKC.[2] Giant papillae (≥ 1 mm) are typically found on the superior tarsal and bulbar conjunctiva (i.e. tarsal and bulbar forms, respectively). Horner-Trantas nodules composed of degenerated eosinophils and epithelial cell debris are commonly found in the limbal region, while corneal involvement may be seen as punctate epithelial keratitis, epithelial macroerosions, shield ulcers, plaque formation, corneal neovascularisation and pseudogerontoxon.[3,4] Although the immunopathogenic mechanisms of VKC are complicated, immunoglobulin E-mediated hypersensitivity response, and mast cell, eosinophil and lymphocyte activation by type 2 T-helper cell (Th2) stimulation are thought to be responsible. In one study that reviewed 195 patients with VKC, a family history of allergic disorders was reported in 49% of the patients with VKC.[5]Topical corticosteroids have been in use for treatment of these cases as they provide relief quickly but there is rapid recurrence of

symptoms following their discontinuation. Thereis also a potential of adverse effects of corticosteroid.[6] Such as secondary glaucoma, infective condition of ocular surface as well as steroid induced cataract. The menace of glaucoma is under estimated because of practical limitation of intra ocular pressure (IOP) measurement in the affected pediatric population.[7] The present study was conducted to assess efficacy of topical 0.05% cyclosporine in Vernal keratoconjunctivitis (VKC).

MATERIALS & METHODS

The present study was conducted from March 2019 toFebruary 2020 in patients visiting OPD of Department of Ophthalmology, SKIMS Medical College, Srinagar, Jammu and Kashmir, India. It comprised of 86 patients diagnosed with vernal keratoconjunctivitis (VKC) of both genders. All were enrolled with the written consent.

Demographic data such as name, age, gender etc. was recorded. All were prescribed topical 0.05% cyclosporine 4 times a day. Patients underwent complete ophthalmic examination and symptoms and signs and intraocular pressure using non- contact tonometer. The patients were evaluated at weeks 4, 8 and 12 after the initiation of therapy. Symptoms and signs before and after treatment, during the four-week intervals, were recorded and scores between 0 and 3 were assigned.

Symptom scores were calculated by grading itching, discomfort (i.e. foreign body sensation, stinging and burning), tearing, discharge and photophobia. Sign scores were calculated by grading conjunctival hyperaemia, tarsal papillae, limbal papillae, keratopathy and corneal neovascularisation (Table I).Results were assessed and analyzed using chi- square test. P value less than 0.05 was considered significant.

RESULTS

TableIScoringmethodforthesignsandsymptomsofseverevernalkeratoconjunctivitis

Variable			**Score**	
	0	1	2	3
Symptom				
Itching	None	Occasional	Frequent	Constant
Discomfort	None	Mild	Moderate	Severe
Tearing	Normal	Impression of wet eyes, without tears on the face	Intermittent tears on the face	Constant tears on the face
Discharge	None	Small amount	Moderate amount	Constant
Photophobia	None	Mild	Moderate	Severe
Sign				
Conjunctivalhyperaemia	None	Mild	Moderate	Severe
Tarsal papillae	None	< 1 mm	1–3 mm	> 3 mm
Limbal papillae	None	< 90° or < 2 mm	90°–180° or 2–4 mm	> 180° or > 4 mm
Keratopathy	Normal cornea	Mild and localised punctate epithelial keratitis	Two quadrants of epithelial keratitis	Three or more quadrants of epithelial keratitis and/or corneal ulcer
Corneal neovascularization	None	< 90° or < 1 mm	90°–180° or 1–3 mm	> 180° or > 4 mm

Table II Distribution of patients

Total- 86		
Gender	**Male**	**Female**
Number	56	30

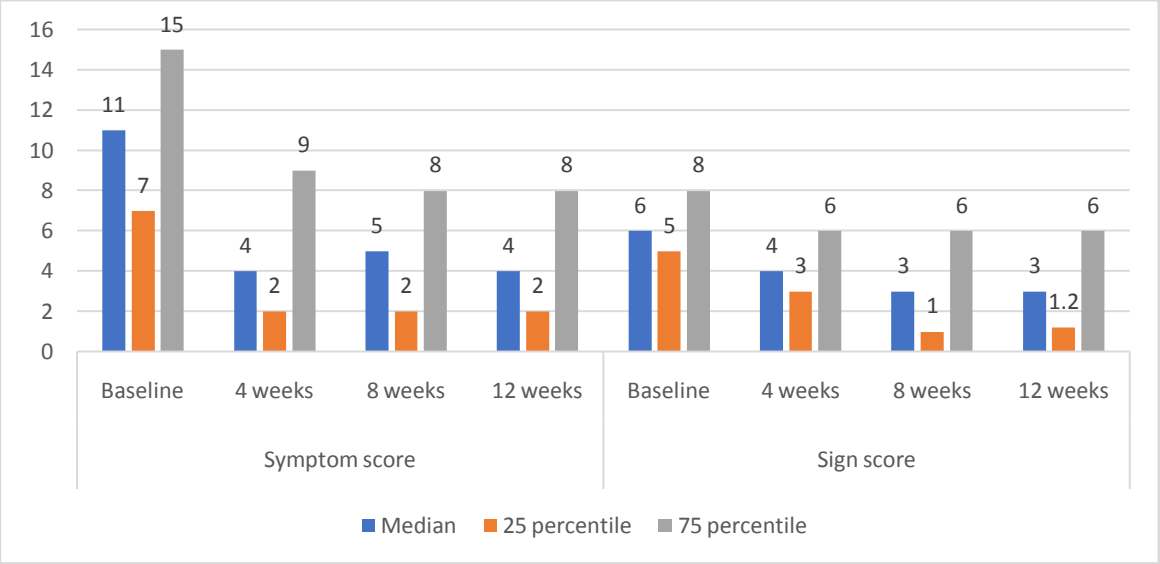
Table II shows that out of 86 patients, males were 56 and females were 30.

Table III Symptom and sign scores of the subjects

Variables	Parameters	Median	25 percentile	75 percentile	P value
Symptom score	Baseline	11	7	15	0.01
	4 weeks	4	2	9	0.03
	8 weeks	5	2	8	0.02
	12 weeks	4	2	8	0.04
Sign score	Baseline	6	5	8	0.05
	4 weeks	4	3	6	0.02
	8 weeks	3	1	6	0.01
	12 weeks	3	1.2	6	0.03

Table III, graph I shows that median of symptoms score at baseline was 11, at 4 weeks was 4, at 8 weeks was 5 and at 12 weeks was 4. Sign score at baseline was 6, at 4 weeks was 4, at 8 weeks was 3 and at 12 weeks was 3. The difference was significant (P< 0.05).

Graph ISymptom and sign scores of the subjects



DISCUSSION

VKC is a chronic allergic disease that has complicated immunopathogenic mechanisms.[8] Although topical corticosteroids are effective for treating VKC, their long-term use is restricted due to side effects.[9] For this reason, low-dose topical CsA has emerged as an alternative therapy for VKC to reduce corticosteroid usage or for corticosteroid-resistant cases.[10]Cyclosporine eye drops used have no effect on intra ocular pressure, is well tolerated and does not cause any increase in punctate keratitis. One of the important observations

regarding the safety of cyclosporine eye drops is its neutrality on intra ocular pressure.[11] The present study was conducted to assess efficacy of topical 0.05% cyclosporine in Vernal keratoconjunctivitis (VKC).

In present study, out of 86 patients, males were 56 and females were 30.Yucel et al[12] in their study a total of 30 patients with VKC that was resistant to topical corticosteroids, antihistamines and mast cell stabilisers were treated with topical CsA 0.05%. Patients were evaluated at Weeks 4, 8 and 12 after the initiation of therapy. Symptoms and signs observed before and after treatment were recorded and scores were assigned. At baseline, the median values of the symptom and sign scores were 10.0 (range 5.0–18.0) and 6.0 (range 2.0–13.0), respectively. At Week 4 of treatment with topical CsA 0.05%, the median values of the symptom and sign scores were 3.0 (range 0–14.0) and 3.0 (range 0–8.0), respectively. The reductions in the symptom and sign scores were statistically significant. The reduction in the need for corticosteroid was statistically significant by Week 12 of therapy. No significant side effects were reported.

We found that median of symptoms score at baseline was 11, at 4 weeks was 4, at 8 weeks was 5 and at 12 weeks was 4. Sign score at baseline was 6, at 4 weeks was 4, at 8 weeks was 3 and at 12 weeks was 3. Gupta et al[13] found that patients of vernal kerato-conjunctivitis were included in the study.Each eye of one patient was prescribed either Cyclosporine eye drops or Fluorometholone eye drops. Patients' vernal keratoconjunctivitis specific symptoms, signs and intraocular pressure were graded and measured repeatedly till 90th day. Forty- four subjects completed the study, with male preponderance. There was a progressive statistically significant reduction in the symptoms of itching, watering discharge and photophobia from day 7 till day 30 in both the groups.In Cyclosporine group there intra ocular pressure remained unaffected (P=0.17), but, in Fluorometholone group there was a significant increase in intra ocular pressure.

Pucci et [a14l] conducted a study in which 24 patients with VKC were treated with topical CsA 2% in one eye and a placebo in the other eye during the first two weeks of treatment. Significant reductions in the clinical scores of the eye treated with CsA 2% were detected after the first two weeks. In the second phase of the study, both the patients' eyes were treated with CsA 2% for two weeks. Clinical scores were reduced in the eyes that were treated with the placebo, but there was no further improvement in the eyes that were previously treated with CsA 2%. This effect persisted during follow-up, which lasted for four months. Among the 24 patients in the study, 4 (16.7%) needed topical corticosteroids, and most patients reported a burning sensation and lacrimation after drug administration.

A study by Ozcanet al[15], which examined the use of topical CsA 0.05% in seven cases of severe allergic conjunctivitis, found significant reductions in the symptom and sign scores, and a reduction in the demand for corticosteroids, with no side effects observed.

CONCLUSION

Authors found that topical cyclosporine 0.05%help to reduce corticosteroid usage, is an effective and safe alternative for the treatment of resistant VKC.

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