Benefits and side effects of cyclosporine a 0.05% eye drops in dry eye diseases

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Abstract

Objectives- To know the effect of topical cyclosporine A 0.05% eye drops in dry eye disease and evaluate its side effects. Materials and methods- 30 cases, above age of 15 year, of dry eye syndrome were included. Grading were done as follows eight symptoms, chronic sandy-gritty irritation, persistent dryness, foreign body sensation, scratching and burning, watery eyes, photophobia, itching and transient blurring of vision. The signs noted in cases of dry eye are tear breakup time and schirmer value. Cyclosporine A 0.05% ophthalmic emulsion eye drop used 12 hourly. Follow up of patients on after 15 days, every month for 3 months then after 6 months. Results- In 30 cases, malefemale ratio were 5:1. According to symptoms, 50% mild, 30% moderate and 20% were severe, and according to signs 46.66%mild, 33.33% moderate, and 20.00% were severe. After cyclosporine a treatment a 20 became normal, 8 partially improved and 2 no improvement in symptoms while 20 became normal, 9 partially improved and 1 patient showed no improvement in signs. Local side effect like burning in 23.33%, discharge in 60.66%, foreign body sensation in 13.33%, sting in 13.33%, conjunctival hyperemia in 20% and visual disturbance in 6% eyes. Conclusions- Topical cyclosporine A 0.05% eye drop twice daily in dry eye diseases improve symptom as well as signs (schirmer’s value and tear breakup time) with minimal tolerable local side effects.

Keywords- Cyclosporine A, Dry Eye, Photophobia, Tear Breakup Time, Schirmer’s Test.

Introduction

In 2003, cyclosporine (CsA) ophthalmic emulsion 0.05% was the first Food and Drug Administration (FDA)-approved prescription medication (Restasis®, Allergan, Irvine, CA, USA) for dry eye disease (DED), as well as the first to modify disease [1]. DED is a widespread and challenging disorder to manage, largely due to its multifactorial causes, chronic nature, need for patient compliance, and limited diagnostic and treatment options. It is the most common form of chronic ocular surface disease[2].

Dry eye syndrome also known as kerato conjunctivitis sicca representing foreign body sensation, grittiness, burning mild congestion, puffiness of eyelids. There are many reason for dry eye. With age, there is a natural decrease in the tear volume and our environment. Dry eye is increased due to increasing use of contact lens, abuse of eye drops and some systemic medicines for e.g. anti-depressants, decongestants, antihistaminics, antihypertensives, oral contraceptives decongestants, diuretics, tranquilisers, among others lasik is another contributor. Association with systemic disorders like rheumatoid arthritis, diabetes, thyroid abnormalities, asthma should be looked into. Dry eye patients develop many eye complication which may even leads to blindness if not treated properly and society may suffer manpower and economic losses.

Diagnosis of a case of dry eye is based on the staining pattern, schirmer’s test, Slit lamp examination, and tear film studies, and chemical analysis of tear film.

An arsenal of treatment options exists for DED.¹ They include the following:

1. Lubricants, including artificial tears, gels, ointments, inserts.
2. Anti-inflammatory agents, such as topical CsA, corticosteroids, lifitegrast, essential fatty acids, and oral tetracyclines.
3. Environmental and behavioral modifications, such as the use of humidifier, purposeful blinking, and computer screen adjustment.

4. Cessation of systemic medications linked to DED, such as antihistamines and other anticholinergic agents.

5. Others including punctal occlusion, oral secretagogues, pulse corticosteroids, autologous serum, mucolytic therapy, moisture chamber spectacles, management of eyelids, contact lens (CL) therapy, and acupuncture [4].

While topical corticosteroids are effective in breaking the cycle of inflammation, their known side effects, such as ocular hypertension, cataract, decreased wound healing, and predisposition to infection limit chronic use [5].

Alternatively, topical CsA has a favorable risk–benefit profile for chronic use. most common side effect of CsA is ocular burning. Other side effects of CsA include blurred vision, ocular itching, conjunctival hyperemia, discharge, foreign body sensation, and stinging [7].

**Aims and Objectives**

The aim of this study is to know the effect of topical Cyclosporine A 0.05% eye drops in dry eye disease and evaluate its side effects.

**Material and Method**

The present study was conducted in the department of Ophthalmology SRG Hospital & Medical college Jhalawar From January to July 2017. Dry eye syndrome patients above 15 year age included and pregnant and nursingmother and young children, patients Allergic to Cyclosporine are Excluded. grading was done as following symptoms.

1. Chronic sandy – gritty irritation
2. Persistent dryness
3. Foreign body sensation

**Observations**

Grading of dry eye patients.

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<td></td>
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<td>%</td>
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<tr>
<td>Symptom</td>
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<td>50</td>
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<td>Sign</td>
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<td>46.66</td>
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Treatment with topical cyclosporine A in dry eye in term of % of symptom in relation to different duration
Tropical Journal of Ophthalmology and Otolaryngology

Original Research Article

Improvement of symptoms in %

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<th>91 days to 6 month</th>
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<td>28 100</td>
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Treatment with topical cyclosporine A in dry eye in term of % of sign in relation to different duration

Improvement of signs in %

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<td>Total</td>
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### Results

30 cases were studied. 25 patients (83.33%) were male and 5 patients (16.66%) were female. They were graded as mild (15 patients 50.00%) moderate (9 patients/30.00%) and severe (6 patients 20.00%) according to symptoms. On the basis of signs they were graded as mild (14 patients 46.66%) moderate (10 patients/33.33%) and severe (6 patients/20.00%). After 6 months treatment with cyclosporine A, 20 (66.66%) patients became normal, 8 (26.66%) patients were partially improved and only 2 patients (6.6%) patients showed no improvement according to symptoms. While 20 (66.66%) patients became normal after treatment, 9 (30%) patients were partially improved and only 1 (3.33%) patients showed no improvement according to signs. There were no systemic side effect of treatment local side effect were burning eye (23.33%), discharge eye (16.66%), foreign body sensation (13.33%), stinging eye (13.33%), conjunctival hyperemia (20%) and visual disturbance (6%).

### Discussion

Till now we are using tear conservative and tear substitutes for the treatment of dry eye disease conventionally. But recent studies show there’s a chronic immune mediated inflammatory process which play an essential role in the pathogenesis of dry eye. The drug cyclosporine A is an established immune modulating and as a treatment for a variety of auto-immune diseases.

This Immuno modulating property of Cyclosporine A effect the inflammatory cascade of ocular surface disease (dry eye) and normalize the tear production and tear film stability.

We studied on 30 patients in which 15 patients (50%) were mild, 9 patients (30%) were moderate and 6 patients (20%) were severe group according to symptoms.

### Conclusion

So it is concluded that topical cyclosporine 0.05% eye drop twice daily in dry eye diseases improve symptom as well as signs (schirmer’s value and Tear breakup time) with minimal tolerable local side effects.

This short study was done with limited resources available at Jhalawar Hospital.

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### References


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