Original Research Article

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 of15 year, of dry eye syndrome were included. Grading were doneas following 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 emulsioneye 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 tosymptoms, 50% mild, 30% moderate and 20% were severe, andaccording to signs 46.66%mild,33.33% moderate, and 20.00% were severe. After cyclosporine a treatment 20 became normal, 8 partially improved and 2 no improvement in symptoms while 20 became normal, 9 partially improved and1patient showed no improvement in signs. Local side effect likeburningin 23.33%, discharge in 60.66%, foreign body sensation in 13.33%, stinging in 13.33%, conjuctival 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 siccarepresenting 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 volumeand 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 property 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.[3] 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.

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3. Environmental and behavioral modifications, such as the use of humidifer, 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 secretogogues, 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 Cs A has a favorable risk–benefit profile for chronic use. most common side effect of CsA is ocular burning.[6] 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
4. Scratching and burning
5. Watery eyes
6. Photophobia
7. Itching
8. Transient blurring of vision

Score 0-3 (Total score was 24)

0. None of time
1. Some of time
2. Most of time
3. All of time

According to above symptoms are graded as

0. mild group (00-08)
1. moderate group (09-16)
2. severe group (17-24)

The signs noted in cases of dry eye are tear breakup time and schirmer value. Scoring was done as following.

Score for Tear Break Up time

0-3 Seconds -3

4-7 Seconds -2

8-10 Seconds -1

More than 10 seconds -0

Score for Schirmer test

0-3 MM -3

4-7 MM-2

8-10 MM-1

More than 10 MM-0

According to these signs cases were divided into mild. moderate and severe group.Cyclosporine A 0.05% ophthalmic emulsion is an immunomodulator that have been effective in treating inflammation in dry eye, eye drop is used 12 hourly.

Follow up Criteria- After 15 days. For every month for 3 month then after 6 months.

Observations

Grading of dry eye patients.

According to	Mild		Moderate		Severe	
	No. of patients	%	No. of patients	%	No. of patients	%
Symptom	15	50	9	30	6	20
Sign	14	46.66	10	33.33	6	20

Treatment with topical cyclosporine A in dry eye in term of % of symptom in relation to different duration

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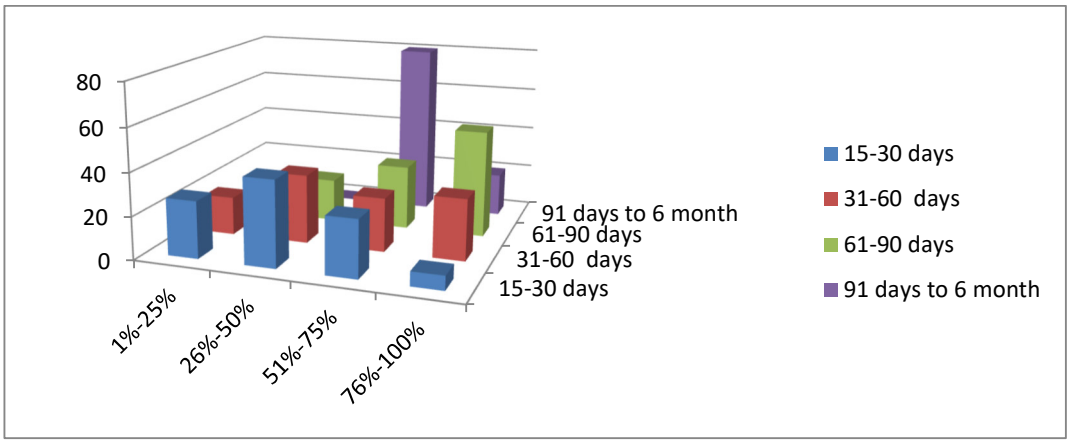
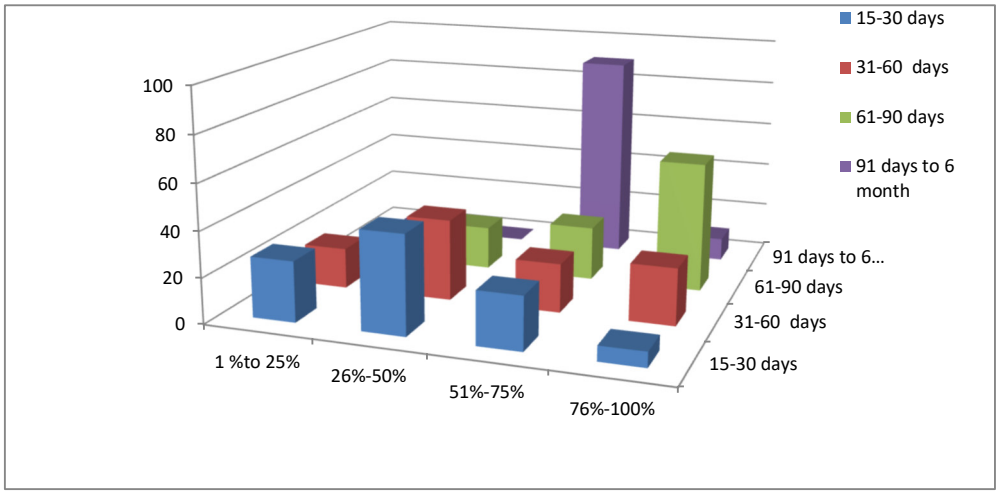
Improvement of symptoms in %	15-30 days		31-60days		61-90 days		91 days to 6 month	
	No.	%	No.	%	No.	%	No.	%
1-25	8	26.66	5	17.85	-	-	-	-
26-50	12	40	9	32.14	4	20	-	-
51-75	8	26.66	7	25.00	6	30	8	80
76-100	2	6.66	8	28.57	10	50	2	20
Total	30	100	28	100	20	100	10	100



Treatment with topical cyclosporine A in dry eye in term of % of sign in relation to different duration

Improvement of signsin %	15-30 days		31-60days		61-90 days		91 days to 6 month	
	No.	%	No.	%	No.	%	No.	%
1-25	8	26.66	5	17.85	-	-	-	-
26-50	13	43.33	10	35.71	4	19.04	-	-
51-75	7	23.33	6	21.42	5	23.80	9	90
76-100	2	6.66	7	25	12	57.14	1	10
Total	**30**	**100**	**28**	**100**	**21**	**100**	**10**	**100**



Treatment related side effect of cyclosporine A 0.05%

S.No.	Side effect	No. ofpatients	% of patients
1	Burning eye	07	23.33
2	Discharge eye	05	16.66
3	Foreign body sensation	04	13.33
4	Stinging eye	04	13.33
5	Conjunctival hyperemia	06	20
6	Visual disturbance	02	06

Results

30 cases were studied. 25 patients (83.33%) were male and 5 patients (16.66%) were femaleThey 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 ad 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 sign there were no systemic side effect of treatment local side effect were burning eye (23.33%) discharge eye 60.66%) foreign body sensation (13.33%)stinging eye (13.33%) conjuctival hyperemia (20%) and visual disturbance (6%)

Discussion

Till now we are using tear conservative and tear substitutes for the treatment of dry eyes conventionally. But recent studies shows there is 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.

Duration of treatment was 7 months. Improvements in objective and subjective measures of dry eye disease were modest, probably because of prior treatment with cyclosporine. Most survey respondents said their symptoms began to resolve in the first 3 month of cyclosporine treatment. Sall K et. al (Ophthalmology 2000-107:631-639) Studied the efficacy and satety of cyclosporine A ophthalmic emulsion in moderate to severe dry eye disease.

They found that most-common treatment related adverse effects were burning eye (14.7%) stinging eye (3.4%) discharge eye (3.1%) foreign body sensation (3.1%) conjuctival hyperemia (2.0%), visual disturbance (1.7%) and eye pain (1.0%) with cyclosporine a 0.05% They also compare with cyclosporine A (0.1%) and results were comparable.

In our study two patients (According to Symptoms) and one patient (AccordingSigns) failed to respond to cyclosporine Aeye drop. It might be due to the long term (more than 4 years of and on) use of the topical steroid drops.

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

1. Pflugfelder SC, Corrales RM, de Paiva CS. T helper cytokines in dry eye disease. Exp Eye Res. 2013;117: 118–125.

2. O'Brien, Collum LM. Dry eye: diagnosis and current treatment strategies. Curr Allergy Asthma Rep. 2004;4 (4): 314–319.

3. Foulks GN, Forstot SL, Donshik PC, et al. Clinical guidelines for management of dry eye associated with Sjögren disease. Ocul Surf. 2015; 13 (2):118–132.

4. Shin MS, Kim JI, Lee MS, et al. Acupuncture for treating dry eye: randomized placebo-controlled trial. Acta Ophthalmol. 2010;88(8): e328–e333.

5. McGhee CN, Dean S, Danesh-Meyer H. Locally administered ocular corticosteroids: benefits and risks. Drug Saf. 2002;25(1):33–55.

6. Barber LD, Pflugfelder SC, Tauber J, Foulks GN. Phase III safety evaluation of cyclosporine 0.1% ophthalmic emulsion administered twice daily to dry eye disease patients for up to 3 years. Ophthalmology. 2005; 112(10):1790–1794.

7. Perry HD, Solomon R, Donnenfeld ED, et al. Evaluation of topical cyclosporine for the treatment of dry eye disease. Arch Ophthalmol. 2008;126(8):1046–1050

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