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ORIGINAL RESEARCH

COMPARATIVE STUDY OF 0.1% OLAPATADINE HYDROCHLORIDE 0.5%KETOROLAC TROMETHAMINE IN TREATMENT OF SEASONAL ALLERGIC CONJUCTIVITIES

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ABSTRACT

Background: The most common allergic disorder seen in eyes is the Seasonal allergic conjunctivitis. The aim of the study is to compare the effectiveness of 0.1% Olapatadine Hydrochloride and 0.5% Ketorolac Tromethamine with placebo in Treatment of Seasonal Allergic Conjuctivities.

Methods: The study was conducted in the the Department of Opthalmology, Rajah Muthiah Medical College and Hospital, Chidambaram among the patients attending Opthalmology OPD with diagnosis of seasonal allergic conjuctivitis. The study was done for a period from June 2020 to May 2021.40 study participants recruited based on inclusion and exclusion criteria. The enrolled study participants were randomized and allocated into two groups (Group I-Ketorolac and Placebo ,Group 2-Olopatadine and Placebo).Baseline characteristics of the study participants were obtained. Occupation history is also elicited. Visual acuity assessment, anterior segment examination and non-dilated examinations were performed on both eyes at the beginning of the study (Day 0) and at the end of the treatment period. Slit lamp examinations was performed on both eyes at all the visit. Clinical observations and evaluation of conjunctival signs and symptoms were performed. In order to provide standardized assessments of ocular injection scoring systems was used. Data collected were entered in MS Excel and the statistical analysis was done in SPSS 23.p value <0.05 is considered as statistically significant.

Results: Majority of the study participants were in <20 years of age 34(85%). Male preponderance was observed 27(67.5%).Most of the study participants were Students 34(85%). All study participants have congestion 40(100%). Papilla found in 24(60%) of the study participants .11(27.5%) of the study participants have lid edema.4 (10%) had chemosis. All study participants have congestion 40(100%). The mean score of itching of Olopatadine was significantly lower than the Ketorolac in days 2,7 and 15. This indicates the better therapeutic effectiveness of Olapatadine over Ketorolac in treating itching.

Conclusion: Our study concluded stating that as multiple aetiologies are present for causing allergic conjunctivitis both 0.1% Olopatadine hydrochloride and 0.5% Ketorolac tromethamine can be used for treatment. Both itching symptoms and hyperemia improved by olopatadine

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compared to ketorolac. Thus more clinical trials with large number of patients in different age group is essential to ensure the accuracy of the present results of both the drugs.

Keywords: Olopatadine hydrochloride, Seasonal allergic conjunctivitis, hyperemia, ocular itching

INTRODUCTION

The inflammation of the conjunctiva that involves immune mediated response which is mediated by IgE and mast cells is known as Allergic conjuctivities.[1,2] Exposure to allergens like pollens, environmental stimuli and animal danders causes it.[3,4] Allergic conjuctivities have subsets like seasonal Allergic conjuctivities (SAC) and Perennial Allergic conjuctivities (PAC).90% of the patients with Allergic conjuctivities will have seasonal conjuctivities. Other types of Allergic conjuctivities are Atopic keratoconjuctivities and vernal conjuctivities (VKC) which are least common.[5]

Seasonal allergic conjuctivities is otherwise known as hay fever.It occurs most commonly due to airborne allergens like grass,weeds,pollen and animal dander. It is Type 1 mediated hypersensitivity reaction which is mediated by IgE.[6] The main presentation of the patients will be ocular itching. conjunctival hyperaemia, tearing, chemosis, mucus discharge, lid edema are other symptoms.[7]

Mast cells plays a major role in its pathology. When specific allergens binds with the mast cells ,the sensitized mast cells will start to degranulate with the help of calcium. Then it will release tryptase, histamine, Phospholipase A and Arachidonic acid. The manifestations of signs and symptoms occurs due to the reaction of Arachidonic acid with the Lipooxygenase and Cyclooxygenase which in turn will produce the thromboxanes, leukotriens prostaglandins and platelet activating factor (PAF).[8]

The treatment of seasonal allergic conjunctivitis starts with keeping away from allergens. Other treatments used are irrigation with saline solutions, cold compressions and lubricating with the artificial tears. Pharmacological treatment are started only when the symptoms are severe which includes Mast cell stabilizers, H1 receptor antagonists, Corticosteroids or immunotherapy. Olapatadines are H1 receptor blocker which will block the action of histamine by competitively binding to the H1 receptor.[9] It is also a mast cell stabilizer which will inhibit eosinophil degranulation and eosinophil chemotaxis by activating the interleukin(10).Corticosteroids can be used to inhibit the transcription protein and will supress the Phospholipase A.It also reduces the mass cells in mucosa .But using it in long term will cause Glaucoma and Cataract and sometime will worsen the prevailing conditions.[11]

Ketorolac are Non steroidal anti-inflammatory agents which can be used as an alternative to Corticosteroids as it reduces the side effects.[12] It acts by inhibiting the prostaglandins and very effective in relieving the symptoms of itching

Aim Of the Study

To compare the effectiveness of 0.1% Olapatadine Hydrochloride and 0.5%Ketorolac Tromethamine with placebo in Treatment of Seasonal Allergic Conjuctivities.

MATERIALS & METHOD

Study Setting

This study was conducted in the Department of Opthalmology, Rajah Muthiah Medical College and Hospital, Chidambaram among the patients attending opthalmology OPD with diagnosis of seasonal allergic conjuctivitis. The study was done for a period from June 2020 to May 2021.

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Study Design

Non randomized prospective comparative study

Inclusion Criteria

- All patients who have characteristics signs and symptoms of seasonal allergic conjunctivitis
- Patients >6 years of age and with body weight >10 kg in both sexes
- Patients who have Allergy but not taken any anit-allery medications like oral or topical ocular for atleast seven days prior to the Day 0 visit
- Patients who are wearing contact lenses but discontinued the use for atleast 7 days before the Day 0 visit and for the whole study period.
- Patients who were willing for follow up visits and who are able to follow the instructions

Exclusion Criteria

- Patients who did not give consent
- Pregnant or lactating women
- Patient who are hypersensitive to any component of the test drug or control drug including the benzalkonium chloride
- Pregnant who had ocular laser surgery or other ocular surgeries within the preceding month prior month to the study
- Any ocular disease other than allergic conjuctivities, confirmed vernal keratoconjuctivities (VKC) and confirmed atopic keratoconjuctivites (AKC).
- Participation in any other investigational study within one month before entry into this study or concomitantly with this study
- Patients with history of retinal detachment, diabetic retinopathy, any retinal disease which may be progressive during the time course of the study
- Patients with any autoimmune diseases such as rheumatoid arthritis associated with dry eye syndrome
- Patients with history of recurrent corneal syndrome, either idiopathic or secondary to previous corneal trauma or dry eye sundrome.

Sample Size

The study participants fulfilling the inclusion and the exclusion criteria were included in the study throughout the study period. The final attained sample is 40.

Data Collection Method

After obtaining the Institutional Ethical Committee clearance, the study was started after obtaining patients informed consent**.** Based on inclusion and exclusion criteria the study participants recruited during the study period is 40**.**

A predesigned proforma was used to collect the clinical details of the patients which include the age of the patient, sex and clinical presentation etc. Patients were randomized into two groups.

Group A: Patients will receive olapadine in left eye and placebo tear substitute in right eye both twice daily

Group B: Patients will receive Ketorolac in left eye and placebo tear substitute in right eye both four times daily

Procedure

The patients were requested to self assess ocular symptoms at each visit by describing their ocular and nasal signs in day 0,2^{nd},7^{th},15^{th} day at 30 minutes after the instillation of the drug in the left eye and placebo in the right eye based on the given choices of answers.

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Visual acuity assessment ,anterior segment examination and non-dilated examinations were performed on both eyes at the beginning of the study (Day 0) and at the end of the treatment period.

Slit lamp examinations was performed on both eyes at all the visit.Clinical observations and evaluation of conjunctival signs and symptoms were performed.In order to provide standardized assessments of ocular injection scoring systems was used.

Evaluability

All subjects receiving the study drugs were evaluated for the safety and efficacy according to the intent-to treat analysis.All eligible subjects receiving the safety drugs and having at least one follow up visit were evaluable for the efficacy and safety analysis.

Statistical Analysis

The obtained data was entered in MS Excel Windows 10. Statistical analysis was done with the help of SPSS 23.Continuous data was expressed in terms of mean and standard deviation. Categorical data was expressed in terms of Numbers and Percentages. Test of association for Categorical data was Chi square test and for Continuous data was t test and Anova test. p values <0.05 is considered as statistically significant.

RESULTS

Table 1: Demographic characteristics of the study participants

Baseline Characteristics	Number(N) (N=40)	Percentage (%)
Age		
<20 years	34	85%
>21 years	6	15%
Gender		
Male	27	67.5%
Female	13	32.5%
Occupation		
Students	34	85%
Servants	3	7.5%
Farmers	2	5%
Housewives	1	2.5%

Majority of the study participants were in <20 years of age 34(85%). Male preponderance was observed 27(67.5%). Most of the study participants were Students 34(85%).

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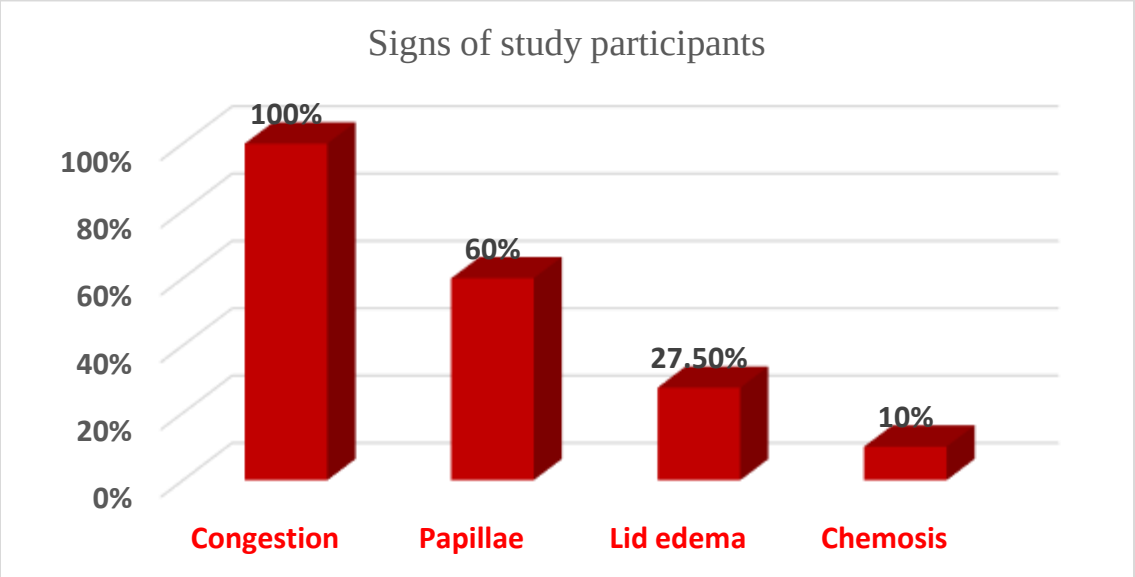
Table 2: Signs of the study participants



All study participants have congestion 40(100%).Papillae found in 24(60%) of the study participants .11(27.5%) of the study participants have lid edema.4 (10%) had chemosis.

Table 3 A: Mean ocular itching in Group I

	Ketorolac	Placebo	P value
Baseline	**2.45±0.60**	**2.40±0.68**	**0.33**
30 minutes	**1.60±0.75**	**2.30±0.70**	**0.001***
2nd day	**1.35±0.81**	**1.95±0.76**	**0.001***
7th day	**1.00±0.65**	**1.65±0.75**	**0.001***
15th day	**0.50±0.61**	**1.65±0.75**	**0.001***

Table 3 B: Mean ocular itching in Group II

	Olopatadine	Placebo	P value
Baseline	**2.3±0.65**	**2.2±0.60**	**0.08**
30 minutes	**1.40±0.60**	**1.80±0.83**	**0.001***
2nd day	**0.80±0.77**	**1.80±0.83**	**0.001***
7th day	**0.55±0.69**	**1.60±0.75**	**0.001***
15th day	**0.20±0.41**	**1.60±0.75**	**0.001***

The baseline scores were found to be similar in both the groups but it is not statistically significant.In Group I the eyes receiving the Ketorolac solution showed significant reduction in signs and symptoms compared to placebo.Similarly in Group II both itching and congestion improved significantly in eyes receiving Olopatadine solution compared to placebo.The mean score of itching of Olopatadine was significantly lower than the Ketorolac in days 2,7 and 15.This indicates the better therapeutic effectiveness of Olapatadine over Ketorolac in treating itching.

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Table 4 A: Mean Conjunctival congestion in Group I

	Ketorolac	Placebo	P value
Baseline	**2.2±0.60**	**2.4±0.76**	**0.052**
30 minutes	**1.80±0.89**	**2.40±0.68**	**0.001***
2nd day	**1.50±0.69**	**2.30±0.66**	**0.001***
7th day	**1.00±0.56**	**2.25±0.72**	**0.001***
15th day	**0.20±0.52**	**1.70±0.80**	**0.001***

Table 4 B: Mean Conjunctival congestion in Group II

	Olopatadine	Placebo	P value
Baseline	**2.3±0.65**	**2.4±0.76**	**0.165**
30 minutes	**1.75±0.85**	**2.35±0.75**	**0.001***
2nd day	**1.40±0.68**	**2.25±0.85**	**0.001***
7th day	**0.90±0.72**	**2.10±0.85**	**0.001***
15th day	**0.2 ±0.41**	**1.70±0.80**	**0.001***

The mean scores of conjunctival congestion in Olapatadine treated eyes has lower scores compared to Ketorolac treated eyes. The difference between the groups was found to be statistically significant except baseline dose.

DISCUSSION

The most common ocular problem in Allergic conjunctivitis. Vision threatening complications is very rare in this condition but it tends to affect the quality of life in the patients due to its recurrent nature. Early relief of the signs and symptoms of allergic conjunctivitis helps in improving the quality of life.

In our study majority of the study participants were in < 20 years 34(85%)of age. Similar results was also seen in Yaylali et al[13] study where the average age was found to be 19.In contrast to our study results the Chaudry et al[14] study states that mean age was found to be 28±11 years. Male preponderance were more in our study 27(67.5%). Yaylali et al[13] also showed similar results where the males were 21(52.5%). Meena R.K et al(15) study and Pallasaho et al[16] study showed Male preponderance. In contrast Chaudry et al(14) study the Female preponderance seen 55%.Majority of the study participants were students 34(85%) followed by servants 3(7.5%).In Meena R.K et al[15] study majority of the study participants are working in outdoor which clearly states that allergic conjunctivitis was more in field worker.

All study participants had congestion (100%) and 60% of the study participants have papillae. In our study the baseline scores were found to be similar in both the groups but it is not statistically significant. where the In Group I the eyes receiving the Ketorolac solution showed significant reduction in signs and symptoms compared to placebo. Similarly in Group II both itching and congestion improved significantly in eyes receiving Olopatadine solution compared to placebo. Yaylali et al study also showed similar results. The mean score of hyperemia of Olopatadine was significantly lower than the Ketorolac in days 2,7 and 15.This indicates the better therapeutic effectiveness of Olapatadine over Ketorolac in treating itching. Similar results are seen yaylali et al study. As for ocular itching the Olapatadine is effective than ketorolac as it lacks the effectiveness of inhibition of allergic response in human conjunctiva as said by Deschenes et al study[17]

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CONCLUSION

Our study concluded stating that as multiple aetiologies are present for causing allergic conjunctivitis both 0.1% Olopatadine hydrochloride and 0.5% Ketorolac tromethamine can be used for treatment. But itching symptoms improved by olopatadine compared to ketorolac. The mean scores of conjunctival congestion in Olapatadine treated eyes has lower scores compared to Ketorolac treated eyes. Thus more clinical trials with large number of patients in different age group is essential to ensure the accuracy of the present results of both the drugs.

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Competing Interest

There is no competing interest

Authors Contribution

All authors in our study contributed to the data collection of the patients

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