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Comparative Evaluation Of Quality Of Life In Patients Of Vernal Keratoconjunctivitis Treated With Bepotastine Besilate Versus Olopatadine And Ketorolac Combination In Eye Department At Tertiary Care Hospital In Indian Population

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Abstract

Ocular itching and redness adversely affect the quality-of-life of vernal keratoconjunctivitis (VKC) patients. The objective of this study was to evaluate changes in VKC patient's quality-of-life (QOL). The present study was prospective, open label, randomized, comparative clinical study. Hundred patients of vernal keratoconjunctivitis between 6 to 20 years of age of either sex willing to give informed consent were enrolled in the study. In Group A, 50 patients received Bepotastine besilate (0.15%) eye drops twice daily for 8 weeks whereas in Group B, 50 patients received Olopatadine (0.2%) and Ketorolac (0.4%) combination eye drops twice daily for 8 weeks. The Quality of Life Questionnaire (QUICK) is a reliable and validated which was assessed at baseline and at the time of follow up at 8 weeks. QUICK Questionnaire scores range from 30 to 90 with higher values representing greater impairment. A decrease in QUICK Questionnaire score is clinically meaningful to the patients.

The results showed that after the 2 months of drug therapy, patients in both the groups showed decrease in the quality of life scoring of VKC. However, there was no statistically significant difference between the two treatment groups at 8th week. It may be concluded that both bepotastine besilate versus olopatadine and Ketorolac combination ophthalmic solutions were found to be effective in alleviating the clinical symptoms and signs of VKC. Hence, improving the quality of life of VKC patients.

Keywords: Mast cell stabilizer, Topical NSAIDs, Newer H1-antihistaminics, Vernal keratoconjunctivitis, Quality of life

Introduction

WHO defines quality of life (QoL) as individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.[1] According to scientist Bonomi,[2] quality of life could be viewed as a subjective, multidimensional concept, which places emphasis on the self-perception of an individual's current state.[2] There is no consensus on a definition of QoL, although there is considerable agreement among experts that it encompasses social and psychological well being as well as health status.[3] Quality of life questionnaires have been recognized as an important tool to measure the impact of satisfaction towards human development needs in a community or society. A QoL questionnaire is central to the development of relevant domains and is then the primary instrument of data collection. QoL indicators look at relationships across variables, domains, and sectors of society and, hence, are an unbundled system of indicators, not a composite index of data. Quality of Life Questionnaire (QoLQ) is an instrument for measuring the quality of an individual's life across a broad range of specific areas.[4]

The term health-related quality of life (HRQoL) is often used to indicate QoL as it relates to diseases or treatments people experience. Muldoon and colleagues[5] describe HRQL as "It moves beyond the direct manifestations of illness to study the patient's personal morbidity—that is, the various effects that illnesses and treatments have on daily life and life satisfaction." Although allergic conjunctivitis is regarded as the most benign form of all ocular allergic conditions, it may limit patient quality of life, affecting daily life activities and psychosocial relations. The quality of life of patients with VKC can be affected by the intense itching, causing dryness sensation, vision fatigue and even reading difficulties.

Vernal keratoconjunctivitis (VKC) is an atopic condition of the external ocular surface. It is most common and most severe in hot, dry environments such as the Mediterranean basin, West Africa and the Indian subcontinent.[6] In these areas, upto 3% of eye clinic patients present with VKC and 10% of outpatient appointments are made for signs and symptoms related to VKC.[7] VKC commonly occurs in school-age children. A male preponderance has been observed, especially in patients under 20 years of age, among whom the male is to female ratio is 3:1 whereas the ratio in older than 20 years of age is 1:1.[8]

VKC is characterized by recurrent inflammation of the conjunctiva and cornea causing intense ocular symptoms such as redness, itching, photophobia, and mucous discharge with corneal involvement and potential impairment of visual function.[9] In 1988, Buckley coined the term "morning misery" for VKC which described the active disease state of patients with severe discomfort, blepharospasm and mucous discharge from eyes leaving them incapacitated upon awakening and "frequently resulting in lateness for school".[10] Because conjunctivitis typically shows reccurence in spring time, it is named as vernal.

On external examination, the lids can be erythematous and thickened. The classic finding of giant papillae of more than 1 mm diameter is located most commonly on the upper tarsal conjunctiva. The tarsal conjunctiva develops a cobblestone appearance and in active disease, can have mucus accumulation between the papillae. In the limbal form, the conjunctiva may show gelatinous limbal papillae associated with epithelial infiltrates called Horner-Trantas dots. These are focal collections of degenerated eosinophils and epithelial cells. The cornea may become involved in VKC, and the corneal changes ranges from mild (punctate epithelial erosions) to severe (macroerosions and ulcers).[11]

Clinical objective evaluation of signs and symptoms commonly are used to evaluate VKC severity. However, clinical evaluations may not necessarily reflect the impact of the disease on the patient's health-related quality of life (HRQoL).[12] In fact, because the presence of severe signs and symptoms of VKC may significantly influence the well-being and daily functioning of patients, often they or their parents refer problems with daily activities, even in mild and moderate cases, of VKC. The

availability of a questionnaire to assess the impact of symptoms of ocular surface inflammation on children's daily functioning would aid in the evaluation of VKC severity and treatment outcomes.[13]

HRQoL parameters have become important outcome measures in allergic diseases, and many questionnaires have been developed to evaluate the impact of allergy on HRQoL.[14] In particular, vernal keratoconjunctivitis HRQoL questionnaires, addressed to adults, adolescents and children, also include the evaluation of eye symptoms. Studies of quality of life in children with allergic vernal keratoconjunctivitis demonstrated maximal interference with their normal daily activities and emotions, because of the severity of signs and symptoms in VKC patients.[15]

This study describes the Quality of Life in patients with Vernal Keratoconjunctivitis using QUICK questionnaire in children between five and 22 years of age.[16]

Material and Methods

This was a prospective, open label, randomized, comparative clinical study. The present study was conducted by the Department of Pharmacology and Regional Institute of Ophthalmology, Pt. B.D. Sharma PGIMS, Rohtak. In present study patients of either sex between 6 to 20 years of age who attended the OPD in Ophthalmology department with vernal keratoconjunctivitis were selected. The study was conducted over a period of 1 year and 100 patients were included. Study was done in accordance with the principles of Good Clinical Practice (ICH-GCP) and Declaration of Helsinki. An informed consent was obtained from all patients enrolled for the study. The study was approved by Institutional Review Board (IRB).

Each study group minimally had 50 patients and had received either topical eye drops of Bepotastine besilate (0.15%) or Olopatadine (0.2%) with Ketorolac (0.4%) combination treatment for a period of 8 weeks i.e two months. A detailed Ophthalomological history with reference to subjective complaints was obtained from the patients at week 0 and followed up at week 4 and week 8.

Demographic profile of study patients

The demographic profile of the study patients in the two study groups is shown in table 1, Figure (1a, 1b, Ic and 1d). The mean age of the patients in both the groups was comparable. The mean age was 12.34 ± 0.76 and 13.34 ± 0.91 (Mean±SEM) in Group A and Group B respectively. On gender differentiation for assessment of VKC, it was noted that more number of patients were male than females in both the groups. In group A, there were 38 males and 12 females whereas in group B, 40 males and 10 females. Out of total 100 patients, 78 were male and 22 were female. History of allergen exposure was present in 30 and 28 patients in Group A and Group B respectively. Distribution of study population who belong to urban area was 20 patients and of rural area was 30 patients in group A whereas in group B, 22 patients belong to urban area whereas 28 are of rural area. There was no statistically significant difference ($p>0.05$) in any of the demographic profile parameters among the two groups which showed that the study outcomes were not affected by any of the parameters.

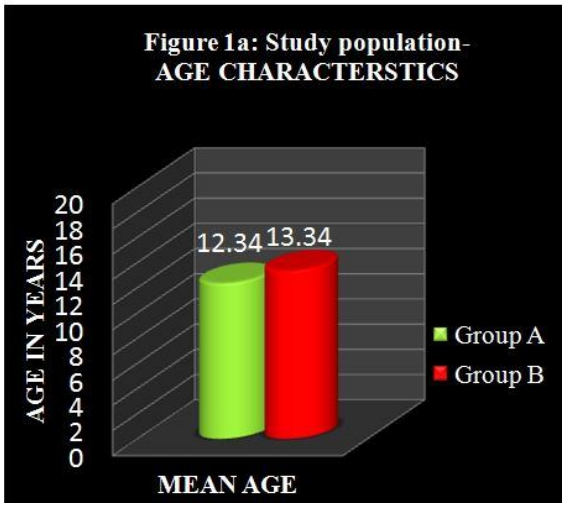
TABLE-1

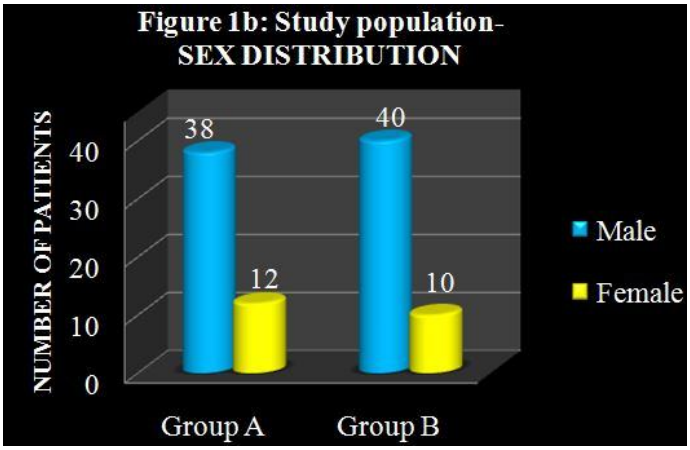
DEMOGRAPHIC PROFILE OF STUDY PATIENTS IN BOTH THE GROUPS

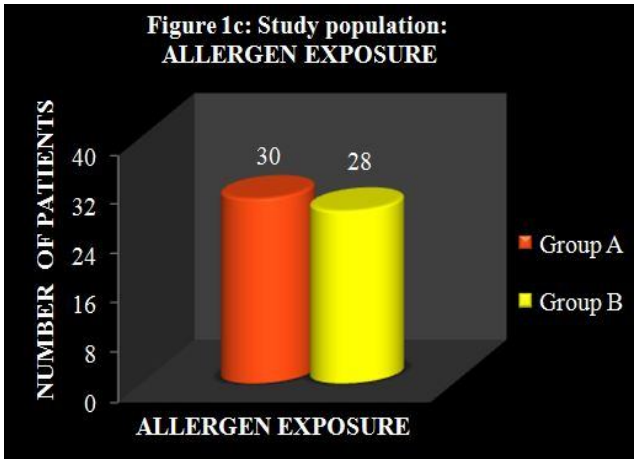
(N=50 IN EACH GROUP)

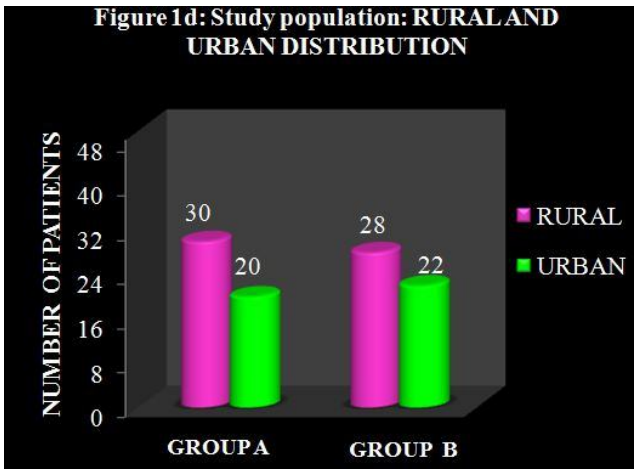
Variables of demographic profile	Group A (n=50)	Group B (n=50)
Mean Age (years)	12.34 ± 0.76	13.34 ± 0.91
Gender		
Male	38(76%)	40(80%)
Female	12(24%)	10(20%)
H/o allergen exposure	30(60%)	28(54%)
Population distribution		
Urban	20(40%)	22(44%)
Rural	30(60%)	28(56%)

Age is expressed as Mean±SEM (standard error of mean) while categorical values were expressed as actual number of patients and their percentage**.**









QUICK Questionnaire[17]**:** QUICK questionnaire assesses the effect of symptoms on everyday life and their interference with daily activities, thus capturing the impact of the condition. This questionnaire measures the impact of VKC symptoms on physical symptoms, worry about health, degree of bother, and limitations of daily activities, with a higher score indicating a worse health impact of VKC symptoms. Preliminary list of 30 questions were asked to patients with vernal keratoconjunctivitis. Possible score can range from 30 (no impact) to 90 (highest negative impact) with higher scores indicating a greater impact on patient's general well-being. It was recorded at the baseline and then at the end of week 8. It is scaled from 1 to 3 as described below:

Scoring was done as:

0= never

1= sometimes

2= always

Preliminary list of **30** questions asked to patients with vernal keratoconjunctivitis:

During the Last Two Weeks, Because of Conjunctivitis . . .

1 . . . you had to use eye drops
2 . . . you had trouble going to the swimming pool
3 . . . you rubbed your eyes
4 . . . you had red eyes
5 . . . you had tearing
6 . . . you had, in the morning, closed, and sticky eyes
7 . . . you had itchy eyes
8 . . . you felt burning in your eyes
9. . . you had problems going to the cinema
10 . . . you had problems in the light
11 . . . you had to use tissues
12 . . . you had difficulties in reading
13 . . . you had eye secretion
14 . . . you had trouble meeting your friends
15 . . . you had problems playing video games or computer
16 . . . you had trouble practicing sports (football,gym, etc.)
17 . . . you had difficulties concentrating on homework or other activities
18 . . . you had blurred vision
19 . . . you had problems at school
20 . . . you had trouble playing outdoors
21 . . . you had puffy eyes
22 . . . you have eaten little
23 . . . you had reduction in eyesight
24 . . . you had difficulties watching TV
25 . . . you had trouble staying in air-conditioned rooms
26. . . you slept badly
27 . . . you had problems going to school
28 . . . you had problems riding your bicycle
29 . . . you attended school regularly
30 . . . you had difficulty opening your eyes completely

Results

QUALITY OF LIFE (QoL) : QUICK QUESTIONNAIRE

Intragroup analysis (Table-2 and Figure-2)

In Group A, baseline score for QUICK questionnaire was 54.26 ± 1.01 which reduced to 41.46 ± 5.30 (45%) at 8 weeks. This reduction was statistically significant when compared to baseline. Similarly in Group B, statistically significant reduction in score of QUICK questionnaire was seen at 8 weeks as compared to baseline score of 53.26 ± 1.44. The score reduced to 39.02 ± 7.50 (25%) at 8 weeks.

There was a significant reduction in QUICK questionnaire score at week 8 in both the study groups which suggests that both the drugs were effective in reducing the score and hence improving the quality of life in VKC patients.

On **intergroup analysis,** at the end of 8 weeks there was no statistically significant difference in improvement of QoL as assessed by QUICK questionnaire. The results were equivocal in both the groups.

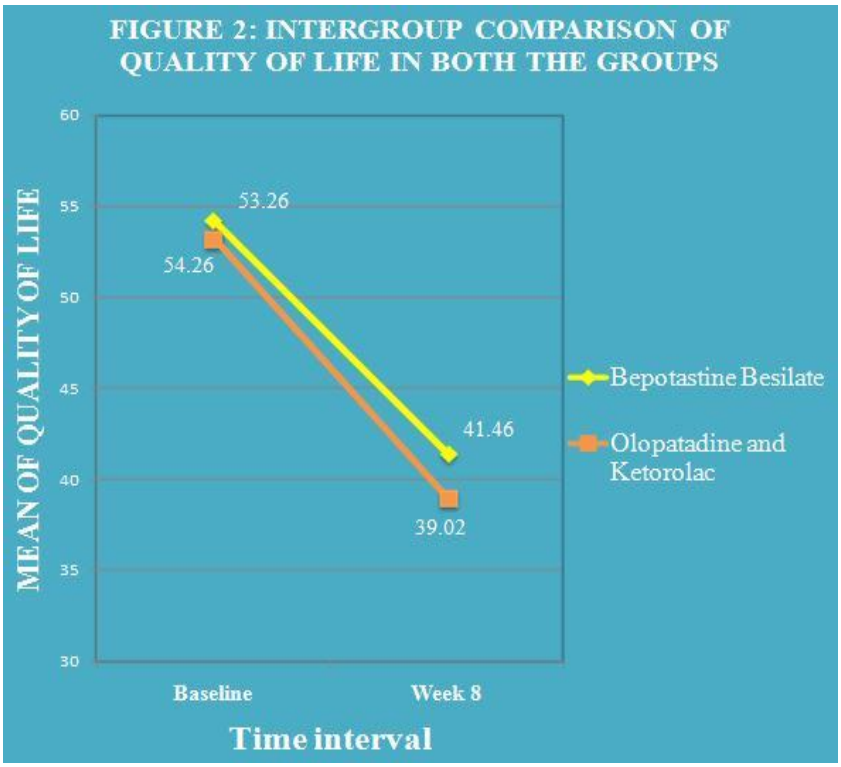
TABLE-2

COMPARISON OF CHANGES IN QOL SCORE IN BOTH THE GROUPS

(N=50)

Time interval	Bepotastine besilate (Group A) (n=50)		Olopatadine and ketorolac combination (Group B) (n=50)		p value (intergroup)
	Mean ± SEM	Improvement from baseline	Mean ± SEM	Improvement from baseline	
Baseline	54.26 ± 1.01	-	53.26 ± 1.44	-	0.574
8 weeks	41.46 ± 5.30	12.8 ± 0.57 (45%)	39.02 ± 7.57	14.24 ± 1.06 (25%)	0.065

- All values are expressed as Mean±SEM
- Comparison of values between Group A versus B is not statistically significant on intergroup analysis at 8weeks.



Discussion

In the present study, both the two groups showed statistically significant improvement in response to QUICK questionnaire at 8 weeks. The decrease in response was 45% and 25% in group A and group B respectively. Both the two groups were comparable regarding the improvement in QOL in patients of VKC. Both drugs act synergistically to improve quality of life in patients of VKC. The findings of the study matches with the pharmacological profile of monotherapy and combination therapy.

Quality of life indices are measures of health that incorporate patients perspective of their physical, social and psychological well-being.[18] VKC can present as one of the most severe forms of ocular allergy. It is common that the quality of life of individuals who have this disease will be affected. The measurements of the quality of life through various scales are useful to the health personnel, not only to understand the impact of the disease VKC on the activities of daily living of individuals but also to determine the effect of various treatments they take thus helping to take correct clinical decisions.[19] VKC impairs the health related quality of life (HRQoL) in conjunctivitis patients by adversely impacting sleep, daily activities, physical and mental status and social functioning.[20]

On literature search a study conducted by Bonini S et al, a comparison of anti allergic medications versus cyclosporine showed that decrease in response to QUICK questionnaire at 3 months which was 13.34% versus 38.71% as compared to baseline, which was statistically significant.[21]

The findings of the present study are quite similar to above mentioned studies as statistically significant improvement in response to QUICK questionnaire with antiallergic eye drops medication was observed at the end of 3 months whereas at the end of 2 months in our study.

Conclusion

There was statistically significant reduction in QUICK questionnaire score of VKC in both the study groups. Also there was significant improvement in quality of life at 8 week, as assessed by QUICK questionnaire, in both the study groups when compared to the baseline. Both bepotastine besilate and olopatadine with ketorolac combination administered topically in eyes of patients suffering from VKC, were effective in improving quality of life. So, from present study it can be concluded that bepotastine and olopatadine with ketorolac combination, there was comparable improvement in QOL in both study groups. However, further multicentric studies with larger number of patients are required to reach any definate conclusion regarding superiority of individual drug regimen in patients of VKC.

Conflict Of Interest: None

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