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Evaluation of Central Corneal Thickness in Patients with Vernal Keratoconjunctivitis using Topical Steroids

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CONFLICT OF INTEREST
None declared.

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None declared.

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Original Research

ABSTRACT

Purpose: To assess the changes in central corneal thickness (CCT) in patients with VKC using topical steroids.
Methodology: A Qusai-Experimental study was conducted over six months at Sarwar eye care center in Lahore. A total of 34 VKC patients aged 5-25 years were recruited using purposive sampling. Patients underwent baseline evaluation, including history, symptom documentation, and CCT measurement via pachymetry. Topical steroids (e.g, dexamethasone/prednisolone) were prescribed based on disease severity. Follow-up CCT assessments were done at 1 and 3 months. VKC severity and treatment response were monitored throughout. Data were analyzed to assess CCT changes over time.
Results: Among34 vernal keratoconjunctivitis (VKC) patients (mean age: 16.26 years), the most common symptoms were itching with redness (29.4%), both steroids improved VKC severity, with Dexamethasone showing greater improvement (64.7%) compared to prednisolone (36.4%) by the third month. Central corneal thickness (CCT) decreased significantly in both groups; however, Dexamethasone caused a more pronounced thinning (OD:-33.8µm;OS:-30.12µm) then prednisolone (OD: -5.29µm ;OS: -5.99µm). Statistical test confirmed significant CCT changes over time (P<0.001) within and between groups, suggesting better anti-inflammatory efficacy of dexamethasone but a safer corneal profile with prednisolone.
Conclusion: Prednisolone provides safer corneal outcomes with moderate clinical improvement, while dexamethasone is more prosperous in lowering the severity of VKC but results in considerable corneal thinning.

KEYWORDS Vernal Keratoconjunctivitis, Central corneal thickness, Steroids, Dexamethasone, Prednisolon

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INTRODUCTION

The conjunctiva is a clear, thin covering that borders the front part of the sclera and the inside of the eyelids. It is divided into bulbar and palpebral portions. While the bulbar portion begins at the outermost part of the cornea and covers the visible portion of the sclera, the palpebral portion surrounds the inside of the eyelids. (1) Eye redness is frequently caused by conjunctivitis, which is why it is a prevalent complaint in emergency departments, urgent care facilities, and primary care health centers. (2)

An essential measurement that is frequently assessed in clinical ophthalmology practice, central corneal thickness (CCT) is used to diagnose and monitor eye conditions such glaucoma, keratoconus and corneal ectasia.(3) The most popular technique for CCT measurements is ultrasound pachymetry. An ultrasonic probe is directly applied to the anterior corneal surface to accomplish this.(4) Another method low-coherence interferometry is used in (OCT), a non-invasive, non-contact imaging technique. A moving reference arm creates depth profiles (A-scans) by scanning a beam for backscattered light from retinal layers. A B-scan is produced by transversely scanning many A-scans, producing high resolution 2D images of ocular structures. The retina, optic nerve, cornea and anterior chamber may all be thoroughly examined according to the 3D volumetric images produced by sequential B-Scans.(5) A non-invasive imaging method called specular microscopy uses light reflections from the inner corneal surface to assess the corneal endothelium.(6) Another one method a revolving camera, is used in Scheimpflug imaging to produce finely detailed cross-sectional pictures of the eye's anterior portion. This technique allows for accurate CCT measurement and thorough corneal topography study, making it easier to detect corneal curvature, thickness and elevation.(7). Factors affecting ethnicity research show that different populations have varying CCT. For instance, compared to people of European heritage, those of African descent frequently have thinner corneas.(8) Genetics certain disorders are associated with naturally thinner or thicker corneas, indicating that hereditary factors can affect corneal thickness.(9)

The chronic bilateral corneal and conjunctival condition known as vernal keratoconjunctivitis (VKC) usually affects young people. Itching, photophobia, lacrimation, white mucus discharge, a sense of a foreign body, and pain from corneal involvement of shield ulcers are the symptoms of VKC.(10) Depending on its anatomical location, VKC often manifests as one of three clinical characteristics. Limbal VKC is the common type (54%) and is more prevalent in hotter regions.(11) Less than 1% of eye disorders are caused by VKC, making it a very uncommon condition. The prevalence is predicted to be 3.2 per 10,000 people in Western Europe, with 0.8 per 10,000 people experiencing corneal problems.(12) The frequency among those under the age of 18 in the United States is 1.24 per 10,000. (13)Children and teenagers are the main victims of VKC and men are more likely to be affected than females. Adult cases have been reported, though and they frequently show up with more severe inflammation and a higher chance of developing conjunctival fibrosis. (14) A Th2-dominated immune response, which results in the generation of cytokines including IL-4, IL-5, and IL-13, is a characteristic of VKC. These cytokines aid in the inflammatory process by encouraging the synthesis of IgE and eosinophil activation. (15) This thorough overview provides a thorough explanation of the presentation of VKC by discussing the clinical symptoms, such as itching, photophobia, mucous discharge, and the presence of gigantic papillae. (10) This article discusses intense itching, photophobia, and repeated inflammatory flares as clinical signs and symptoms of VKC in adults. It also offers insights into the course of the disease and how it is managed in these patients. (14) Furthermore, discussing several therapeutic options, such as topical immunomodulators, gives a summary of the immunopathogenesis of VKC. (11)This review describes the clinical manifestation of VKC and provides information on contemporary treatment modalities with a focus on the function of mast cell stabilizers and antihistamines. (16)

METHODOLOGY

This quasi-experimental study was conducted at Sarwar Eye Care Center, Lahore, over six months and included children and young adults aged 5–25 years diagnosed with vernal keratoconjunctivitis (VKC). A sample size of 34 was calculated using G*Power based on a paired t-test (effect size 0.5, $\alpha = 0.05$, power 80%) and adjusted to 38 to account for a 10% dropout rate. Participants were selected using a non-probability purposive sampling technique, with defined inclusion and exclusion criteria.

Baseline assessment included demographic details, clinical history, VKC symptoms and signs, and confirmation of diagnosis using slit-lamp biomicroscopy. Central corneal thickness (CCT) was measured using ultrasound pachymetry, and details of topical steroid therapy (prednisolone or dexamethasone) were recorded. Disease severity was clinically graded, and intraocular pressure was monitored to detect steroid-related adverse effects.

Follow-up visits were conducted at one month and three months, during which CCT, VKC severity, and IOP were reassessed using the same methods. The primary outcome was the change in CCT from baseline to follow-up visits, while secondary outcomes included improvement in VKC severity and the correlation between changes in corneal thickness and disease severity.

RESULTS

The following section presents the findings from the evaluation of central corneal thickness in patients with vernal keratoconjunctivitis undergoing treatment with topical steroids. Descriptive statistics summarize the demographic characteristics and baseline measurements of the study participants, followed by an analysis of changes in CCT throughout the treatment period. Comparisons were made between baseline and follow-up measurements at one and three months to assess the effect of therapy on corneal thickness. The results also discovered the relationship between treatment regimens and changes in CCT to provide insights into the therapeutic response among these patients.

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ORIGINAL RESEARCH

Volume 4 | Issue 3 | 2026
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Normality of data was assessed through the Shapiro-Wilk test. Results indicated that the data were not normally distributed (P <0.05). This study was conducted on 34 patients, of whom 19(55.88%) were males and 15(44.12%) were females, as shown in Figure 1.

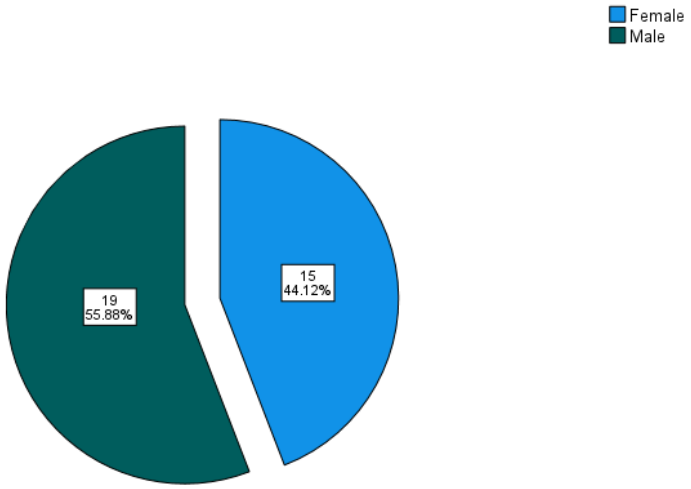

Figure No. 1: Gender Distribution Among Study Participants

This bar chart shows that the most commonly observed symptom pair was itching and redness, reported by 10 individuals (29.41%), followed by photophobia and tearing, noted in 8 cases (23.53%). Both itching with photophobia and the triad of redness, photophobia, and tearing were each reported by 6 individuals (17.65%), while the least frequent combination, redness, tearing, and discharge, occurred in 4 cases (11.76%).

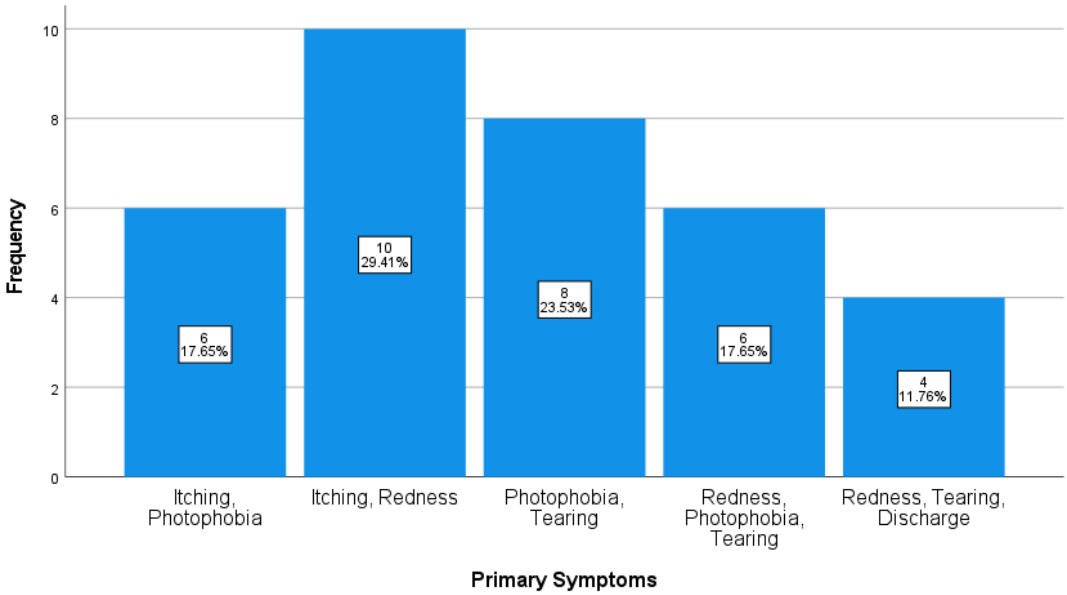

Figure No. 2: Distribution of Symptom Combinations Among Study Participants

In this study, the most frequently observed sign was Trantas dots, appearing alone in 10 individuals (29.41%). This was followed by the combination of Giant papillae with Trantas dots, reported in 8 cases (23.53%), and Limbal papillae alone, observed in 07 (20.59%) participants. Giant papillae alone were seen in 05 individuals (14.71%), while the least common combination, Limbal papillae with Trantas dots, was observed in 04 cases (11.76%).

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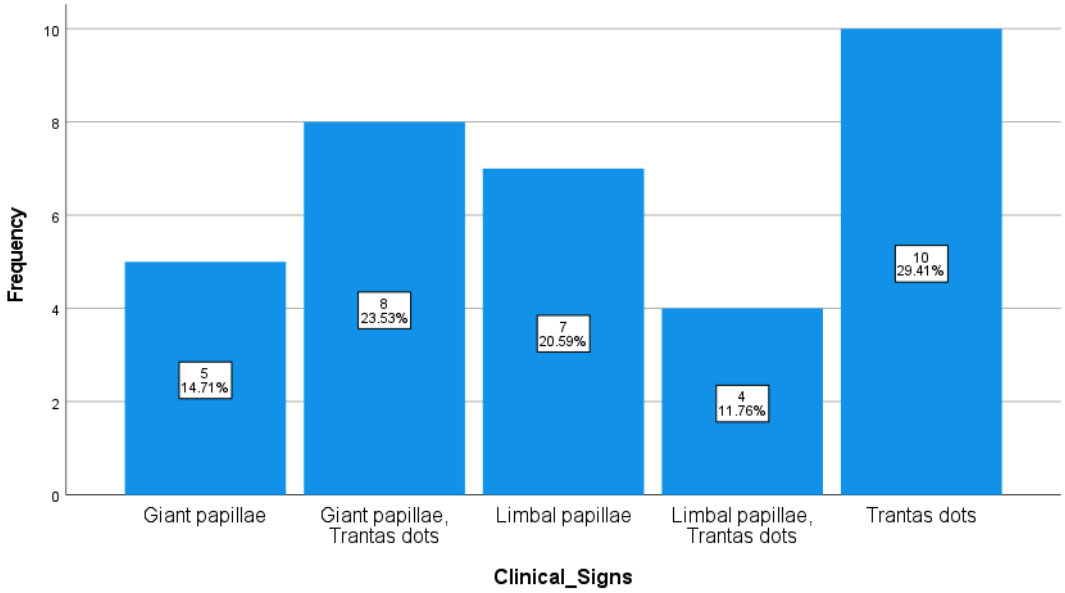

Figure No. 3: Distribution of Clinical Ocular Signs

Table No. 1: Descriptive Statistics of Demographic Characteristics and CCT Measurements in Patients with Vernal Keratoconjunctivitis

	N	Minimum	Maximum	Mean	Std. Deviation
Age	34	5	25	16.26	6.468
Baseline CCT OD	34	513.0	578.0	535.379	15.1703
Baseline CCT OS	34	512.0	577.0	534.791	14.8658
1st month Follow-up CCT OD	34	498	556	524.09	12.251
1st month Follow-up CCT OS	34	498	555	523.59	12.877
3rd month Follow-up CCT OD	34	489	543	515.91	14.220
3rd month Follow-up CCT OS	34	487	543	516.88	14.407
Change in CCT OD	34	-42.0	-2.0	-19.585	14.9552
Change in CCT OS	34	-39.0	-4.0	-18.056	12.5487

The study included 34 participants aged between 5 and 25 years, with a mean age of 16.26 years. Central corneal thickness in both eyes showed a consistent decrease over the follow-up period. In the right eye, the baseline mean CCT was 535.38 µm, which reduced to 524.09 µm at the 1st month follow-up and further to 515.91 µm by the 3rd month. Similarly, in the left eye, the mean CCT decreased from 534.79 µm at baseline to 523.59 µm at 1 month and 516.88 µm at 3 months. The mean change in CCT was –19.59 µm in the right eye and –18.06 µm in the left eye, indicating a significant reduction in corneal thickness over time. These findings suggest that the treatment resulted in progressive corneal thinning in both eyes, with a similar pattern of reduction observed across the group.

Table No.2: Comparison of Central Corneal Thickness and Changes in CCT Over Time Between Groups

Parameter	N	Dexamethasone Mean ± SD	Prednisolone Mean ± SD	P-value
Baseline CCT OD	17	543.53 ± 16.33	527.23 ± 8.19	0.001
Baseline CCT OS	17	540.59 ± 17.38	528.99 ± 9.07	0.020
1st Month CCT OD	17	524.82 ± 15.15	523.35 ± 8.88	0.732
1st Month CCT OS	17	521.82 ± 15.69	525.35 ± 9.45	0.733
3rd Month CCT OD	17	509.65 ± 16.09	522.18 ± 8.64	0.008
3rd Month CCT OS	17	510.47 ± 15.84	523.29 ± 9.48	0.009
Change in CCT OD (Baseline to 3rd Mo)	17	-33.88 ± 4.85	-5.29 ± 1.86	<0.001
Change in CCT OS (Baseline to 3rd Mo)	17	-30.12 ± 3.53	-5.99 ± 1.77	<0.001

A comparison was made by applying an independent sample t-test between groups. At baseline, the mean central corneal thickness in both eyes was significantly higher in the Dexamethasone group compared to the Prednisolone group, with statistically significant p-values for both OD (0.001) and OS (0.020). This suggests that the corneas of those in the Dexamethasone group were initially

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ORIGINAL RESEARCH
Volume 4 | Issue 3 | 2026
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thicker. There were no discernible variations in CCT between the two groups at the one-month follow-up, indicating that the initial effects of both steroids on corneal thickness were similar. However, by the 3rd month, significant differences emerged. The Dexamethasone group continued to show a notable decrease in CCT, whereas the Prednisolone group maintained more stable values. This was evident with p-values of 0.008 for OD and 0.009 for OS, reflecting a statistically significant difference favoring Prednisolone in terms of less corneal thinning.

Table No. 3: Change in Severity of Vernal Keratoconjunctivitis

Severity	1st Month Follow-up		Total	3rd Month Follow-up		Total
	Dexamethasone	Prednisolone		Dexamethasone	Prednisolone	
Improved	13(65%)	7(35%)	20(58.8%)	14(63.64%)	8(36.36%)	22(64.70%)
Unchanged	4(28.57%)	10(71.43%)	14(41.18%)	3(25%)	9(75%)	12(35.29%)
Total	17	17	34	17	17	34

The change in severity of VKC was assessed at the 1st and 3rd month follow-ups in both treatment groups. At the 1st month, 65% of patients in the Dexamethasone group showed improvement compared to 35% in the Prednisolone group, while 28.57% in the Dexamethasone group remained unchanged compared to 71.43% in the Prednisolone group. By the 3rd month, the proportion of improved cases increased slightly in both groups, with 63.64% improvement in the Dexamethasone group and 36.36% in the Prednisolone group. The number of unchanged cases decreased to 25% in the Dexamethasone group and 75% in the Prednisolone group. Overall, Dexamethasone showed a more favorable trend in improving VKC severity over time compared to Prednisolone.

Table No. 4: Comparison of Severity of Drugs

Parameter	Steroids	Mean Rank	U Value	p-value
Severity at 1st month	Dexamethasone	14.50	93.5	0.039*
	Prednisolone	20.50		
Severity at 3rd month	Dexamethasone	14.50	93.5	0.034*
	Prednisolone	20.50		

*shows significant p-values

The Mann-Whitney U test was applied to compare the effect of two steroid treatments, Dexamethasone and Prednisolone. The results indicated that the severity scores at the 1st month and 3rd months were significantly lower in the Dexamethasone group compared to the Prednisolone group ($p = 0.039$ and 0.034, respectively), indicating more effective inflammation control with Dexamethasone.

Table No. 5: Comparison of Central Corneal Thickness within Groups in Right Eye

Eyes	CCT Measurements	Mean Rank	p-value
Dexamethasone	Baseline	3.00	< 0.001
	1st Month Follow-up	2.00	
	3rd Month Follow-up	1.00	
Prednisolone	Baseline	2.94	< 0.001
	1st Month Follow-up	1.88	
	3rd Month Follow-up	1.18	

A within-group comparison of central corneal thickness in the right eye revealed a significant reduction over time for both the Dexamethasone and Prednisolone groups ($p < 0.001$ for both). Patients who used the drug Dexamethasone had decreased mean ranks from 3.00 at baseline to 2.00 at the 1st month and 1.00 at the 3rd month, indicating a consistent and significant decline in CCT. Similarly, patients taking the Prednisolone drug showed a reduction from a mean rank of 2.94 at baseline to 1.88 at the 1st month and 1.18 at the 3rd month. These findings suggest that both treatments effectively reduce corneal thickness over time, with a slightly more marked effect observed in the Dexamethasone group.

Table No. 6: Comparison of Left Eye Central Corneal Thickness by Group

Eyes	CCT Measurements	Mean Rank	p-value
Dexamethasone	Baseline	3.00	< 0.001
	1st Month Follow-up	1.53	
	3rd Month Follow-up	1.47	
Prednisolone	Baseline	3.00	< 0.001
	1st Month Follow-up	1.44	
	3rd Month Follow-up	1.56	

The central corneal thickness in the left eye decreased statistically significantly over time in both the Dexamethasone and Prednisolone steroids, according to a within-group comparison ($p < 0.001$ for both). The mean rank of the Dexamethasone-using patients dropped from 3.00 at baseline to 1.53 at the first month and 1.47 at the third, suggesting a steady decline in CCT. Comparably, the Prednisolone group's score decreased from 3.00 at baseline to 1.44 at the first month, then slightly increased to 1.56

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ORIGINAL RESEARCH
Volume 4 | Issue 3 | 2026
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at the third month. These findings imply that over time, both steroids considerably lower CCT in the left eye, with the Dexamethasone group showing a more steady pattern of decline.

DISCUSSION

In this study, patients with vernal keratoconjunctivitis (VKC) had their central corneal thickness (CCT) and disease severity evaluated in relation to topical steroids. Over the course of the three-month treatment period, both the Dexamethasone and Prednisolone groups demonstrated a progressive decrease in CCT; however, the degree of thinning differed considerably between the two medications. The Dexamethasone group had a significantly higher mean CCT at baseline than the Prednisolone group (OD: 543.53±16.33µm vs 527.23±8.19µm, p=0.001; OS: 540.59±17.38µm vs 528.99±9.07µm, p=0.020).

By the third month, dexamethasone-treated eyes experienced a markedly greater reduction in CCT compared to prednisolone, with highly significant differences ($p<0.001$). Within-group analyses confirmed a statistically significant reduction in CCT over time for both drugs ($p<0.001$), although the thinning effect was more pronounced and progressive in the dexamethasone group. Regarding clinical severity, 65% of patients on Dexamethasone improved at 1 month compared to 35% on prednisolone, and improvement increased slightly by the third month (63.64% vs 36.36%). The Mann-Whitney U test demonstrated that Dexamethasone achieved significantly lower severity scores at both follow-ups (p=0.039 at 1 month; p=0.034 at 3 months), suggesting superior anti-inflammatory efficacy.

These findings indicate that while dexamethasone provides better short-term control of VKC symptoms, it also induces significantly greater corneal thinning, which may increase the risk of long-term structural complications. Prednisolone showed a safer profile on corneal thickness, making it better for long-term use in young patients, despite being marginally less effective at reducing inflammation. A study was investigated by Rajeesh Singh et al. in 2024. Finding out how patients with vernal keratoconjunctivitis (VKC) altered in terms of central corneal thickness (CCT) was the aim of the current study. The study was carried out at the Department of Ophthalmology, a tertiary healthcare facility, and the analysis group comprised 100 eyes from VKC patients. The VKC group's mean CCT of 490.9± 20.7 was significantly lower than the control group's mean CCT of 545.30± 30.20. (17)

The goal of the cross-sectional, comparative study conducted by Wan Mohd Mohd-Alif et al. in 2024 was to assess corneal topographic indices and CCT in Malaysian children suffering from vernal keratoconjunctivitis (VKC) and compare them across different disease severity classes. 83 children with VKC and 83 healthy subjects were enrolled in the study. A Placido disc corneal analyzer was used to produce corneal topography the CCT measurement was taken using an ultrasonic pachymeter during the participant's comprehensive ocular examination. The results demonstrated significant changes in both CCT and corneal topography factors that connect VKC patients and healthy indiviuals ($p<0.05$). In comparison to the mild to moderate group, the severe-to-very severe VKC group had the thinnest mean CCT ($p<0.05$).(18) Prandhnya Sen et al in 2019 a serious consequence of the common and frequently unsupervised use of topical steroids in children with vernal keratoconjunctivitis (VKC) is steroid-induced glaucoma. A prevalence of 3.3% was found in a study of 1,423 VKC patients, of whom 240 used steroids without a prescription and 47 patients 92 eyes developed steroid-induced glaucoma.(19)

CONCLUSIONS

According to the study findings, prednisolone and dexamethasone both decreased central corneal thickness and VKC severity over time. In contrast to prednisolone, Dexamethasone had superior overall results in reducing inflammation and preserving corneal stability. These results imply that for VKC patients undergoing topical steroid therapy, dexamethasone would be a better course of action.

REFERENCES

1. Azari AA, Barney NP. Conjunctivitis. JAMA Ophthalmol. 2013;16:1721–9.
2. Azari AA, Barney NP. Conjunctivitis: a systematic review of diagnosis and treatment. JAMA. 2013;310(16):1721-9.
3. Simsek C, Kaya C, Karalezli A. Comparison of Central Corneal Thickness Measurements with Four Different New Devices and Ultrasound Pachymetry. Turk J Ophthalmol. 2022;52(5):318-23.
4. Khaja WA, Grover S, Kelmenson AT, Ferguson LR, Sambhav K, Chalam KV. Comparison of central corneal thickness: ultrasound pachymetry versus slit-lamp optical coherence tomography, specular microscopy, and Orbscan. Clin Ophthalmol. 2015;9:1065-70.
5. Alexopoulos P, Madu C, Wollstein G, Schuman JS. The Development and Clinical Application of Innovative Optical Ophthalmic Imaging Techniques. Front Med (Lausanne). 2022;9:891369.
6. Kaur K, Gurnani B. Specular Microscopy. StatPearls. Treasure Island (FL)2025.
7. Baradaran-Rafii A, Motevasseli T, Yazdizadeh F, Karimian F, Fekri S, Baradaran-Rafii A. Comparison between Two Scheimpflug Anterior Segment Analyzers. J Ophthalmic Vis Res. 2017;12(1):23-9.
8. Wang SY, Melles R, Lin SC. The impact of central corneal thickness on the risk for glaucoma in a large multiethnic population. J Glaucoma. 2014;23(9):606-12.
9. Silva FD, M Linhares JM, L, Madalena What intrinsic factors affect the central corneal thickness? Ophthalmic Physiol Opt. 2025;45(1):315-32.
10. Bruschi G, Ghiglioni DG, Cozzi L, Osnaghi S, Viola F, Marchisio P. Vernal Keratoconjunctivitis: A Systematic Review. Clin Rev Allergy Immunol. 2023;65(2):277-329.

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INSIGHTS-IJHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

ORIGINAL RESEARCH

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ISSN: 3007-2948

11. Doan S, Papadopoulos NG, Lee JK, Leonardi S, Manti S, Lau S, et al. Vernal keratoconjunctivitis: Current immunological and clinical evidence and the potential role of omalizumab. World Allergy Organ J. 2023;16(6):100788.
12. Bremond-Gignac D, Donadieu J, Leonardi A, Pouliquen P, Doan S, Chiambarretta F, et al. Prevalence of vernal keratoconjunctivitis: a rare disease? Br J Ophthalmol. 2008;92(8):1097-102.
13. Steven B, Shannon B, Katz J. Epidemiology of Vernal Keratoconjunctivitis in the United States: A Claims Data Analysis. nvestigative Ophthalmology & Visual Science 2020;61(7).
14. Di Zazzo A, Zhu AY, Nischal K, Fung SSM. Vernal keratoconjunctivitis in adults: a narrative review of prevalence, pathogenesis, and management. Front Ophthalmol (Lausanne). 2024;4:1328953.
15. Leonardi A. Vernal keratoconjunctivitis: pathogenesis and treatment. Prog Retin Eye Res. 2002;21(3):319-39.
16. Mehta JS, Chen WL, Cheng ACK, Cung LX, Dualan IJ, Kekunnaya R, et al. Diagnosis, Management, and Treatment of Vernal Keratoconjunctivitis in Asia: Recommendations From the Management of Vernal Keratoconjunctivitis in Asia Expert Working Group. Front Med (Lausanne). 2022;9:882240.
17. Singh R, Boriya A, Bandil Y. To Study the Change in Central Corneal Thickness in Patients with Vernal Keratoconjuctivitis (VKC) in a Tertiary Health Care Centre (Vindhya Region MP). International Journal of Toxicological and Pharmacological Research. 2024;14(4):72-4
18. Mohd-Alif WH, Tengku Norina TJ, Shatriah I. Central corneal thickness and topographic indices in Malaysian children with vernal keratoconjunctivitis. Med J Malaysia. 2024;79(4):375-9.
19. Sen P, Jain S, Mohan A, Shah C, Sen A, Jain E. Pattern of steroid misuse in vernal keratoconjunctivitis resulting in steroid induced glaucoma and visual disability in Indian rural population: An important public health problem in pediatric age group. Indian J Ophthalmol. 2019;67(10):1650-5.

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