

**MANAGING VERNAL KERATOCONJUNCTIVITIS IN CHILDREN WITH PRECISION
MEDICATION: CASE REPORT AND LITERATURE REVIEW****Peggy Luisananda Dyarangi¹, Oktarina Nila Juwita^{2*}**¹Faculty of Medicine, Tarumanagara University, Jakarta²Ophthalmologist, RSUD RAA Soewondo Pati, Central Java

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Doi: <https://doi.org/10.33024/mnj.v5i12.12813>**ABSTRACT**

Vernal Keratoconjunctivitis is a chronic inflammatory condition that primarily affects the conjunctiva of both eyes. It is characterized by recurrent episodes of inflammation, often following a seasonal pattern, and is the result of a Type I hypersensitivity reaction. This condition is associated with specific clinical features, including the hypertrophy of papillae in the tarsal conjunctiva and limbus. There are two distinct forms of vernal conjunctivitis, the palpebral and limbal types, each presenting with its own set of clinical features and management considerations. In the case at hand, a 6-year-old male patient presented with active vernal conjunctivitis that had persisted continuously for the past four months. Despite receiving treatment with topical anti-inflammatory eye drops aimed at stabilizing the inflammatory response, the patient's condition did not show significant improvement. The diagnosis of vernal conjunctivitis was established through a thorough patient history evaluation. Additionally, an ophthalmological examination revealed clinical signs, such as ciliary injection (+), hyperemia (+), and pseudogerontoxon (+) in both eyes, further confirming the diagnosis. The management for patient during the acute phase of the disease included the administration of mast cell stabilizers. Topical corticosteroids were also considered to address the inflammation and alleviate the patient's symptoms. The combined therapy approach involving topical mast cell stabilizers and topical corticosteroids ultimately led to a noticeable improvement in the patient's clinical condition and relief from the troublesome symptoms of vernal conjunctivitis. This multidisciplinary management approach highlights the importance of tailoring treatment to the individual patient's needs, considering both the acute and long-term aspects of this chronic ocular condition.

Keywords: Vernal Keratoconjunctivitis, Mast Cell Stabilizers, Topical Corticosteroids, Chronic Ocular Disorder.

INTRODUCTION

Vernal keratoconjunctivitis (VKC) is a recurrent allergic inflammation affecting both eyes concurrently. The condition often exhibits periodicity and tends to display seasonal recurrences,

initially peaking during the spring and summer months. Gradually, VKC may progress to a year-round manifestation. VKC belongs to the category of allergic conjunctivitis. It is a prevalent atopic ailment typified

by the presence of limbal papillae (Horner-Tranta dots) in various papillary, limbal, and mixed forms. Itching is the most consistent symptom, and episodes of the condition tend to reoccur, primarily presenting as perennial at the outset and evolving into a chronic state over time. (Saha et al., 2023; Zicari et al., 2019) Males are more frequently affected than females. Histopathological analysis of conjunctival secretions reveals the presence of eosinophils. The standard treatment approach involves the use of topical antihistamines and mast cell inhibitors, with the potential necessity of topical steroids to manage acute episodes. This discourse explores the diverse clinical manifestations, diagnostic evaluation, and therapeutic strategies for vernal keratoconjunctivitis. It also elucidates the collaborative role of an interprofessional healthcare team in caring for patients afflicted by this condition. In our specific case, vernal keratoconjunctivitis has recurred in both eyes, despite the use of ocular drops aimed at stabilizing the inflammatory process. (Micera et al., 2016; Oray & Toker, 2013) The primary aim of this article is to raise awareness about the importance of diligently enforcing the diagnosis of this illness, thereby mitigating the risk of

exacerbation and further complications.

CASE REPORT

A 6-year-old male juvenile presented himself at the ophthalmology clinic situated within RSUD RAA Soewondo Pati. He presented a chief concern of persistent and intense bilateral ocular pruritus over the preceding four months. The patient's discomfort was accompanied by a discoloration of a yellowish-brown hue in both ocular globes, as well as notable ocular erythema. Furthermore, the patient reported episodic sensations of stinging and ocular dryness in both eyes. As conveyed by the patient's maternal figure, the ocular pruritus symptoms typically emerged following exposure to environmental dust and solar radiation. Prior to this consultation, the patient had sought medical attention from a general practitioner and had habitually administered ophthalmic drops aimed at modulating inflammatory responses. Regrettably, these interventions failed to yield substantial amelioration of the documented symptoms. The patient specifically denied the presence of additional ocular complaints, including visual disturbances, ocular pain, photophobia, cephalalgia, or ocular discharge.



Figure 1. Clinical sign of the patient's eyes (siliar injection, hyperemia, pseudogerontoxon)

Upon ophthalmological assessment, the patient displayed clinical indicators of siliar injection (+), hyperemia (+), and the presence of pseudogerontoxon (+) in both eyes. These findings collectively suggested signs of ocular inflammation and a manifestation of age-related changes in the corneal tissue. Notably, other aspects of the ophthalmic examination, such as visual acuity, intraocular pressure, and the examination of the optic disc and retina, fell within the established norms, indicating the absence of severe structural or functional abnormalities beyond the surface-level symptoms. In response to the clinical presentation, the patient was prescribed a therapeutic regimen. This included the administration of Fluoromethlone 0.1%, a corticosteroid known for its potent anti-inflammatory properties, and Cromolyn Sodium, which is recognized for its mast cell

stabilizing effects. Both medications were selected to address the ocular inflammation and pruritus that had been troubling the patient.

Subsequent follow-up examinations revealed a favorable outcome. The patient's initial complaints of ocular discomfort, itching, and associated signs of inflammation, such as siliar injection and hyperemia, had significantly improved. This positive response to the prescribed treatment regimen underscored the effectiveness of Fluoromethlone and Cromolyn Sodium in managing the patient's condition. The successful alleviation of symptoms and the reduction of ocular inflammation demonstrate the importance of accurate diagnosis and appropriate therapeutic interventions in ophthalmological care, ultimately improving the patient's overall ocular health and well-being.

DISCUSSION

Vernal keratoconjunctivitis (VKC) is a recurrent, bilateral ocular disorder that predominantly affects males and typically emerges after the age of five. In many cases, VKC exhibits a tendency to remit over time, often resolving by the time the affected individual reaches puberty. However, in some instances, it can progress to atopic keratoconjunctivitis. VKC is more prevalent in regions characterized by warm and arid climates and often displays a distinct seasonal variation, with the highest incidence occurring during the spring and summer months.(Brindisi et al., 2021; Labib et al., 2020) In some cases, these seasonal symptoms can transition into a year-round, or perennial, pattern, with the likelihood of persistence increasing as the disease progresses. Individuals

with VKC often have a history of atopy, and a positive family history of atopy can be found in nearly 49% of cases, implying a genetic predisposition. Besides personal and familial allergic tendencies, additional risk factors include male gender, close contact with animals, and heightened exposure to dust and sunlight.(Eltagoury et al., 2022; Oray & Toker, 2013)

The clinical manifestation of VKC is characterized by the presence of multiple papillae in the upper tarsal conjunctiva. The underlying pathological process involves hyperplasia of the conjunctival epithelium, leading to the formation of projections into the subepithelial tissue. Eosinophils, plasma cells, lymphocytes, and histiocytes infiltrate the adenoid layer, and fibroblasts undergo proliferative

changes, followed by hyaline transformations. These factors contribute to the inflammatory process and tissue remodeling, culminating in the development of the characteristic giant papillae seen in VKC. (Addis & Jeng, 2018; Nguyen et al., 2023)

The management of VKC depends on the extent and severity of the disease at the time of diagnosis. Treatment approaches can range from conservative measures to surgical interventions. Conservative treatment is the initial step involves attempting to eliminate potential allergens from the patient's environment. Cold compresses can provide soothing relief, while lid scrubs are a primary treatment option. Wearing dark goggles can help reduce glare and photophobia, as well as prevent exposure to environmental allergens. In refractory cases, patients may be advised to relocate from hot, dusty areas to cooler climates. (Chigbu & Labib, 2021; Leonardi, 2013) In cases of moderate severity, medical intervention entails the administration of topical mast cell stabilizers such as sodium cromoglycate (2%), sodium nedocromil (2%), and lodoxamide, complemented by topical antihistamine eye drops that target H1 receptors, such as olopatadine and alcaftadine. (Nebbioso et al., 2018; Zicari et al., 2019) Alternatively, topical corticosteroids, with a preference for low-absorption varieties like fluorometholone, loteprednol, and remexolone, can be considered as safe therapeutic options. For severe cases, more potent alternatives like dexamethasone or betamethasone may be necessary. Vigilant monitoring of intraocular pressure is imperative when employing topical steroids, and a gradual tapering of the treatment regimen is often

indicated. (Eltagoury et al., 2022; Saha et al., 2023)

In our case, the patient initially demonstrated limited responsiveness to mast cell stabilizer eye drops. Despite the initial implementation of these eye drops, the patient's symptoms persisted, suggesting an inadequate control of the underlying condition. Given this situation, a therapeutic intervention was necessitated to address the persistent ocular symptoms and improve the patient's overall ocular health. Subsequently, a decision was made to introduce topical corticosteroids as an alternative treatment approach. The rationale behind this decision was based on the potential of corticosteroids to exert a more profound anti-inflammatory effect, which might be more efficacious in alleviating the patient's symptoms. The introduction of topical corticosteroids marked a significant turning point in the patient's treatment journey, as it resulted in a substantial improvement in the patient's ocular condition. Following the initiation of topical corticosteroids, the patient experienced a marked reduction in their ocular symptoms. This included relief from ocular discomfort, itching, redness, and swelling, all of which had previously posed significant challenges to the patient's overall well-being. The observed improvement can be attributed to the potent anti-inflammatory properties of corticosteroids, which effectively addressed the underlying inflammation contributing to the patient's ocular distress. The positive response to topical corticosteroid treatment underscores the importance of individualized and adaptable medical management. In cases where initial therapeutic

interventions prove insufficient, it is essential to explore alternative treatment strategies to achieve optimal patient outcomes. In this instance, the judicious introduction of topical corticosteroids played a pivotal role in enhancing the patient's quality of life by effectively managing their ocular symptoms and addressing the underlying condition. This case serves as a valuable reminder of the importance of clinical flexibility and evidence-based decision-making in the management of ocular health. (Dahlmann-Noor et al., 2023; Mohan et al., 2023)

CONCLUSION

In conclusion, Vernal keratoconjunctivitis (VKC) is a complex and recurring ocular disorder that predominantly affects males, often emerging in childhood and displaying a variable course that can extend into adulthood. Effective management of VKC requires a comprehensive understanding of the disease's pathophysiology and its progression. In the case presented, conservative measures were insufficient, and the patient's persistent and severe ocular symptoms necessitated a transition to topical corticosteroid treatment. This approach successfully alleviated the patient's discomfort and improved ocular health, highlighting the importance of individualized and adaptable medical management. In the broader context of VKC, this case emphasizes the need for healthcare professionals to remain vigilant and flexible in their approach to ocular conditions, adapting treatment strategies as needed to optimize patient outcomes. As we continue to study and treat VKC, it is crucial to explore both conservative and advanced therapeutic options, ultimately aiming to enhance the

overall well-being of patients affected by this challenging ocular condition.

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