

Journal Scans

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EFFECTIVENESS OF CORTICOSTEROID-SPARING TOPICAL TREATMENTS FOR VERNAL KERATOCONJUNCTIVITIS IN CHILDREN: A REPORT BY THE AMERICAN ACADEMY OF OPHTHALMOLOGY

Cavuto KM, Oatts JT, Nallasamy S, Prakalapakorn SG, Collins ME, Trivedi RH, Pineles SL, Chang MY. . *Ophthalmology*. 2026 Jun;133(6):764-774. doi: 10.1016/j.ophtha.2026.01.025. Epub 2026 Mar 9. PMID: 41801166.

QUESTION

What does the published literature show regarding the efficacy of corticosteroid-sparing topical treatments for vernal keratoconjunctivitis in children 18 years of age and younger?

BACKGROUND/SUMMARY OF FINDINGS

Vernal keratoconjunctivitis (VKC) is a chronic allergic ocular surface disorder found with an overall prevalence of 1.99 per 10,000 children and ranging from less than 2 per 10,000 in the United States to up to approximately 11% in regions of Africa and India. The underlying etiology of VKC is thought to be a combination of an immunoglobulin E (IgE)- and non-IgE-mediated allergic disease and may occur in the presence or absence of systemic allergic conditions such as asthma, eczema, or rhinitis. Although the disease tends to resolve as patients age, symptoms can interfere with daily life. Untreated ocular surface manifestations can result in permanent visual impairment from corneal ulceration, scarring, and the development of keratoconus, making adequate and timely treatment important.

Treatment of VKC corresponds to the severity of the disease with a stepwise approach based on signs and symptoms. Treatment may involve cool compresses, topical mast cell stabilizers, topical and oral antihistamines, topical combined mast cell stabilizer/antihistamine, topical corticosteroid, or topical immunomodulators. Although mast cell stabilizers, antihistamines, and combined mast cell stabilizer-antihistamine treatments can provide some relief of symptoms, their effect is often limited due to the complex underlying immune pathophysiology that causes VKC. Topical corticosteroids are useful but limited by their side-effect profile, including the risks of glaucoma and cataract, as well as the risk of potentiating infectious keratitis. Mast cell stabilizers and antihistamines limit or block the effects

of inflammatory mediators such as histamine. Immunomodulators, such as the calcineurin inhibitors tacrolimus and cyclosporine A, have been used to inhibit T-cell activation, a key part of the inflammatory process in VKC. Despite the availability of various treatment modalities, no single agent or treatment regimen is considered the standard of care.

Cavuto et al conducted a literature search of the PubMed database and limited the search to articles

published in English without date restrictions, all prior to August of 2025. The search yielded 56 articles, which were reviewed by the primary author in abstract form; 24 were selected for full-text review. Fifteen articles met the inclusion criteria and were assigned a level of evidence rating by the panel methodologist. Six studies were rated level I, and 9 studies were rated level III. Level I evidence evaluated the efficacy of cyclosporine (4/6), tacrolimus (4/6), interferon alpha-2b (1/6), and sodium cromoglycate (1/6) ophthalmic preparations. Most level III evidence studies (5/9) reported outcomes using tacrolimus drops or ointment. Regardless of the medication, concentration, dosing frequency, or treatment duration, level I and level III evidence included in the assessment demonstrated that signs and symptoms of VKC in children can be improved with intervention with corticosteroid sparing agents. Most level I evidence supported the use of calcineurin inhibitors-cyclosporine and tacrolimus. Apart from application site discomfort, the studies reported no significant adverse events

CLINICAL VALUE/IMPLICATIONS

Although typically self-limiting, VKC and the traditional use of steroids can potentially be visually devastating and impair health related quality of life in children affected. Corticosteroid sparing agents can provide a valuable alternative to steroids and are supported by level I evidence. Mitigating negative side effects of treatment can reduce burden and steroid alternatives should be considered in patients with VKC.

CHARACTERIZATION OF RETINAL MICROVASCULAR CHANGES IN OBSTRUCTIVE SLEEP APNEA USING OCT ANGIOGRAPHY: DATA FROM THE OBSTRUCTIVE SLEEP APNEA AND RETINAL MICROVASCULAR NETWORK STUDY

Germanese C, Georges M, Bonniaud P, Goueslard K, Arnould L, Creuzot Garcher C, Gabrielle PH. *Ophthalmology*.

2026 Jun;133(6):742-754. doi: 10.1016/j.opht.2026.01.030. Epub 2026 Feb 2. PMID: 41638537.

QUESTION

Are retinal microvascular characteristics in individuals with obstructive sleep apnea syndrome different than obstructive sleep apnea syndrome-free controls? Do baseline microvascular characteristics change after intervention with continuous positive airway pressure treatment is initiated?

BACKGROUND/SUMMARY OF FINDINGS

Obstructive sleep apnea syndrome (OSAS) is characterized by repeated episodes of upper airway obstruction during sleep, leading to intermittent hypoxia and sleep fragmentation. It affects approximately 936 million people, mainly adults aged 36 to 69 years, with a higher prevalence in men than women, with future estimates predicting 54% of the global population could be affected due to rising obesity and aging. OSAS is associated with increased risk of hypertension, cardiovascular diseases, stroke, and metabolic disorders such as diabetes. Although the underlying changes in microvasculature observed in OSAS are poorly understood, OSAS is linked to several ocular vascular diseases, including nonarteritic anterior ischemic optic neuropathy, glaucoma, and diabetic retinopathy. Repeated apneic events can cause temporary hypoxemia and elevate vascular resistance, which leads to hypoperfusion of the optic nerve head and reduced retinal blood flow. OCT-angiography studies have shown conflicting results regarding peripapillary and retinal microvascular changes in patients with OSAS, and none have explored whether microvascular characteristics are influenced by the initiation of continuous positive airway pressure (CPAP) treatment.

A total of 162 participants, including 82 with OSAS and 80 healthy controls, were analyzed in a single-center, prospective cohort study. Among the OSAS participants, 63 received CPAP therapy. Retinal vessel density (VD) and perfusion density (PD) were quantified in the superficial capillary plexus

(SCP) and deep capillary plexus (DCP), as well as the foveal avascular zone (FAZ) and peripapillary region. Multi-variable mixed-effects models were used to compare OCT-A parameters between groups, adjusting for age, sex, axial length, hypertension, diabetes, smoking, and vascular diseases. Changes in microvascular parameters associated with CPAP use were evaluated at 3 to 6 months and 18 to 24 months of follow-up. The primary outcome was the comparison of retinal microvascular parameters between OSAS participants and OSAS-free controls. Secondary outcomes included microvascular parameters across OSAS severity groups and longitudinal changes after CPAP therapy

At baseline, OSAS participants exhibited a significant reduction in retinal VD and PD in the DCP compared with OSAS-free controls (β [95% confidence interval] = -0.724 [-1.352 to -0.096], $P = .024$ and -0.020 [-0.033 to -0.007], $P = .03$, respectively). No significant differences were observed in the SCP, FAZ, or peripapillary regions. Patients with severe OSAS had similar microvasculature measurements as

those with mild and moderate disease. Retinal VD and PD remained overall similar after CPAP initiation throughout the follow-up when adjusted for treatment compliance.

CLINICAL VALUE/IMPLICATIONS

OSAS is a growing public health concern that affects many of our patients. This study illuminates the potential influence OSAS may play on retinal vasculature. Although on average initiation of treatment did not lead to increased microvasculature density, more adherent patients did show a modest increase in multiple parameters. Eye physician awareness of OSAS and its association with ocular disease, in this case retinal microvasculature, is warranted and should drive educating our patients with sleep apnea on the benefits of adherence to their CPAP therapy.

WHEN DRY EYE IS PAIN: FREQUENCY AND CHARACTERISTICS OF A PAIN PHENOTYPE

Mejía-Salgado G, Galor A, de-la-Torre A. . Ophthalmology. 2026 May 20:S0161-6420(26)00368-4. doi: 10.1016/j.opht.2026.05.020. Epub ahead of print. PMID: 42167612.

QUESTION

What is the frequency of a pain-predominant phenotype among patients diagnosed with dry eye disease and what are the clinical characteristics of those with that phenotype compared to sign-concordant dry eye disease?

BACKGROUND/SUMMARY OF FINDINGS

Dry eye disease (DED) is traditionally defined by the coexistence of symptoms and tear film abnormalities. However, this framework may group heterogeneous conditions under a single label, and the cutoff values used for both signs and symptoms are broad and variable. In clinical practice, patients with significant ocular discomfort but minimal objective findings may still be classified as having DED, reflecting the diagnostic challenges in borderline cases that meet commonly used thresholds despite limited evidence of ocular surface damage.

Emerging evidence highlights frequent discordance between symptoms and signs, suggesting that ocular symptoms, such as pain, may arise from mechanisms beyond the ocular surface, including neurosensory dysfunction. Identifying patients with a pain-predominant phenotype can prevent misclassification which otherwise might lead to prolonged, ineffective surface-directed therapies.

Aiming to report the frequency of a pain-predominant phenotype, Mejía-Salgado et al conducted a comparative cross-sectional analysis of patients evaluated between 2014 and 2022 at a tertiary dry eye diagnostic referral center in Bogotá, Colombia. DED diagnosis was based on clinician judgment, guided by a standardized clinical evaluation that integrated symptoms (Ocular surface disease index [OSDI] ≥ 13) and tear film parameters (including noninvasive tear break-up time (NITBUT) <10 seconds or Schirmer <10 mm/

5min, consistent with TFOS DEWS III. In real-world practice, this approach allows classification of patients with significant symptoms and borderline tear film parameters (eg, NITBUT 8–10 s or Schirmer 8–10 mm) as DED when no alternative explanation is identified. A pain-predominant phenotype was defined as: (1) clinician-diagnosed DED, (2) OSDI pain score ≥ 3 , (3) OSDI ≥ 23 , and (4) minimal signs (NITBUT >8 s, Schirmer >8 mm, and Oxford grade 0 staining).

Among 2761 patients, 189 (6.9%) met criteria for a pain-predominant phenotype, indicating that approximately 1 in 14 patients labeled as DED presents with severe symptoms despite minimal objective findings. Pain-predominant phenotype was more frequently female (93.7% vs 82.5%, $p < .001$) and older (59.5 ± 10.1 vs 51.7 ± 16.4 years, $p < .001$). Migraine (10.5% vs 1.9%) and psychiatric disorders (15.8% vs 3.2%) were markedly more prevalent (both $p < .001$) in this group, whereas Sjögren's disease (9.0% vs 14.2%, $p = .046$) and connective tissue diseases (3.7% vs 9.1%, $p = .012$) were less frequent. These findings highlight a strong association with systemic pain-related comorbidities and a lower prevalence of autoimmune conditions in the pain-predominant phenotype. The authors also noted that symptom burden was consistently higher across all OSDI domains in the pain-predominant group, particularly photophobia and pain-related descriptors, suggesting a broader sensory amplification rather than isolated dryness.

CLINICAL VALUE/IMPLICATIONS

Recognizing that a pain-predominant phenotype exists is an important first step when assessing presumed DED. Failure to accurately classify a pain-predominant phenotype may result in prolonged use of therapies that offer no benefit to our patients and just compounds their burden. The overlap between chronic pain disorders and a pain-predominant ocular phenotype, incorrectly labeled DED, offers an opportunity for the eye physician to drive multidisciplinary care that may improve not only the patient's ocular but systemic pain and can lead to an enormous impact on their quality of life.

RISK OF GLAUCOMA AND UNDERGOING GLAUCOMA SURGERY IN MYOPIC AND HIGHLY MYOPIC EYES

Akada M, Hata M, Kamei T, Kido A, Doi Y, Okayama W, Morino K, Nakano E, Numa S, Ikeda HO, Akagi T, Suda K, Niimi K, Ogino K, Oishi A, Kashiwagi K, Tamura H, Tsujikawa A, Miyake M. Risk of Glaucoma and Undergoing Glaucoma Surgery in Myopic and Highly Myopic Eyes: A Nationwide Population-Based Cohort Study. *Ophthalmology*. 2026 May;133(5):625-634. doi: 10.1016/j.ophtha.2025.12.025. Epub 2026 Jan 5. PMID: 41500270.

QUESTION

Is the risk for glaucoma development and the need for glaucoma surgery higher in myopic and highly myopic eyes?

BACKGROUND/SUMMARY OF FINDINGS

The link between myopia and glaucoma has been a topic of interest for many years. Myopia is one of the most prevalent ocular disorders and poses a significant public health challenge while glaucoma is one of the leading causes of irreversible vision loss worldwide. Understanding the link between these 2 conditions and the associated risk for glaucoma that the degree of myopia may pose can help treatment and management decisions for affected patients.

This retrospective observational study involved analysis of the National Database of Health Insurance Claims and Specific Health Checkups of Japan, which collects comprehensive medical insurance claims data for almost the entire population of Japan. This database has been used in numerous ophthalmic epidemiology and public health studies and is considered particularly reliable with regards to surgical procedure data.

Participants were classified into 3 groups based on refractive error status: nonmyopia, myopia, and high myopia (spherical equivalent worse than -6.00 diopters). The risk for glaucoma development and surgery for glaucoma over 7.5 years was assessed. Among the 13,204,347 participants in the database, 7,478,999 were identified as having any degree of myopia.

After adjusting for age, sex, diabetes, hypertension, and dyslipidemia, the hazard ratio for glaucoma developing was 1.44 for the myopia group and 2.67 for the high myopia group. With regards to glaucoma surgery, the adjusted hazard ratio was 1.71 for the myopia group and 3.7 for the high myopia group. The study also found an earlier onset of glaucoma in the myopia group as well as an association between increasing myopia severity and the risk of glaucoma onset. Specifically, the hazard ratio for filtering surgery such as trabeculectomy was 2.03 for the myopia group and 4.03 for the high myopia group.

CLINICAL VALUE/IMPLICATIONS

In this study from Japan, both myopia and high myopia significantly increased the risk for glaucoma development and the need for glaucoma surgery. Eyecare providers need to be vigilant and proactive in their glaucoma screening and management of glaucoma in patients with myopia, particularly those with prescription worse than -6.00 DS spherical equivalent.

CARDIOVASCULAR RISK AND EYE HEALTH: A COHORT STUDY OF THE POOLED COHORT EQUATIONS AND OCULAR DISEASE INCIDENCE

Sun D, Tseng VL, Yu F, Coleman AL. Cardiovascular Risk and Eye Health: A Cohort Study of the Pooled Cohort Equations and Ocular Disease Incidence. *Ophthalmology*. 2026 May;133(5):645-653. doi: 10.1016/j.ophtha.2025.12.021. Epub 2025 Dec 29. PMID: 41475545.

QUESTION

Is the Pooled Cohort Equations cardiovascular risk score, used in primary care settings, associated with future risk for age-related macular degeneration, glaucoma, diabetic retinopathy, retinal vein occlusion, and hypertensive retinopathy?

BACKGROUND/SUMMARY OF FINDINGS

The calculation of cardiovascular risk scores takes multiple systemic risk factors into a single metric and provides an assessment of overall primary care health. The Pooled Cohort Equations (PCE) is a well-established tool developed by the American College of Cardiology and the American Heart Association designed to predict 10-year risk of atherosclerotic cardiovascular disease. The score incorporates age, sex, blood pressure, cholesterol, diabetes history, and smoking status.

A total of 35,909 adults from the All of Us Research Program were included and needed to have completed variables for the PCE calculation within a 6-month period. Cardiovascular and ocular health share common risk factors including diabetes, hypertension, hyperlipidemia, and smoking. This study evaluated whether the PCE risk categories are associated with future development of ocular disease over 6 years of follow-up.

There were 4 PCE risk categories: low risk (<5%), borderline (5%-7.4%), intermediate (7.5%-19.9%), and high risk (>20%) for atherosclerotic cardiovascular disease. Higher PCE risk categories were significantly associated with increased risk for ocular diseases compared to the low-risk group. The hazard ratios for the high-risk group were 6.22 for age-related macular degeneration, 5.93 for diabetic retinopathy, 2.33 for glaucoma, 3.38 for retinal vein occlusions, and 4.47 for hypertensive retinopathy.

The low-risk group had a mean age of 50.6 years vs the high-risk group which had a mean age of 67.2 years. The low-risk group had a higher proportion of female cases (81.6%) compared to the high-risk group which had a higher proportion of male cases (66.9%). The low-risk group had the highest proportion of White individuals (67.6%) while the high-risk group had a higher proportion of Black individuals.

CLINICAL VALUE/IMPLICATIONS

In the All of Us population, the PCE cardiovascular risk score is associated with future risk for multiple ocular diseases, including age-related macular degeneration, diabetic retinopathy, glaucoma, retinal vein occlusions, and hypertensive retinopathy. Using readily available information, this risk score could be incorporated into routine practice in primary care and help to identify individuals who would benefit from earlier vision screening, evaluation, and prevention strategies as indicated. This is yet another study that underscores the important role that eyecare providers can play not only in ocular but systemic health through patient education and collaboration with primary care providers.

VITREOUS HEMORRHAGE DUE TO POSTERIOR VITREOUS DETACHMENT: INCIDENCE OF RETINAL DETACHMENT AND SPONTANEOUS CLEARANCE DURING OBSERVATION

Hasbolat H, Christensen UC, Lund-Andersen C. Vitreous Hemorrhage Due to Posterior Vitreous Detachment: Incidence of Retinal Detachment and Spontaneous Clearance during Observation. *Ophthalmology*. 2026 Apr;133(4):487-494. doi: 10.1016/j.ophtha.2025.11.014. Epub 2025 Dec 16. PMID: 41412389.

QUESTION

What is the natural course of vitreous hemorrhage due to posterior vitreous detachment?

BACKGROUND/SUMMARY OF FINDINGS

Three hundred sixty-six consecutive patients with vitreous hemorrhage secondary to posterior vitreous detachment were included in the retrospective chart review. Patients were followed for a minimum of 2 years until one of these outcomes occurred: spontaneous vitreous hemorrhage clearing, rhegmatogenous retinal detachment, vitrectomy for persistent vitreous hemorrhage, or referral to retinal service. Patients with history of proliferative diabetic retinopathy, retinal vein occlusion, or wet age-related macular degeneration were excluded.

Vitreous hemorrhage obscured the fundus in 295 of the 366 eyes (80.6%) with the hemorrhage clearing spontaneously without intervention in 62% of patients. Rhegmatogenous retinal detachment occurred in 17% of patients with a plateau at 20 days, suggesting that the risk for retinal detachment decreases significantly after 3 weeks. The risk of retinal detachment was significantly higher in men compared to women.

After 60 days, in approximately 48% of the eyes, the vitreous hemorrhage cleared spontaneously. After a mean duration of 98 days, 36 eyes did not have the hemorrhage clear and required vitrectomy. While this timeline suggests that clinicians should wait approximately 3 months to see if the vitreous hemorrhage will clear on its own, prolonged resolution of the bleeding may increase the risk for rhegmatogenous retinal detachment and make detecting retinal tears more challenging.

CLINICAL VALUE/IMPLICATIONS

Vitreous hemorrhage secondary to posterior vitreous detachment showed variable outcomes in this study but generally resolved spontaneously in many patients over a few months. Individuals presenting with vitreous hemorrhage due to posterior vitreous detachment are at significantly higher risk for a rhegmatogenous retinal detachment and need to be followed very closely, particularly during the first 3 weeks after onset. While most patients in the study were observed for approximately 3 months to allow for spontaneous clearance of the vitreous hemorrhage, clini-

cians should consider earlier surgical intervention or referral for individuals with myopia, history of retinal detachment, or history of cataract surgery in the same eye.

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CONFLICT OF INTEREST

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