Journal Highlights

NEW FINDINGS FROM THE PEER-REVIEWED LITERATURE

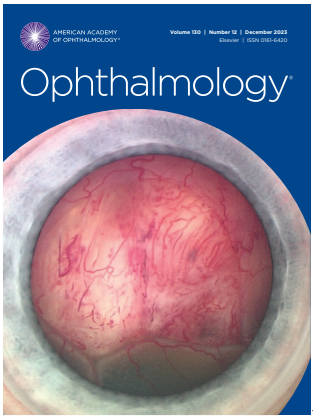
Ophthalmology

Selected by Russell N. Van Gelder, MD, PhD

COVID-19 Vaccination Does Not Raise Risk of New-Onset Uveitis

December 2023

New-onset cases of noninfectious uveitis (NIU) have been reported following COVID-19 vaccination in the United States. Using deidentified data from a claims database, **Kumar et al.** assessed the rates of NIU after COVID-19 vaccination in people aged ≥5 years who had no history of uveitis. The authors found no significant differences in NIU incidence between those who were vaccinated and those who were not.



The study cohort included 4.6 million people, half of whom had received the COVID-19 vaccine and half of whom had not. An NIU outcome event was defined as a diagnosis code for NIU recorded during a first or second visit to an ophthalmologist or optometrist *and* a filled prescription for a topical ophthalmic corticosteroid or local corticosteroid (injection/implant) within the seven days following initial diagnosis or the 30 days prior to diagnosis.

In the study period (December 2020 to November 2021), 254 NIU cases were recorded for the vaccinated group and 266 NIU cases for the unvaccinated group. The crude incidence rates were 47.1 per 100,000 person-years and 50.7 per 100,000 person-years, respectively. The unadjusted hazard ratio (HR) for NIU incidence in the vaccinated versus unvaccinated group was 0.92, and the adjusted HR was 0.91, indicating no difference in NIU incidence between the two groups. Increased risk of NIU in the vaccinated group was linked to use of immunomodulatory therapy (HR, 2.85).

The authors concluded that COVID-19 vaccination does not raise the risk of NIU in patients without a uveitis history. They emphasized that future studies of this potential relationship be focused on patients who do have a history of NIU.

—Summary by Stephanie Leveene, ELS

Neuro-Ophthalmology Consults Are in High Demand

December 2023

Prompt assessment of neuro-ophthalmology concerns is crucial for achieving the best outcomes for patients, yet the highly specialized field of neuro-ophthalmology is experiencing a shortage of trained subspecialists. In a prospective quality-improvement study, **Smolar et al.** studied neuro-ophthalmology consultation requests at a large academic referral center in the United States to better understand current consultation needs and trends. They found that many cases were highly complex. Moreover, two-thirds of patients received a diagnosis of active neuro-ophthalmologic disease, most of whom required subsequent follow-up.

For this study, the authors reviewed all neuro-ophthalmology consultation requests for adults seen at their facility between Jan. 1, 2022 and Jan. 1, 2023. The data collected included patient demographics, distances traveled, consultation patterns, disease complexity, diagnoses, and follow-up.

Overall, 494 consultations were requested. Emergency department (ED) consultations accounted for 65% of requests; the remaining 35% were for inpatients. The mean age of patients was 48 years, and 64% were women. Patients often traveled long distances for their consultation (mean, 65 miles [inpatient] and 51 miles [ED]). Nearly half of all consultations (49%) occurred outside standard business hours, but only 25% of these were considered truly urgent.

Most patients presented with a clear neuro-ophthalmologic question or reason for their consultation (91% of inpatients, 65% of ED patients), and many had previously seen at least one external provider for the same chief symptom. All inpatient consultations and most ED consultations were ranked as highly complex to assess. After evaluation, 67% of all patients were confirmed to have active neuro-ophthalmologic disease. Idiopathic

intracranial hypertension (17%) and optic neuritis (11%) were the top two ED diagnoses. The most common inpatient diagnosis was vision-affecting intracranial mass (22%). Ultimately, 61% of patients received a life- or vision-threatening final diagnosis. Outpatient neuro-ophthalmology follow-up was required for 59% of patients.

The authors suggested that improving access to outpatient neuro-ophthalmologists and telehealth programs, and developing hospital protocols specific to neuro-ophthalmologic care, may help to relieve some of the observed consultation burden.

—Summary by Lauren Jarem, MS

Academy Assesses Thermal Pulsation for MGD and Dry Eye

December 2023

The Academy has released an *Ophthalmic Technology Assessment (OTA)* on the safety and efficacy of thermal pulsation for the treatment of meibomian gland dysfunction (MGD) and dry eye. After reviewing the available English-language literature, **Tao et al.** concluded that a single thermal pulsation session may improve subjective or objective signs and symptoms of MGD and dry eye.

The authors performed PubMed literature searches in June 2022 and March 2023, from which they identified 11 relevant studies that met inclusion criteria. The studies were conducted in predominantly White and Asian populations. The Ocuolplastics and Orbital Panel of the Academy's *OTA* Committee included a methodologist who rated eight of the studies as having level I evidence (well-designed and well-conducted randomized controlled trials or systematic reviews) and three studies as having level II evidence (well-designed cohort studies and nonrandomized controlled cohort or follow-up trials). Four studies were industry supported. Each study entailed evaluation of one thermal pulsation session involving a combination of heat and pressure applied to the eyelids while the patient was under topical anesthesia. Outcome measures were subjective or objective improvement in signs and symptoms of MGD or dry eye within one to 12 months of treatment.

In nine studies, greater objective improvements and subjective benefits were seen with thermal pulsation (LipiFlow) than with conventional treatments such as daily warm compresses or eyelid hygiene regimens, but the improvements in four studies were not statistically significant. In all studies, thermal pulsation was more effective than no treatment. No serious adverse events were reported.

The authors concluded that a single thermal pulsation treatment appears to be a safe and less burdensome alternative to conventional therapies. They called for independent studies to ascertain the long-term benefits of thermal pulsation treatment and its cost efficacy (a single session may cost $300 to $1,000), especially among more broadly representative populations.

—Summary by Kathleen Erickson, MLIS

Ophthalmology Glaucoma

Selected by Henry D. Jampel, MD, MHS

Treated IOP Values Improve Estimates of POAG Risk

November/December 2023

The Ocular Hypertension Treatment Study (OHTS) risk calculator is an important tool to guide clinical decisions. It accounts for five key variables (age, IOP, central corneal thickness, vertical cup-to-disc ratio, and pattern standard deviation from Humphrey visual fields), from which it estimates the five-year risk of primary open-angle glaucoma (POAG). Although the benefits of initiating treatment for ocular hypertension are well known, it is unclear if the calculator can be applied to treated patients. **Leshno et al.** looked at the accuracy of this risk-assessment model among the medication arm of the OHTS and found that it performed better with treated IOP than with baseline IOP.

This post hoc analysis of the OHTS included participants randomized to the medication arm who had complete data for both eyes. The model's performance was evaluated by separately calculating risk based on 1) the untreated baseline IOP and 2) the average IOP for the first 24 months of treatment. The z-test statistic was used to compare hazard ratios (HRs) between treated and untreated patients. The main outcome measure was the model's accuracy for estimating POAG risk, which was assessed by calibration chi-square analysis and involved dividing the medication group into 10 risk levels. For each decile, the predicted POAG risk was compared with the actual proportion of POAG cases. (A calibration chi-square value of ≤20 indicates good agreement between predicted and observed event rates.)

Among the 726 treated patients who qualified for the analysis, POAG developed in 42 (5.8%). There was no significant difference in the HRs for treated and untreated patients. The calibration chi-square analysis of treated patients demonstrated that the model's predictive value was superior when treated IOP was used instead of baseline IOP (chi-square, 10 vs. 29, respectively). In addition, the model was able to distinguish between cases that did and did not result in POAG.

Although the OHTS calculator is based on IOP ranging from 20 to 34 mm Hg, findings of this study suggest that it also may be relevant to lower levels of IOP. However, the authors emphasized that "this does not mean that the same results will be reached for untreated IOP within the same range." They concluded that simulating the five-year risk of POAG, based on the predicted treatment-attained IOP reductions, may improve clinical decision-making and the management of patient expectations.

—Summary by Lynda Seminara

Ophthalmology Retina

Selected by Andrew P. Schachat, MD

Risk Factors for Diabetic Vitrectomy: Report From an Urban Safety-Net Hospital

December 2023

Identifying factors to prevent the vision-threatening complications

of proliferative diabetic retinopathy (PDR) is crucial for quality-improvement and cost-reduction initiatives. **Micevych et al.** explored the individual and system-based risk factors for pars plana vitrectomy (PPV) among patients with PDR who were seen at an urban safety-net hospital. They found that absence of panretinal photocoagulation was the most significant individual risk factor for PPV. System-related contributors were long delays from PDR diagnosis to initial treatment and lengthy intervals without follow-up of active PDR.

This single-center, retrospective, case-control study was performed at Zuckerberg San Francisco General Hospital and Trauma Center and included data for a five-year period. The medical records of patients were reviewed from the time they entered the hospital system through the date of vitrectomy (or date-matched clinic visit for controls). Altogether, 222 patients with PDR were identified, 111 of whom underwent PPV for a vision-threatening complication. The control group (n = 111) was case-matched through incidence density sampling. Individual variables included in the analysis were demographic traits, smoking status, area deprivation index, insurance status, retinopathy stage, VA, and hemoglobin A1c, as well as panretinal photocoagulation status and cumulative anti-VEGF treatments. System-based factors included external department involvement, referral route, time in the hospital and ophthalmology systems, interval between screening and ophthalmology visit, time from identification of proliferative disease to panretinal photocoagulation or first treatment, and periods of loss to follow-up. Main outcome measures were associations between each variable and the occurrence of PPV, expressed as odds ratios (ORs).

According to the multivariable analysis, the most significant individual risk factor for PPV was the lack of panretinal photocoagulation (OR, 4.78; p = .011). The most meaningful system-related factors were long periods from PDR diagnosis to initial treatment (OR, 1.06; p = .024) and lengthy cumulative periods without follow-up of active PDR (OR, 1.10; p = .002). Each month without follow-up increased the odds of PPV by 10%. The most protective factor for avoiding vitrectomy was greater time in the ophthalmology system (OR, 0.75; p = .035).

It is noteworthy that PPV risk in this setting is modulated mainly by modifiable factors, said the authors, which could be relevant to other care settings as well. They concluded that optimizing the modifiable factors should help to promote earlier treatment, maintain continuity of follow-up, and reduce the risk of vision-threatening complications. *—Summary by Lynda Seminara*

Ophthalmology Science

Selected by Emily Y. Chew, MD

Large Language Models: Pros and Cons for Ophthalmology

December 2023

The evolution of large language models (LLM) and generative artificial intelligence has piqued interest in leveraging chatbots to improve health care. ChatGPT has had several iterations, with the latest being GPT-4 (released in 2023). Each new version has been trained with increasingly expanded datasets, learning parameters, and fine-tuning such as reinforcement from human feedback. In a recent report, **Tan et al.** discussed benefits and challenges surrounding LLM use in ophthalmology, focusing mainly on ChatGPT. They emphasized that, despite the potential benefits of these models for patient care, there are many drawbacks to consider.

Potential ophthalmology applications. LLMs may prove useful for accurate and efficient drafting of expert guidelines and other health care documents. These models can parse and analyze massive amounts of data, and GPT-4 can interpret images, which may have diagnostic applicability. These models also could facilitate the triage process, medical education, research, and publication development. Improving the patient experience is another potential plus. LLMs may simplify administrative tasks, such as patient documentation, allowing clinicians more time to engage with their patients, promoting truly patient-centered care. Patients often turn to the internet to learn more about their ailments, and LLMs may be able to offer targeted medical advice, within certain limitations.

Challenges and considerations. Although LLMs hold promise for many ophthalmology processes, the authors expressed caution about their implementation in real-world settings. GPT-4 has not been trained on the most up-to-date medical information; therefore, patients using it may be misinformed. "More importantly, because these applications are not intended to be deterministic and essentially be 'continuously learning,' there is currently no framework for determining safety and accuracy," said the authors. LLMs may inadvertently perpetuate biases and stereotypes, generate false content, and draw conclusions based on faulty assumptions. Other considerations for implementing LLMs in health care are legal issues, including copyright infringement, and ethical matters such as patient privacy. *—Summary by Julie Monroe and Lynda Seminara*

American Journal of Ophthalmology

Selected by Richard K. Parrish II, MD

Advanced Neovascular AMD: Outcomes of Intentional Treatment Suspension

December 2023

Intentional suspension of anti-VEGF treatment in eyes with end-stage neovascular age-related macular degeneration (nAMD) is not uncommon, but studies of the anatomic and functional ramifications of this approach are limited and the findings have varied. **Awh et al.** reviewed data for patients with advanced nAMD to explore the outcomes of intentional suspension of therapy. They found that mean values for VA and structural parameters did not change significantly during the suspension period, leading them to conclude that this approach may be

suitable for select cases, especially those deemed unlikely to benefit from further treatment.

Included in the study were patients with nAMD for at least one year (best Snellen VA ≤20/400) whose anti-VEGF therapy was intentionally suspended by the treating physician. VA and OCT findings were documented and analyzed through month 24 of the suspension period.

Among the 93 patients (93 eyes) who qualified for the study, the mean number of anti-VEGF injections received was 16. Follow-up exams occurred at months 6 (86 eyes), 12 (81 eyes), 18 (59 eyes), and 24 (52 eyes). From the point of treatment suspension to 24 months later, there were no significant changes in mean values for central foveal thickness (163 µm vs. 164 µm), greatest lesion diameter (2,547 µm vs. 2,442 µm), greatest lesion thickness (194 µm vs. 205 µm), or VA (20/1,482 vs. 20/1,741). Treatment was restarted in seven eyes (7.5%), at a mean of 977 days following suspension.

Even though visual and anatomic findings remained stable for most eyes throughout the suspension period, the fact that some required additional treatment highlights the importance of continually monitoring all eyes with nAMD, said the authors, regardless of the management approach.

Effects of Suboptimal Vision on the Well-Being of U.S. Adolescents

December 2023

It is well known that vision-enhancing procedures such as cataract surgery can improve cognitive function and quality of life for adults. Visual impairment is less common in the adolescent population, but some teens have subnormal VA due to uncorrected or undercorrected refractive error. How such visual deficits may affect their mental and physical health had not been investigated. To learn more, **Teebagy et al.** looked at the prevalence of vision concerns among U.S. adolescents and explored possible links between eyesight-related worry and adverse physical and mental well-being. They found that nearly one-fourth of surveyed adolescents worried about their vision. Female, low-income, and uninsured adolescents worried the most and were more likely than others to have refractive errors that were not corrected adequately. Vision-related concerns were found to adversely affect mental health but not physical health.

This cross-sectional study included 12- to 17-year-olds who participated in the 2005-2008 National Health and Nutrition Examination Survey and completed visual function questionnaires and eye exams. Vision-related concerns were identified from responses to a question relating to worry about eyesight. Recent poor physical or mental health was defined as at least one day of poor health in the preceding month. Odds ratios (ORs) were derived from survey-weighted multivariable logistic regression models and were used to identify factors linked to vision concerns of adolescents, with adjustment for demographics and refractive correction.

Among the 3,100 survey participants (mean age, 15.5 years; 49% female), vision concerns were expressed by 24%. These concerns were more common among females (29% vs. 19% of males, $p < .001$), those from low-income families (30% vs. 23% vs. higher-income families; $p < .001$), and the uninsured (31% vs. 22% for insured, $p = .006$). Relative to adolescents who did not worry about their eyesight, those who did were more likely to have inadequate visual correction (OR, 2.07; 95% CI, 1.43-2.98) and poor recent mental health (OR, 1.30; 95% CI, 1.01-1.67) but not poor recent physical health (OR, 1.00; 95% CI, 0.69-1.45). Among racial/ethnic groups, Mexican Americans worried the most about their eyesight (OR, 1.98; 96% CI, 1.42-2.75).

Findings of this study emphasize the need to better understand the relationship between vision concerns and the mental health of adolescents, said the authors. Efforts to improve access to refractive correction, especially for teens in low-income households, may reduce vision-related worry and its negative impact on mental health.

—Summaries by Lynda Seminara

JAMA Ophthalmology

Selected and reviewed by Neil M. Bressler, MD, and Deputy Editors

Bilateral Endophthalmitis After ISBCS

November 2023

Bilateral simultaneous postoperative endophthalmitis (BSPOE) after immediate sequential bilateral cataract surgery (ISBCS) is a rare event, but the consequences can be devastating. **Bjerager et al.** explored the cause of BSPOE cases that occurred after ISBCS, performed at a community clinic in Denmark. Analyses of vitreous cultures indicated that a systemic breach of sterility had occurred.

For this investigation, the authors gathered data for patients diagnosed as having BSPOE at ophthalmology departments in Denmark following an outbreak in December 2022. Cases were reported during the annual meeting of the Danish Society of Cataract and Refractive Surgeons, which took place four months later. The main outcome measure was patient recovery from BSPOE, which was determined from the results of clinical and microbiological reports.

Altogether, three cases of post-ISBCS BSPOE occurred during the four-month time frame. Two were in women (ages 71 and 79), and the third was in an 84-year-old man. All three cases occurred on the same day at the same clinic, and symptoms began four to eight days after cataract extraction. The vitreous cultures of all patients showed *Staphylococcus epidermidis* in one or both eyes, and the same cefuroxime-resistant strain was common to all cultured specimens. Five eyes underwent vitrectomy and received intravitreal antibiotics. Before vitrectomy, no eye exhibited clear evidence of leakage. IOP values were uniformly low, possibly due to capillary shutdown secondary to endophthalmitis rather than to suboptimal cataract incision architecture.

Contamination of viscoelastics was ruled out by repeated cultures. Phthisis occurred in one eye, leading to evisceration. Although sample laterality was

unavailable in microbiological reports (for unknown reasons), it is unlikely that additional antibiotic treatment could have spared this eye. The final (presumably corrected) Snellen-equivalent VA of the eye most severely affected by endophthalmitis was 20/63; that of other eyes recovered to 20/25 (three eyes) or 20/20 (one eye).

The fact that the same strain of *S. epidermidis* was common to all cultures indicates that a systemic breach of sterility took place at the clinic on the day these patients underwent cataract surgery, said the authors. This experience emphasizes the need for strict adherence to guideline-recommended precautions throughout ISBSC procedures.

Silicone Oil Remnants: A Presumed Complication of Intravitreal Pegcetacoplan

November 2023

Intravitreal administration of pegcetacoplan is a relatively new treatment for geographic atrophy associated with nonexudative age-related macular degeneration, but it may result in unexpected complications. **Dessouki et al**. described a series of cases in which silicone oil droplets appeared to be present after intravitreal injection of pegcetacoplan. This phenomenon occurred in 29% of their patients who received the medication via standard Luer lock syringes.

The authors reviewed medical records for all 55 patients treated with intravitreal pegcetacoplan at their single-specialty retina practice from March 24, 2023 through June 5, 2023. Prompting this review was a trend in reports of floaters by a number of pegcetacoplan-treated patients. The medication (0.1 mL in a 150-mg/mL aqueous solution) was administered by standard technique, using the Apellis injection kit and a 1-mL McKesson Luer lock syringe. After drawing the product from its glass vial with the provided filter needle, the syringe was inverted, and air was forced to the top by pulling and pushing the plunger several times. The high viscosity of pegcetacoplan resulted in many air bubbles in the syringe, so it was crucial to prime the syringe in this manner. Patients who experienced adverse effects returned to the office within four weeks of treatment.

Among the 55 patients, the total number of pegcetacoplan injections was 62. The mean age of patients was 83.8 years, and 60% were women. Five patients returned quickly because of persistent floaters, and 11 others reported floaters at their first scheduled follow-up visit. Of these 16 patients, 14 (88%) were symptomatic for new and persistent floaters, and two were asymptomatic. During biomicroscopic examination, all 16 patients presumably had silicone oil droplets present; three of these cases were documented by fundus photography as well. The floater descriptions given by patients were diverse in terms of size and shape. Most stated that the floaters were black, and two reported black floaters with distinct white centers. Several patients saw "hundreds" of floaters.

The authors reported their findings to Apellis Pharmaceuticals and to the Research and Safety in Therapeutics Committee of the American Society of Retina Specialists. They have not yet examined every patient who was treated, "so the percentage of adverse events may increase," they said. To prevent this complication, they recommend using silicone-free syringes if available. *(Also see related commentary by John T. Thompson, MD, in the same issue.)*

Automated Prediction of Imminent GA Progression

November 2023

Is a convolutional deep-learning algorithm, based on neural networks, capable of predicting progression from intermediate age-related macular degeneration (iAMD) to geographic atrophy (GA) from volumetric spectral-domain (SD) OCT? This question was the subject of a retrospective study by **Dow et al.**, who found that such an algorithm successfully predicted this progression in a clinically meaningful time frame. They noted that automated prediction could be instrumental for clinical trials and may help to guide clinical decisions about the frequency of screening and the timing of treatment.

The study involved patients with iAMD who did or did not experience progression to GA. Dataset 1 was derived from participants of the AREDS2 A2A study (2012-2022). Datasets 2 and 3 involved patients who received routine care at a tertiary referral center or associated satellites; their data were collected from July 1, 2022 to Feb. 1, 2023. The deep-learning algorithm (known as DeepGAze) was developed based on volumetric SD-OCT scans, with the goal of predicting progression from iAMD to GA during the 13 months following the scan. A position-aware convolutional neural network with proactive pseudo-intervention was trained and cross-validated on Bioptigen SD-OCT volumes (dataset 1) or was validated on two external datasets of Heidelberg Spectralis SD-OCT scans (datasets 2 and 3). The prediction of progression to GA was assessed by area under the receiver–operating curve (AUROC) and area under the precision–recall curve (AUPRC). Also evaluated were sensitivity, specificity, accuracy, positive predictive value, and negative predictive value.

There were 417 patients overall (316 in dataset 1, 53 in dataset 2, and 48 in dataset 3). In dataset 1, the AUROC for prediction of progression from iAMD to GA within 13 months was 0.94 (AUPRC, 0.90; sensitivity, 0.93; specificity, 0.85). In dataset 2, the model predicted progression to GA with an AUROC of 0.94 (AUPRC, 0.92; sensitivity, 0.91; specificity, 0.80). For that dataset, a high-specificity operating point was chosen and was optimized to simulate patient screening for clinical trial recruitment. At this point, specificity was 0.98 and sensitivity was 0.59. If the model were used to screen and ultimately enroll 1,000 patients for a hypothetical one-year trial, the authors estimated that enrichment could be increased by at least 11.2-fold. Given that the model would need to be autonomously applied to multiple image databases in the course of clinical trial recruitment, its performance also was tested at the same operating threshold in dataset 3, at

which the sensitivity was 0.96, specificity was 0.60, and simulated recruitment was enriched by at least 8.3-fold.

The model's performance was equivalent to that of a similar algorithm trained by expert-defined features, but it avoided the costly labor-intensive process of image annotation. The authors highlighted potential benefits of the algorithm, including facilitation of clinical trial enrollment, assistance in determining patients who would benefit the most from treatments to prevent GA (if they become available), and identification of patients who need frequent monitoring so that treatment can be initiated without delay.

—Summaries by Lynda Seminara

Other Journals

Selected by Prem S. Subramanian, MD, PhD

Prevalence and Prognosis of Asymptomatic IIH

Clinical & Experimental Ophthalmology
2023;51:598-606

The presentation and prognosis of asymptomatic idiopathic intracranial hypertension (IIH) are largely unknown. **Thaller et al.** explored the visual and headache-related outcomes in people with IIH, whether or not there were symptoms at presentation. Through a prospective observational study, they found that visual prognosis was similar for symptomatic and asymptomatic cases. Headache frequency was greater for the symptomatic group.

Patients with confirmed IIH were enrolled in the study between 2012 and 2021. Outcome measures such as VA (logMAR), Humphrey visual field (HVF) perimetric mean deviation, OCT, and headache parameters were assessed by regression analysis and locally weighted scatterplot smoothing graphs. Mean and standard deviations were calculated for continuous variables, and percentages were computed for binary and categorical variables.

Among the 343 study participants, 121 (35%) were found to have papilledema incidentally, 36 (30%) of whom were completely asymptomatic at the time of diagnosis. Twelve (33%) of these 36 patients remained asymptomatic throughout follow-up (median, 19.5 months). Of the 24 asymptomatic cases that became symptomatic, headache was the predominating symptom in 23. Headache-related parameters did not change significantly over time. The presence of daily headache at baseline was the main predictor of worse outcomes. VA, HVF mean deviation, and OCT findings did not differ significantly for symptomatic and asymptomatic cases, and visual outcomes were good for both groups.

The similar outcomes observed for symptomatic and asymptomatic IIH could indicate that cases lacking symptoms are at the mild end of the IIH spectrum, said the authors. This is supported by the lower rate of surgical intervention in the asymptomatic cohort of this study (2.8% vs. 11.7%).

Investigations of asymptomatic papilledema are helpful, said the authors, particularly because many questions remain about papilledema development and duration, as well as the severity required for permanent visual loss. Although incidentally discovered papilledema is relatively common, direct questioning of patients often leads to disclosure of symptoms. This study indicates that, relative to symptomatic IIH, asymptomatic disease is neither beneficial nor detrimental to visual outcomes. "Deterioration in papilledema may be harder to detect in the asymptomatic population," said the authors, who concluded that these patients likely will need routine eye exams throughout their lives.

Is Pseudomyopia a Risk Factor for Myopia?

British Journal of Ophthalmology
Published online Aug. 4, 2023

Nearly one-fourth of Chinese children have pseudomyopia. Whether this condition is linked to the development of myopia is uncertain. **Sun et al.** conducted a population-based study to explore the possible relationship between these conditions and found that pseudomyopia is an independent risk factor for myopia.

For this research, children without myopia were recruited from schools in rural and urban areas of the Shangdong province of China. Study enrollees were examined at baseline and were invited to participate in a follow-up visit six months later. Pseudomyopia was defined as spherical equivalent (SE) of −0.50 D or less before cycloplegia and SE above −0.50 D after cycloplegia. Myopia was defined as SE at or below −0.50 D after cycloplegia. Data were analyzed for both eyes of each participant. The correlation between each set of eyes was adjusted using the generalized estimated equation model, from which the relative risk (RR) was determined. Other analyses included normality of distribution, propensity matching, Pearson chi-square, and parametric and nonparametric tests.

Altogether, 2,328 participants qualified for the full analysis. Their age at baseline ranged from four to 17 years. By the six-month follow-up visit, myopia had developed in 21.1% of pseudomyopic eyes and in 3.8% of nonmyopic/nonpseudomyopic eyes. After adjustment for multiple myopia risk factors (including baseline cycloplegic SE, near-work time, and outdoor time), pseudomyopia was determined to be an independent risk factor for myopia (RR, 2.52). Among the pseudomyopic eyes, certain conditions were found to significantly raise the risk of myopia, including greater myopic cycloplegic SE, smaller differences between cycloplegic and noncycloplegic SE, and higher binocular amplitude of accommodation.

The authors acknowledged that instrument myopia (i.e., autorefractor induced) might have been responsible for some cases of pseudomyopia in their study. They recommend investigations to differentiate instrument myopia from pseudomyopia and to understand whether instrument myopia raises the risk of true myopia. They concluded that their research provides new considerations for myopia prevention and control and "opens up a new window for future research to investigate the mechanisms underlying the transition from pseudomyopia to myopia."

—Summaries by Lynda Seminara