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Eddie F. Kadrmas, MD, PhD

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RETINA DIGEST®

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Risk of Diabetic Retinopathy in Youth

Worldwide, the incidence of type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM) is increasing among children and adolescents. T2DM now accounts for about 50% of all new diabetes mellitus cases among adolescents, an increase related to the rise of childhood obesity over the past decade.

Though typically asymptomatic early on, diabetic retinopathy is a serious, sight-threatening complication of diabetes. While clinical practice guidelines have been developed for ophthalmic screening of youth with T1DM, the recommended timing of initial screening varies: The American Academy of Ophthalmology (AAO) recommends initial screening 5 years after T1DM onset; the American Diabetes Association (ADA) recommends it 3 to 5 years after T1DM onset for patients ≥10 years old; the American Academy of Pediatrics (AAP) recommends it 3 to 5 years after T1DM onset for patients ≥9 years old. A recent study, however, suggested that initial ophthalmic screening can be delayed until 15 years of age.

For youth with T2DM, little is known about the risk of developing diabetic retinopathy. To inform the establishment of standardized guidelines for detecting and treating the complication before vision loss occurs, Wang et al from the University of Michigan Medical School evaluated the incidence of diabetic retinopathy among 4008 youths (aged ≤21 years) with newly diagnosed T1DM or T2DM, and assessed whether adherence to the screening guidelines recommended by the AAO, ADA and AAP could adequately diagnose youth with the condition.

Under ophthalmic surveillance, the incidence and timing of diabetic retinopathy onset was identified. Overall, 14.4% of participants (20.1% with

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T1DM; 7.2% with T2DM) received a diagnosis of diabetic retinopathy with a median of slightly >3 years follow-up. Incidence and prevalence were nearly 3-fold greater among the youths with T1DM than among those with T2DM. For children with T1DM, the risk for developing diabetic retinopathy increased for each year older the child was at the initial diabetes diagnosis.

These results indicated that diabetic retinopathy may be more common in youth with diabetes than previously suspected. Undergoing screening sooner than current clinical practice guidelines recommend could be especially beneficial to youth with poor glycemic control. While the current guidelines suggest screening 3 to 5 years after initial diabetes diagnosis, this study found that at least 18% of the youths had already been diagnosed with diabetic retinopathy by that time. Because youth with T1DM or T2DM have significant risk of developing diabetic retinopathy, eye care professionals should conduct regular screenings to ensure timely diagnosis and limit irreversible progression.

Wang SY, Andrews CA, Herman WH, et al. Incidence and risk factors for developing diabetic retinopathy among youths with type 1 or type 2 diabetes throughout the United States. Ophthalmology *2017;124:424-430.*

Table 1. Eyes with macular characteristics indicative of AMD noted during fundus photograph grading

Characteristic	Eyes, no. (%) ($n = 320$)
≥10 small drusen	249 (77.8)
Intermediate drusen	250 (78.1)
Large drusen	96 (30.0)
Hyperpigmentation	32 (10.0)
Hypopigmentation	43 (13.4)
Drusenoid retinal pigment epithelial defect	2 (0.6)
Serous retinal pigment epithelial defect	0
Geographic atrophy	1 (0.3)
Choroidal neovascularization	0
Disciform scar	0

Categories are not mutually exclusive; thus, percentages do not total 100.

Diagnosing AMD in Primary Eye Care

Age-related macular degeneration (AMD) is a serious, multifactorial disease that can result in progressive loss of central vision. Although AMD affects approximately 14 million Americans, it is not uncommon for the disease to go undiagnosed by primary eye care physicians.

The high prevalence of AMD in the older adult population and the availability of treatment options to slow its progression led Neely et al from the University of Alabama at Birmingham to investigate the extent to which existing AMD goes undiagnosed by primary eye care physicians. The authors conducted a cross-sectional study with 644 adults (≥60 years old; 64% women) who reported normal macular health in both eyes based on a dilated eye examination performed by their primary care optometrist or ophthalmologist.

Personal interviews with all participants revealed the following demographic characteristics: 59% were in their 60s, 35% were in their 70s and 6% were in their 80s; 95% were white/non-Hispanic and 5% were African American. Medical comorbidities, smoking status, family history of AMD and use of Age-Related Eye Disease Study (AREDS) formulation nutritional supplements were also used to compare characteristics of those with and without undiagnosed AMD in primary care.

Before undergoing 3-field digital color fundus photography, eyes were dilated with 2.5% phenylephrine hydrochloride and 1% tropicamide. Based on the Clinical Age-Related Maculopathy Staging system, the photographs were evaluated for the presence and severity of AMD. Of the 1288 eyes evaluated, approximately 75% did not have AMD, in agreement with their medical record, while close to 25% had AMD, despite there being no medical record of diagnosis.

Of the undiagnosed eyes, the 30% that presented with large drusen (Table 1) potentially could have been treated with nutritional supplements had

AMD been detected earlier. Older eyes were more likely to present with undiagnosed AMD and to have drusen of all sizes. Because AMD prevalence increases in late adulthood, the authors were puzzled by the primary eye care physicians' lower likelihood of identifying it in older eyes.

Primary care ophthalmologists and optometrists were equally likely to underdiagnose AMD; therefore, both could benefit from better training in AMD identification during dilated fundus examination. Even in the early stages of AMD—for which no current proven effective treatments exist—significant burdens, such as reading difficulty, driving cessation, depression and anxiety may result. In upcoming years, when treatments for the early stages of AMD are developed, improved detection strategies will be critical for avoiding patients' central vision loss.

Neely DC, Bray KJ, Huisingh CE, et al. Prevalence of undiagnosed age-related macular degeneration in primary eye care. JAMA Ophthalmol *2017;135:570-575.*

Understanding Hemorrhagic Occlusive Retinal Vasculitis

Since 2007, when the European Society of Cataract and Refractive Surgeons published results showing that routine use of intracameral antibiotics at the end of cataract surgery could reduce the rate of postoperative endophthalmitis by 5-fold, many ophthalmologists have adopted this practice. The American Society of Cataract and Refractive Surgery (ASCRS) found that from 2007 to 2014, the percentage of cataract surgeons using this prophylaxis rose from 30% to 50%.

In 2014, for the first time, 2 cases of severe bilateral ischemic retinal vasculitis following cataract surgery were described. Four more cases were reported in 2015 (3 bilateral, 1 unilateral). Witkin et al from Tufts Medical Center, Massachusetts, termed this condition hemorrhagic occlusive retinal vasculitis (HORV). They hypothesized that a delayed immune response to a surgical adjuvant, likely vancomycin, was the leading cause. The HORV Task Force, formed by the ASCRS and the American Society of Retina Specialists (ASRS), conducted a retrospective case series of 36 eyes (23 patients; mean age, 68 years; 65% women) to expand understanding of HORV's presentation, potential cause, treatment and outcomes. Cases were collected in 3 ways: by creating an online case registry for ASRS members to report new cases; by e-mailing surveys to ASCRS and ASRS members soliciting cases of suspected HORV; and by literature search. Characteristic findings of HORV included

- unremarkable undilated examination on first day after surgery
- delayed-onset, painless vision loss
- vitreous and anterior chamber inflammation

Table 2. Recommendations for surgeons on prevention and management of HORV

Considerations for intraocular vancomycin use
1. Weigh the potential risk of HORV associated with vancomycin against that of endophthalmitis.
2. Reconsider using vancomycin with close sequential bilateral cataract surgery, especially if immediate sequential same-day bilateral surgery is performed.
3. Be aware that in addition to delayed onset, HORV may not cause symptoms in the first eye, and a dilated retinal examination may be the only way to detect it.
4. Cefuroxime or moxifloxacin may be an alternative to vancomycin for intracameral prophylaxis.
Recommendations for management of HORV
1. If HORV is suspected, avoid intravitreal vancomycin.
2. Consider an ocular or systemic workup, or both, for other syndromes (e.g., viral retinitis) if the diagnosis is unclear.
3. Use systemic and topical corticosteroids aggressively; consider periocular or intraocular steroids.
4. Use anti-VEGF treatment early.
5. Use panretinal photocoagulation early.
6. If you identify a patient with HORV, please submit the clinical data to the HORV registry, which can be found at www.surveymonkey.com/r/HORV.

Anti-VEGF, anti–vascular endothelial growth factor.

- sectoral intraretinal hemorrhages in ischemic areas with a predilection for venules
- peripheral retinal involvement

Visual results among eyes were commonly poor. The findings suggested that HORV is caused by a delayed hypersensitivity reaction to vancomycin and that early treatment with corticosteroids may be beneficial. The task force suggested avoiding more vancomycin injections whenever HORV is suspected (Table 2).

Witkin AJ, Chang DF, Jumper JM, et al. Vancomycin-associated hemorrhagic occlusive retinal vasculitis: clinical characteristics of 36 eyes. Ophthalmology *2017;124:583-595.*

Risk of Uveitis Among Psoriasis Patients

The chronic inflammatory skin disease psoriasis affects 0.1% to 3% of the world's adult population; of them, 6% to 42% also present with psoriatic arthritis, a disabling inflammatory joint disease. Over the past decade, public awareness of the comorbidities of psoriasis has increased. Uveitis, an inflammation of the uveal tract and associated ocular structures, has also been associated with psoriatic arthritis.

Because the nature of the relationship between uveitis and psoriasis remains unsettled among researchers, Chi et al from Chang Gung University, Taiwan, conducted a retrospective population-based cohort study of 147,954 patients with psoriasis and an equal number of age- and sex-matched healthy controls to evaluate the risk of incident uveitis among psoriasis patients with (n = 10,107) and without (n = 137,847) concomitant psoriatic arthritis. They also assessed the risk of uveitis in individuals with mild vs severe psoriasis.

The Taiwan National Health Insurance Research Database from 2000 to 2011 was used to identify people with psoriasis. The 2005 Taiwan Longitudinal Health Insurance Database was used to select the nonpsoriatic control group, made up of people who had never received a psoriasis diagnosis. A higher proportion of participants with psoriasis had type 2 diabetes mellitus, hypertension and hyperlipidemia ($p < .001$ for each condition) compared with the controls.

Among the 295,908 participants (58.8% men; mean age, 44.4 ± 19.8 years):

- The greatest risk of incident uveitis was found among the group with concurrent severe psoriasis and psoriatic arthritis (adjusted hazard ratio [HR] 2.40).
- A moderately increased risk of incident uveitis was present in both the group with severe psoriasis without psoriatic arthritis (adjusted HR 1.42) and in the group with mild psoriasis with psoriatic arthritis (adjusted HR 1.42).
- No significant increased risk of incident uveitis was identified among people with mild psoriasis without psoriatic arthritis (adjusted HR 1.09).

These findings suggested that the risk of incident uveitis increases among people with inflammatory presentation on the psoriatic spectrum. This information may help clinicians guide uveitis risk stratification in patients with different inflammatory presentations and educate psoriasis patients about the increased manifestations and risk of uveitis.

Chi C-C, Tung T-H, Wang J, et al. Risk of uveitis among people with psoriasis: a nationwide cohort study. JAMA Ophthalmol *2017;135:415-422.*

SPRING 2018

- Diplopia and macular pucker
- Physical activity and age-related macular degeneration
- Incidence of macular hole

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