Proactive Management for Prevention and Detection of AMD

Involving patients in their own vision care maintenance requires education and the right tools.

BY ROBERT LOWENTHAL, MD

Vision health is undergoing a global sea change as the world's population ages. The numbers of people who are classified as baby boomers in the United States (approximately 44 to 62 years of age) is currently estimated as more than 75 million. As members of this generation reach their 60s and 70s, vision care specialists must be more vigilant than ever in helping patients proactively care for their vision. As our patients age, vision health becomes an important consideration in their ability to live happily and independently.

A 2007 report issued by Prevent Blindness America estimated that the total economic cost of vision problems (specifically age-related macular degeneration [AMD], cataract, diabetic retinopathy, and glaucoma) totaled $51.4 billion annually, with expenses related to direct medical costs, lost productivity, medical care and health utility costs all contributing to the total.[1] Because AMD is currently the leading cause of blindness in the United States, affecting one in five people over age 65, prevention and proper management of this condition have the potential to make a significant difference in the economic statistics, as well as in quality of life for seniors.

As retina specialists, our role is not only to educate patients on how to proactively manage their vision health, but to present this information in a compelling and accessible way to inspire adherence. For nonneovascular AMD patients, proper nutrition and active monitoring of vision can contribute to better visual outcomes, and this can be accomplished with very achievable steps on the patient's part.

NUTRITION: A SIMPLE STEP TO MANAGE AMD

The 2001 report from AREDS (Age-related Eye Diseases Study) established that nutritional supplements containing vitamins C and E, beta-carotene, zinc, and copper were beneficial for patients with intermediate-sized drusen or with advanced AMD in one eye, reducing the risk of developing advanced AMD by approximately 25%.[2] Carotenoids, particularly lutein and zeaxanthin, which have also shown promise in slowing the advance of the condition, are found in dark leafy greens such as spinach and collard greens.[3] The AREDS2 study is currently evaluating these substances in combination with the omega-3 fatty acids DHA and EPA.

It is important for retina specialists to discuss patients' dietary habits and ask specific questions to determine if patients are eating adequate amounts of antioxidant-rich foods. The patient's dental status is an additional consideration, as ill-fitting dentures or other oral conditions may prevent seniors from getting prop-

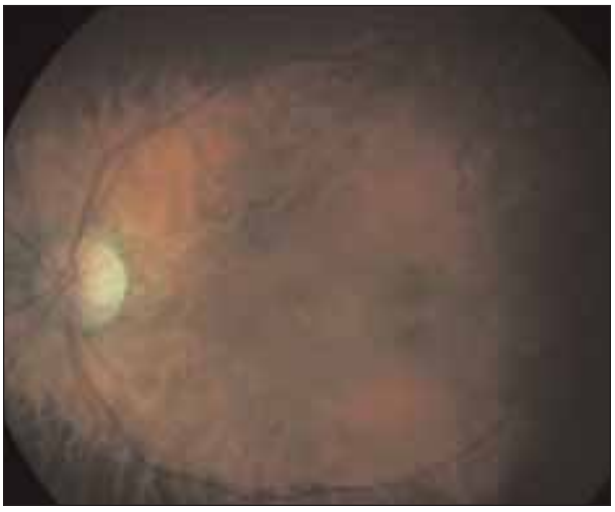

Figure 1. Grey submacular lesion in the temporal macula seen with fundus imaging.

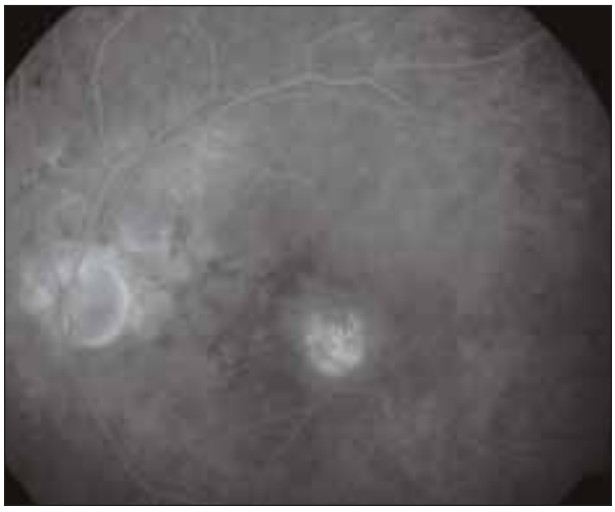

Figure 2. Fluorescein angiography demonstrates an occult subfoveal CNV membrane.

er nutrition. Discuss these factors with patients and their caregivers to determine if supplementation may be beneficial.

Even with proper adherence to a nutritional regimen, there is still a risk that nonneovascular AMD will advance to choroidal neovascularization (CNV). Therefore, the importance of regular professional eye exams should be emphasized as well. Use of the Amsler grid can be helpful in serving as a daily reminder to patients to monitor their condition, but evidence has shown that this tool may not be sufficient in detecting early conversion to CNV. This is due to the brain's "corrections" of distortions the eye sees in the Amsler grid. Because of this phenomenon, for many patients vision loss has already occurred by the time the lines on the Amsler grid appear curved.

MONITORING TECHNOLOGY FOR DETECTING CONVERSION TO CNV

This underscores the need for patients with nonneovascular AMD to have regular checkups with a vision care provider. A relatively new technology, preferential hyperacuity perimetry (PHP), which is becoming available in many clinicians' offices, aims to identify conversion to CNV with a more interactive functional test than the Amsler grid. The technology, marketed as the Foresee PHP (Sightpath Medical, Bloomington, MN), is a noninvasive, patient-paced exam that identifies elevations in the retinal pigment epithelium (RPE) that are consistent with conversion from intermediate to advanced stage AMD. The device maps defects within a patient's visual field by analyzing responses to "dot deviation signals" flashing on a computer screen. A signal, consisting of a series of closely spaced dots in a single straight line with one dot out of alignment, is displayed on the screen for 160 milliseconds. The patient uses a stylus pen to touch the screen to identify the most prominent distortion in the line. A typical 3- to 5- minute test measures 500 retinal data points covering the central 14° of the macular visual field. The response patterns are recorded, analyzed and compared to a normative database, producing a report revealing the relative location of the defects in the macular area.

By utilizing a phenomenon called *preferential looking,* the device can determine abnormalities that may indicate RPE elevation. Patients' attention will always be drawn to the greatest distortion they see, so if a visual defect causes the patient to see a bend in the line that appears greater than the one presented by the instrument, the patient will select the physiological distortion. The dot deviation signals show differing magnitudes and locations of distortions to measure the extent and location of defects consistent with CNV. In studies, the PHP device has been shown to correctly detect indicators of neovascular AMD more than 80% of the time,[4] representing a significant improvement over the Amsler grid.

CASE EXAMPLE

The case of a recent patient treated in my office demonstrates the effectiveness of PHP technology and its promise for improving early detection of AMD. An 88-year-old woman with history of nonneovascular AMD presented to her optometrist for a routine PHP screening. Although this was her first test, PHP results suggested a possible lesion in the temporal macula of her left eye.

Upon further questioning, the patient admitted to noticing a "shadow" in the vision of her left eye, but had detected no changes on her home Amsler grid monitoring. The patient's visual acuity had decreased to 20/50, which was one line below her baseline vision OS.

The patient was referred to my office, where she was found to have a grey submacular lesion in the temporal macula (Figure 1). Fluorescein angiography demonstrated an occult subfoveal choroidal neovascular membrane (Figure 2) corresponding to the lesion noted clinically and as suggested by the PHP screening. The patient was treated with intravitreal ranibizumab (Lucentis, Genentech) followed one week later by verteporfin with photodynamic therapy (Visudyne/PDT, Novartis/QLT). During the follow-up examination 6 weeks later, the patient's visual acuity had improved back to her baseline of 20/40, and she no longer noted a "shadow" in her vision. Examination and ancillary testing confirmed that the subfoveal CNV had involuted.

We feel that PHP screening helped prevent loss of vision in this patient. It is fortunate that her optometrist offered PHP testing, and that she was motivated to take advantage of it in addition to her regular use of the Amsler grid.

By encouraging patients to take an active role in AMD management, and by suggesting achievable steps that they can take to look after their health, vision care providers can play an important role in empowering their patients. With existing and ongoing research on how nutrition affects AMD, patients today have much more data than before to guide them in how best to live with the condition.

Additionally, today's effective diagnostic and treatment tools make AMD a much more manageable condition than it was in the past. Now, in addition to being partners in the fight against blindness, retinal specialists can be a valuable source of support and guidance to patients living with AMD. ■

Robert A. Lowenthal, MD, is a Retinal Specialist at Springfield Eye Consultants, Springfield, IL. He states that he has no financial relationships to disclose. Dr. Lowenthal may be reached at ral@springfieldeyeconsultants.com.

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