

Comanagement of Cataract and AMD: a Retinal Physician's Perspective

Cataract surgeons may want to consider a preoperative consultation with a retina colleague, even for patients with mild disease.

BY ALLEN CHIANG, MD

The leading causes of blindness and visual acuity impairment in the United States are primarily age-related eye diseases.^{1,2} Cataract is the overall leading cause of the loss of visual acuity, and age-related macular degeneration (AMD) is the main cause of permanent impairment of central vision among individuals aged 65 years and older.^{1,3} As the US population ages, the number of patients with both conditions is expected to increase substantially. A collaborative effort, therefore, between cataract surgeons and retinal physicians is of great importance.

CATARACT EXTRACTION AND RISK OF AMD PROGRESSION

In recent years, patients and ophthalmologists alike have expressed concern over whether cataract extraction increases the risk of progression to advanced AMD (neovascular AMD or geographic atrophy). This concern is largely a response to various population-based studies that reported a potential association. For example, both the Beaver Dam Eye Study (BDES) and Los Angeles Latino Eye Study (LALES) identified a positive association between cataract extraction and advanced AMD.^{4,5} Similarly, the Blue Mountains Eye Study (BMES) identified a threefold higher risk of developing advanced AMD in eyes that had previously undergone cataract extraction.⁶

In contrast, a 2009 Cochrane Database meta-analysis and systematic review concluded that it was not possible to reliably determine whether cataract extraction is beneficial or harmful with regard to the progression of AMD based on limited clinical trial data.⁷ Moreover, a recent

prospective cohort study by Wang et al demonstrated no increased risk of developing early or advanced AMD during a 3-year period following cataract extraction.⁸ Dong et al arrived at a similar conclusion; they suggested that presumed progression to neovascular AMD may have been present prior to cataract extraction but overlooked due to the lens' opacity.⁹

Fortunately, the Age-Related Eye Disease Study (AREDS)—a large, randomized, controlled clinical trial that spanned a 10-year period—has addressed the controversy. In contrast to the previous population-based studies, some of which had limited data, AREDS included 4,577 subjects (8,050 eyes) and had many more cases of advanced AMD and cataract extraction. AREDS Report No. 25 demonstrated no clear effect of cataract extraction on the risk of progression to advanced AMD in two separate analyses, one for neovascular AMD and the other for geographic atrophy.¹⁰ Furthermore, AREDS Report No. 27 showed that participants with AMD of varying severity benefited from cataract extraction and that their gain in visual acuity persisted for at least 18 months.¹¹

Because many patients and their families still inquire about the potential impact cataract extraction could have on AMD, it is important for ophthalmologists to be familiar with these studies, particularly AREDS.

PREOPERATIVE EVALUATION OF CATARACT-AMD PATIENTS

Anterior segment surgeons can greatly help their patients with concurrent cataract and AMD by arranging

SCREENING OLDER PATIENTS FOR INSUFFICIENT MACULAR PIGMENT OPTICAL DENSITY

By Steven F. Sopher, OD

Age-related macular degeneration (AMD) is the leading cause of blindness among people older than 55 years. Fifty-five million AMD patients live in North America alone, and 2.7 million new patients per year are expected. Compared with other elderly individuals, those who lose vision due to AMD enter nursing homes an average of 3 years earlier, suffer twice as many falls, have a threefold higher incidence of depression, sustain four times as many hip fractures, and die an average of 2 years earlier.¹ These statistics demonstrate the value of identifying who is at risk of developing the disease.

MACULAR PIGMENT OPTICAL DENSITY

AMD is an oxidative process within the eye, much like rusting. High-energy blue light can cause oxidation of the retinal pigment epithelial layer, which leads to the formation of drusen. Free radicals—unstable molecules formed in metabolic areas of the body, including the retina—contribute to the oxidation of the photoreceptors. Macular pigment both blocks blue light and quenches free radicals.² A significant amount of research has found that insufficient levels of macular pigment optical density (MPOD) increases an individual's risk of developing AMD by as much as 40%.^{3,4}

Although the risk factors for AMD include immutable characteristics that cannot be changed such as genetic history, gender, and eye color, others such as cardiovascular disease and smoking status can be changed. By far, the easiest risk factor for eye care professionals to address with patients is MPOD, and its screening should become the standard of care in every eye care practice.

PATIENTS' EDUCATION

Eye care practitioners in my office have implemented a variety of measures to help patients understand the risk factors for AMD and focus on its prevention. The first step involves patients' education. Using the ECHO tool (Eyemaginations Inc.), we send animated videos on AMD to every patient older than 45 years. They also view information on MPOD testing and dietary supplementation in the office's waiting room and the examination lane.

Our second step is to incorporate MPOD screening into the comprehensive eye examination of every patient older than 21 years. Macular changes related to AMD are rare until patients exceed the age of 50; our goal is to identify problems before they result in structural changes to the retina or macula.

Macular pigment is made up of three carotenoids: lutein, zeaxanthin, and meso-zeaxanthin. As individuals age, it is very difficult for them to get sufficient levels of lutein and zeaxanthin in a normal diet. Studies have shown that oral supplementation of these essential nutrients increases MPOD and consequently can slow the progression of AMD.^{5,6}

CONCLUSION

It only makes sense that a comprehensive eye examination should screen patients for the most common cause of blindness in the elderly. I advise my patients with low MPOD or average MPOD combined with other significant risk factors for AMD to take oral macular supplements.

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a preoperative consultation with a retina colleague, even when these patients have mild retinal disease. The clinical assessment of the macula can be quite challenging in the setting of a particularly dense cataract or certain types of cataract, such as a posterior subcapsular cataract. A retina specialist may identify subtle findings that warrant additional evaluation with ancillary retinal imaging. In addition, a potential acuity meter reading can provide a useful approximation of the extent to which the cataract is contributing to the patient's vision loss relative to AMD.

Spectral-domain optical coherence tomography is of tremendous value in the analysis of the integrity of the retinal pigment epithelium (RPE) and inner segment-outer segment photoreceptor junction, which is critical to scrutinize in the setting of AMD. In addition, this technology is of great value in assessing the vitreomacular interface for conditions such as epiretinal membrane or vitreomacular traction. These conditions may be particularly difficult to appreciate in patients with AMD, owing to alterations in the RPE and drusen that reduce background contrast during a macular examination.

Other imaging modalities such as fluorescein angiography, indocyanine green angiography, and fundus autofluorescence may be warranted in certain cases to assist in excluding the presence of choroidal neovascularization or subtle RPE atrophy. For instance, a serous (avascular) RPE detachment may be difficult to distinguish from a fibrovascular RPE detachment (a form of occult choroidal neovascularization) on clinical examination and even fluorescein angiography, yet the two can be readily differentiated with indocyanine green angiography.

In addition to providing valuable clinical information, a visit to the retina specialist can assist in educating patients on how their AMD may affect their final visual acuity and function after cataract surgery. Because patients are often inundated with personal testimonials from family, friends, or neighbors who "had cataract surgery and saw perfectly the next day," the information they receive from a retina consultation can help them develop more realistic expectations.

POTENTIAL PITFALL

In this digital age, patients often arrive at doctors' offices with manila folders stuffed with printouts and questions regarding the latest medical technology. Many will request or inquire about a premium IOL. It is critical to remember that patients with AMD are poor surgical candidates for a multifocal IOL. Although this is obvious for a patient who presents with distinct symptoms and signs of AMD, some anterior segment surgeons may be inclined to implant a multifocal IOL in a patient with

only a few macular drusen. Such individuals, however, are more apt to notice deterioration in their quality of vision sooner than those who receive a monofocal IOL. Studies have demonstrated a reduction in visual quality and contrast sensitivity with multifocal IOLs, which is particularly pronounced in mesopic conditions.^{12,13} In contrast, accommodating IOLs appear to have a lesser impact on contrast sensitivity and to produce fewer photic phenomena.¹⁴ Nevertheless, it may be prudent simply to stick with a traditional monofocal IOL for patients with both cataracts and AMD.

CONCLUSION

In the coming decades, the population of patients whose visual acuity is impaired by AMD and cataracts is expected to grow substantially. The skillful management of both ophthalmic conditions will be essential to achieving and maintaining the best possible vision for these individuals. Quality collaboration and timely communication between anterior segment surgeons and retina specialists will therefore become critical.

Based on the AREDS data, cataract extraction appears to have no clear effect on patients' risk of progression to advanced AMD. A retinal consultation prior to cataract extraction, however, remains of value with regard to ensuring an accurate preoperative assessment and staging of AMD. This evaluation ultimately aids in surgical planning and the setting of realistic expectations for patients. ■

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