Age Related Macular Degeneration

[AREDS | Glutathione | Lutein and Zeaxanthin | Antioxidants]
[Inflammation, C-Reactive Protein and Omega-3 Fish Oil | References]

Macular Degeneration

The macula is the central and most vital area of the retina. It records images and sends them via the optic nerve from the eye to the brain. The macula is responsible for focusing central vision that is needed for seeing fine detail, reading, driving and recognizing facial features.

Age-related macular degeneration is the leading cause of blindness in people over the age of 55, affecting more than 10 million Americans. It is a condition in which the central portion of the retina (the macula) deteriorates. It is equally common in men and women and more common in whites than blacks. The cause is unknown, but the condition tends to run in some families. Macular degeneration affects more Americans than cataracts and glaucoma combined. There are two forms of macular degeneration: atrophic (dry) and exudative (wet). Approximately 85% to 90% of the cases are the dry type. Both forms of the disease may affect both eyes simultaneously. Vision can become severely impaired, with central vision rather than peripheral vision affected. The ability to see color is generally not affected, and total blindness from the condition is rare, but functional vision is very often lost.

There is little that can be done within conventional medical treatment protocols to restore lost eyesight with either form of the disease. Leading researchers, however, are documenting the benefits of a more holistic approach in the treatment of macular degeneration. Patients are being encouraged to increase physical fitness, improve nutrition (including a reduction in saturated fats), abstain from smoking and protect their eyes from sunlight. Dietary supplementation of trace elements, antioxidants and vitamins is recommended for improving overall metabolic and vascular functioning. Early screening and patient education offer the most hope for reducing the debilitating effects of the disease.

Exposures to sunlight and photochemical damage have been suspected factors in macular degeneration, as well as decreased antioxidant activity responsible for damage control.

AREDS Study

The AREDS study demonstrated that moderate doses of older formulations of Vitamin C, E, beta carotene, zinc and copper may reduce the progression of AMD by 25%. Almost comparable effective dosages may now be found in a robust multivitamin, such as Maximum Vitality®. The dosage used in the AREDS study was 452 mg Vitamin C, 400 IU synthetic (dl-alpha tocopherol) Vitamin E, 15 mg beta carotene, 69.6 mg zinc, and 1.6 mg copper. There was huge variability in the AREDS study, as almost two-thirds of participants used a multivitamin in addition to the study dosage.

AREDS	Maximum Vitality®	Comments
Vitamin C 452 mg	500 mg	
Vitamin E 400 IU	200 IU	200 IU natural is roughly equivalent to 400 IU synthetic. In addition, Maximum Vitality includes all 8 isomers of vitamin E (alpha, beta, gamma, & delta tocopherols and tocotrienols)
Beta Carotene 15 mg	10,000 IU	

Zinc 69.6 mg 15 mg not equivalent volume, but more bioactive
Copper 1.6 mg 1 mg more bioactive form

Glutathione

An age-dependent drop in glutathione blood status and a significantly lower level of glutathione has been found in older individuals compared to younger ones. Moreover, an increase of oxidized glutathione by-product over time suggests more oxidation and the incumbent higher risk of age-related eye diseases.30 In the early stages of macular degeneration, glutathione has been found to protect retinal pigment epithelial cells from dying.[41]

Glutathione, which is particularly concentrated in the lens, has been shown to have a hydroxyl radical-scavenging function in lens epithelial cells.[19]

Lutein and Zeaxanthin

Lutein and zeaxanthin, the primary carotenoids concentrated in the macula, counter the free-radical forming action of light and oxygen. It's been suggested that macular pigment protects the retina via a dual role that includes scavenging for free radicals and filtering out blue light, which can cause photochemical damage. Some studies have also suggested a link between dietary carotenoid intake and macular pigment density. In fact, eyes with age related maculopathy have revealed significantly lower carotenoid levels in the macula and retina than healthy eyes. Earlier studies had shown that eating dark leafy vegetables was associated with a 43% lower risk of macular degeneration.[42]

Macular pigment density can be increased by consuming foods and supplements that are rich in lutein and zeaxanthin.[50-53] Consuming lutein ester can increase macular pigment density in patients with early ARMD, so even people with diseased macula can accumulate lutein and possibly zeaxanthin.[53]

Antioxidants

Other studies have been examining how antioxidant status relates to the risk of age-related macular degeneration. The Baltimore Longitudinal Study of Aging, for instance, found that tocopherol, and an antioxidant combination of tocopherol, carotene and ascorbate were protective. Researchers have also been looking at the potentially therapeutic role of individual compounds. For example, a study from Sete, France of 2584 inhabitants showed that higher plasma levels of alpha-tocopherol were inversely related to macular degeneration development and progression.[43]

The Age-Related Eye Disease Study Research Group[43] has shown a protective effect against macular degeneration when higher doses of antioxidants and minerals are taken on a regular basis. The same can be said for cataracts as there is now ample evidence that indicate cataracts have in fact a nutritional connection. It, therefore, appears that prevention is the best solution to postponing or avoiding macular degeneration and cataract surgery. Most eye care professionals to date have told patients affected by these conditions that no treatment exists for macular degeneration and that surgery is the only treatment for cataracts. Emerging research, however, provides new hope for many of these individuals.

Inflammation, C-reactive Protein and Omega-3 Fish Oil

Inflammation, as measured by c-reactive protein has been implicated in macular degeneration. In a study published in the February 2004 issue of the Journal of the American Medical Association, researchers studied 930 participants in the AREDS study at two sites. C-reactive protein levels were significantly higher in the group diagnosed with advanced macular degeneration than in those in whom the disease was absent. Analysis of the results found CRP levels to be significantly associated with the presence of both intermediate and advanced stages of AMD. Those whose CRP levels were in the highest one-fourth had a 65 percent increased risk of macular degeneration compared to those in the lowest one-fourth of participants.[47]

In an earlier study published in the American Journal of Clinical Nutrition, investigators questioned 72,000 study participants about their diets and calculated the types of fat and total fat they ate. Those who ate more fat overall increased their risk of AMD, while those who ate fish reduced their risk of developing the eye disease. Omega-3 fatty acid, specifically, DHA, from fish, actually reduced the AMD risk by 30%. Omega-3 fish oil has anti-inflammatory properties as shown on this inflammation chart.[46]

Return to main Vision article

References

Full references are here.

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