

New Clues To The Causes Of Age Related Macular Degeneration (AMD)

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Age-Related Macular Degeneration (AMD) is a leading cause of vision loss in the United States, but discoveries about the roles played by nutrition, genetic factors and immune response are providing clues to new prevention and treatment measures. AMD can destroy the detailed, central vision we need to read, drive, recognize faces, and enjoy daily life.

March is AMD Awareness Month, and the American Academy of Ophthalmology, joined by the American Society of Retina Specialists, the Macula Society, and The Retina Society, encourages Americans to know their risks for AMD. "We have a greater understanding of AMD than ever before," says Janet S. Sunness, MD, Medical Director of the Hoover Services for Low Vision and Blindness, Baltimore, Maryland, and an Academy clinical correspondent. "We are seeing exciting clinical and research advances, but catching AMD early still offers the best chance of preserving vision. People need to know their risks so that they can save their sight."

As part of the EyeSmart campaign, the Academy and EyeCare America, a public service program of the Foundation of the American Academy of Ophthalmology, recommend that adults with no signs or risk factors for eye disease get a baseline eye disease screening at age 40-the time when early signs of disease and changes in vision may start to occur. Based on the results of the initial screening, an ophthalmologist will prescribe the necessary intervals for follow-up exams. For individuals at any age with symptoms of or at risk for eye disease, such as those with a family history of eye disease, the Academy recommends that individuals see their ophthalmologist to determine how frequently their eyes should be examined. One of the best ways to reduce AMD risk is to quit smoking, as smokers have twice the risk of nonsmokers.

New Clues

Certain nutrient supplements are now known to be protective: the first Age-Related Eye Disease Study (AREDS 1) of 4,000 people with AMD found that the progression to advanced disease among people at high risk declined by 25 percent when the subjects were given a high-dose combination of antioxidants and zinc. Eye MDs recommend this supplement formula to their AMD patients when appropriate. These nutrients may strengthen the ability of a layer of cells in the eye's retina to withstand oxidative stress, a probable factor in AMD development. In the second AREDS study now underway, researchers are assessing lutein, zeaxanthin, and omega-3 fatty acids, associated in some large studies with reduced risk of developing AMD. Both AREDS projects were sponsored by the National Institutes of Health. Eating fruits and deeply colored vegetables such as red peppers and spinach-food sources of antioxidants-provides many health benefits, and one is likely to be protection against AMD.

A new model that views a specific type of uncontrolled immune response as an important factor in AMD development and progression has emerged from the work of a number of genetic and ophthalmic researchers. The model promises to spark advances in AMD treatments and genetic susceptibility tests. In several degenerative diseases-including Alzheimer's, atherosclerosis and AMD-the early phases are marked by abnormal extra-cellular deposits that begin to disrupt

normal functioning. In AMD, these deposits are called drusen, and they contain proteins associated with inflammation and other immune system responses.

Four independent research groups recently discovered that variations in three genes associated with sensitivity of the immune response are also strongly associated with AMD. Several research groups subsequently confirmed that two of these genetic variants collectively account for about 75 percent of AMD cases in North American and European populations. Another study, by Margaret Pericak-Vance, PhD, Duke University, and Jonathan Haines, PhD, Vanderbilt University, showed how a risk factor and genetic variant interact: the risk of AMD increased eight-fold in study participants who were smokers and had variant LOC387715.

About AMD

The disease takes two forms, termed "dry" and "wet." In the early "dry" stage, drusen, yellow deposits, develop under the retina, but most people do not have a change in vision. Patients with more and larger drusen, and more pigment changes in the central retina, or macula, are considered to have intermediate AMD and are at higher risk for both advanced "dry" and "wet" AMD. The majority of those with intermediate AMD do not progress to the advanced stage but should be carefully followed by an Eye MD to insure timely treatment if needed.

Advanced AMD can occur in the "dry" or the "wet" form. Once the "dry" form reaches the advanced stage, with blind spots in the central visual field, no medical or surgical treatment is available, although patients can be provided low-vision technologies, including improved lighting and magnification, to maintain their quality of life. In the "wet" form, abnormal new blood vessels develop under the retina that bleed or leak fluid and form scars, causing central vision loss. Only about 10% of the 10 to 15 million Americans with AMD have the "wet" form, but until two years ago it was responsible for most severe vision loss. New, highly effective treatments such as the injectable medications ranibizumab and bevacizumab are dramatically reducing damage from "wet" AMD: vision stabilizes in over 90 percent of patients and actually improves in more than 30 percent.

For more information about AMD and other eye diseases, visit www.geteyesmart.org. For more information on: the American Society of Retinal Specialists, visit <http://www.asrs.org>; on the Macular Society: <http://www.maculasociety.org>; and on The Retina Society: <http://www.retinasociety.org>.

About the American Academy of Ophthalmology

The American Academy of Ophthalmology is the world's largest association of eye physicians and surgeons-Eye M.D.s-with more than 27,000 members worldwide. Eye health care is provided by the three "O's" - opticians, optometrists and ophthalmologists. It is the ophthalmologist, or Eye M.D., who can treat it all: eye diseases and injuries, and perform eye surgery.

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Genes Involved In Inflammation May Hold Clue To Age Related Macular Degeneration

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A University of Southampton research team, led by Professor Andrew Lotery, has identified a new genetic risk factor for age-related macular degeneration (AMD), a major cause of untreatable blindness in elderly people in developed countries.

The study is published today by the British Journal of Ophthalmology.

AMD is a progressive disease affecting the retinal pigment in the macular region at the back of the eye. Building on their previous research, which showed that genes that control inflammation were important for developing AMD, the researchers took DNA samples from 478 people with AMD and from 555 people with no signs of the disease. They then looked for evidence of variations in genes controlling the production and suppression of cytokines - powerful chemicals involved in inflammatory processes in the body.

Their work paid off when they identified that one of the genetic variants (251A/T), which is associated with a gene that boosts the production of interleukin 8 (known as IL-8), was significantly more common among the patients with AMD. This held true even after taking account of age, sex, weight, and smoking, which is a known risk factor for AMD.

'This is exciting research which helps us understand why people develop AMD,' says Professor Lotery. 'In the future we may be able to target patients with this genetic risk factor for specific anti-inflammatory treatments, maybe with something as simple as aspirin! This knowledge should allow us to get much better treatment results.'

Professor Lotery's research has been supported by the University of Southampton and the Gift of Sight appeal. He adds: 'I would like to thank everyone who has made a donation to this very worthwhile cause.'

If repeated in larger studies, Professor Lotery and his colleagues suggest that their findings might lead to the possibility of genetic screening for AMD and the development of biological agents to control it.

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