

Coping with Macular Degeneration: Three Case Studies

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Educational Objectives

1. Learn about the diagnosis and available treatments for Age Related Macular Degeneration (AMD).
2. Explain the differences between Dry and Wet AMD.
3. Understand the impact of vision loss on the lives of older adults.

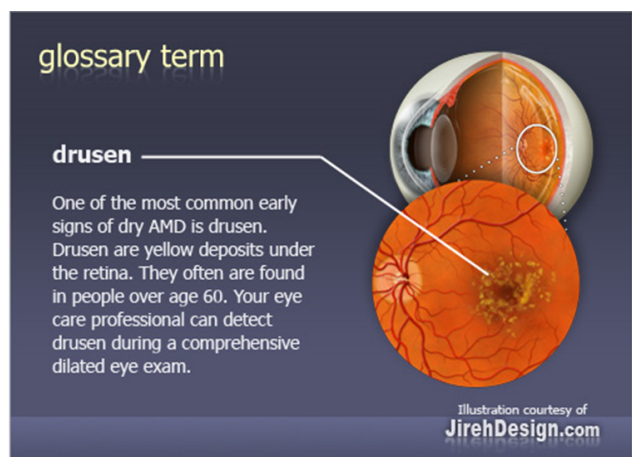
Background

Age Related Macular Degeneration (AMD) is a retinal eye disease that can cause central vision loss. This damage occurs on the macula, which is responsible for sharp, straight-ahead vision. AMD can affect the ability to read clearly, drive, and navigate in unfamiliar environments. Approximately 11 million people are affected by AMD in the United States, with a global prevalence of approximately 170 million.

Along with diabetic retinopathy, cataracts, and glaucoma, AMD is one of the leading causes of vision loss and disability in the United States. According to the Centers for Disease Control, the direct costs and productivity loss associated with vision disabilities are estimated to be over 35 billion dollars. Depression, diabetes, hearing impairment, stroke, falls, cognitive decline, and premature death are often associated with vision disabilities.

There are many factors which influence susceptibility to AMD. These include smoking tobacco, family history, diet, blood lipid and cholesterol levels.

Diagnosis



The hallmark of AMD is the presence of drusen on the retina. Drusen are lipid rich, protein containing deposits which accumulate between the Retinal Pigment Epithelium and Bruch's Membrane. There are two types of AMD: Dry and Wet. Dry AMD is an early to intermediate stage of the disease characterized by the presence of drusen in the central macular region of the retina with a gradual loss of vision. In the Wet AMD, also referred to as the advanced neovascular (exudative) stage of the disease, vision loss is more rapid and accounts for most of the vision loss associated with the disease. This

is due to the overgrowth of abnormal blood vessels from the highly vascular choroidal tissue layer which lies adjacent to the normally avascular retina. About 10 percent of those with Dry AMD will progress to the Wet AMD neovascular stage.

AMD is best detected by your eye doctor through a dilated fundus examination. This allows for a comprehensive evaluation of the macula and adjacent areas to look for drusen and epithelial changes indicative of the disease. Retinal photos and Optical Coherence Tomography are also used to detect early changes to the retinal tissues.



What do people with AMD see?

Treatment

Most therapies for treatment of AMD are targeted towards the advanced exudative (Wet) stage of the disease. Antibody-based treatment is directed towards inhibition of the vascular endothelial growth factor A (VEGFA). This involves periodic ocular injections of the anti-VEGFA antibody (Avastin, Eyelea) to control neovascularization. Special dietary supplements and vitamins and minerals are also prescribed for early to intermediate disease to keep it from turning into advanced AMD.

Treatment for AMD depends on the stage and type. There is currently no treatment for early AMD, so your eye doctor will probably just keep track of how your eyes are doing with regular eye exams. Eating healthy, getting regular exercise, and quitting smoking can also help. Vitamin C, vitamin E, beta-carotene, zinc, and green leafy vegetables help in the prevention and may slow the progression of the disease (Tabloski, 2014).

If you have intermediate AMD in one or both eyes, special dietary supplements (vitamins and minerals) may be able to stop it from turning into late AMD. If you have late AMD in only one eye, these supplements may slow down the progression of AMD in your other eye.

People with vision loss are more likely to report depression, diabetes, hearing impairment, stroke, falls, cognitive decline, and premature death. Decreased ability to see often leads to the inability to drive, read, keep accounts, and travel in unfamiliar places, thus substantially compromising quality of life. The cost of vision loss, including direct costs and lost productivity, is estimated to exceed \$35 billion (Rein, Zhang, Wirth, et al., 2006).

The following case studies describe three patients with Macular Degeneration and their struggles in coping with the disease.

Case Study 1

Marco was a 68-year-old male who was first seen in our office in 2004. He presented for a routine examination with a chief complaint of blurred vision. His best corrected visual acuities were 20/20 in the right eye and 20/20 in the left eye. Apart from cataract formation, his ocular examination was unremarkable; glasses were prescribed to correct his refractive error and he was instructed to follow up with us one year later. At his yearly follow up, his vision was still 20/20 in each eye. However, we noticed subtle pigmentary changes in the macula. After referral to a retinal specialist, he was diagnosed with Dry AMD. OCT scans showed no sub-retinal fluid.

Marco started vitamin supplementation therapy and was instructed to follow up with us in six months' time. Subsequent follow up exams did show initial progression of the macular lesions and a slight decrease in visual acuity to 20/25 in each eye. We followed Marco for over ten years with this condition. His vision remained stable and there was no conversion to Wet AMD over this period.

Marco had a good social support system both in and outside of his home and he was able to lead a productive life during this time. He loved to read, was active in the church choir and kept up with his many social activities. Unfortunately, we lost Marco to cancer in 2018.

Case Study 2

Rhoda is a 78-year-old female who was diagnosed with Wet AMD. The disease initially presented in the left eye in the form of soft drusen. Vision deteriorated rapidly from 20/20 in that eye to only light perception within a time span of two years. Anti-VEGFA injections were not able to control the disease state, and eventually she was left with only peripheral vision in that eye. The right eye fared much better. Her vision only deteriorated to 20/50 in the eye. However, as with the left eye, her central vision was severely affected.

Rhoda had many comorbidities: arthritis, hypertension, and hip replacement surgery. Mobility was an issue even before the diagnosis of macular degeneration and was further compromised afterward. She was a very independent-minded person. She liked to read and spend time on the computer as this was one of the ways she could connect with family and friends. After her vision loss associated with macular degeneration, she lost that connection. Referral to a low vision specialist did help her cope with the vision loss, but was not able to bring back the ability to see to her satisfaction.

Case Study 3

Walter is an 85-year-old male who was previously diagnosed with glaucoma in the right eye. Glaucoma is a disease of the optic nerve which affects peripheral vision. His glaucoma was a very aggressive form and peripheral vision loss was already sustained before he was diagnosed with wet macular degeneration in the left eye. As both diseases progressed, his vision loss continued to progress in each eye. Currently his vision is 20/60 in the right eye with severely restricted peripheral vision and light perception in the left. His retinal specialist has stopped his anti-VEGFA injections as they are not doing any good at this time.

He had to give up driving and is finding it extremely difficult to read and watch television. He has lost his independence and, as a result, the family has been under a lot of emotional stress. An appointment with a low vision specialist has been scheduled.

Case Study Discussion

Each of the above cases represents the effects of AMD on patients. Some individuals can live life with little to no compromise in vision, as in Marco's case. Others, such as Rhoda and Walter, have more difficulty.

Most individuals affected with AMD are elderly and typically have comorbidities which affect the quality of life in addition to the vision loss associated with AMD. One of the greatest fears of the older patients we see in our clinic is the loss of independence because of aging. Vision loss is a big factor. Losing the ability to drive, not being able to read or work on a computer, not being able to see the faces of their grandchildren, all affect their quality of life. Not being able to see properly also puts older adults at greater risk of falling and subsequent injury. It is important that those affected with vision loss have a good support system. Referral to appropriate specialists, such as low vision clinics and visual rehabilitation service agencies, should be made when needed. Social and psychological counseling should not be ruled out to help older adults cope with vision loss.

Study Questions

1. What are the signs of macular degeneration?
2. How does an optometrist detect macular degeneration?
3. What should you do to slow the progression of macular degeneration?

References

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About the Author

Dr. Tiwari has been practicing optometry since 1995. His practice, [Family Eyecare of Virginia](#), has locations both in Petersburg and Richmond. He earned his Doctorate of Optometry from The Illinois College of Optometry in Chicago. He holds a Masters of Science Degree in Microbiology and Food Science from Clemson University. His undergraduate degree is from Randolph-Macon College where he received a Bachelors of Science Degree in Biology. Dr. Tiwari lives in Richmond with his wife and three children and is a member of St. Andrews United Methodist Church.

