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Title  
Addressing the Activities of Daily Living in a Patient with Age-Related Macular Degeneration through Low Vision Management

Abstract  
Age-related macular degeneration (AMD) is a common cause of visual impairment. This case outlines the management of an early AMD patient through the use of a bioptic telescope system and near magnification devices.

I. Case History  
Demographic: 79 year old Caucasian male

Chief Complaint:

- Patient referred by retinal specialist to the University of Houston Eye Institute for low vision services. He complained of a constant central vision loss that affected both eyes as a result of non-exudative AMD OD and exudative AMD OS.
- Goals for low vision evaluation included spotting faces at distance, especially for traveling and sightseeing. For near, his goal was to improve his ability to read small print.
- Patient did not drive due to his vision, but inquired about potential to return to driving.

Ocular History:

- AMD OS was previously treated with anti-VEGF injections; the last one was in 2013. Last eye exam was two months ago with the referring retinal specialist who determined the AMD was stable in both eyes.
- Primary-open angle glaucoma OU for five years.
- Ocular trauma OS in 1959

Medical history: hyperlipidemia, hypertension, atrial fibrillation. History of melanomas and testicular cancer with surgical removal.

Medication: bimatoprost, simvastatin, hydrochlorothiazide, flecainide; no known drug allergies

Family ocular and medical history: unremarkable.

Social history: No alcohol or recreational drug use. He had previously been a tobacco smoker for 40 years and quit 27 years ago.

II. Pertinent findings  
Clinical:

- Habitual correction: plano-1.25x140 OD and -0.50-0.25x049 OS with +2.25 add
- Distance entering acuities (with electronic Snellen acuity chart): 20/50 OD, 20/63 OS and 20/100 OU with difficult eccentric viewing (EV).
- Near entering acuities: 1.25 M at 30 cm OD, 1.6 M at 30 cm OS and 1.6 M at 35 cm OU.
• Confrontation visual fields, extraocular motilities and pupils were normal.
• Manifest refraction: plano-1.25x140 OD and -0.50-0.50x050 OS with no improvement in distance acuity.

Special testing:
• Binocular Esterman Humphrey Visual Field (HVF): 160 degree continuous field with scattered peripheral defects and 115/120 points seen.
• HVF 10-2: central field defect encompassing four degrees left of fixation OD; diffuse central field loss denser nasally with 11/14 fixation loss errors OS.
• Full-field Dynavision: In three 60 second trials, the patient recorded 40, 51, and 49 hits. Decreased reaction time to peripheral targets.

III. Differential diagnosis
Primary/leading: Age-related macular degeneration OU
Others:
- Stargardts disease
- Chloroquine toxicity
- Myopic degeneration
- Angioid Streaks
- Posterior uveitis (i.e. serpiginous chorioropathy)

IV. Diagnosis and discussion
• AMD is a chronic degenerative disorder of the macula characterized by drusen deposition and progression to geographic atrophy in non-exudative AMD or choroidal neovascular membrane formation and serous detachment of the retinal pigmented epithelial layer in exudative AMD.\(^1,2\)
• Non-exudative AMD accounts for approximately 80% of all cases of AMD,\(^3\) but exudative-AMD accounts for 90% of all cases with severe central vision loss.\(^4\)
• AMD is the leading cause of severe, irreversible visual impairment in developed nations.\(^2\)
• Risk factors for development of advanced AMD include increased age, Caucasian ethnicity, hypertension and smoking.
• Cigarette smoking is the single most modifiable risk factor for advanced AMD.\(^2\) Smokers that smoked 20 or more cigarettes per day have a 2-fold increase in advancement of AMD.\(^5\) Cessation of smoking for 20 years reduces the risk of developing AMD to the level of a nonsmoker.\(^5\)
• Symptoms of AMD include decreased acuity, metamorphosia, and central scotoma.

V. Treatment and Management

Treatment and response
Initial evaluation
• Prescribed single vision spectacles with a +6.00 D effective add (EA) for near. Near VA improved to 0.5 M at 15 cm OU. Another set of single vision spectacles with a +2.00 EA was prescribed for use at computer distance. Educated on importance of proper illumination to improve near acuity.
Evaluated, trained, and dispensed a 4x handheld telescope (HHTS) to meet distance goals. Distance VA improved to 20/25 OD with a positive patient response. Patient advised to consider a bioptic telescope system (BTS) if successful with habitual HHTS use.

Due to central field loss, inadequate eccentric viewing skills, and borderline Dynavision results, patient instructed to not return to driving at this time.

Addressing distance goals
- Patient returned to clinic reporting success with HHTS and expressed his desire for a BTS for distance face spotting and sightseeing while travelling. He was fitted for a 2.2x BTS over the OD with eyepiece correction from Designs for Vision, Inc.
- At the dispense visit, the 2.2x BTS was evaluated and in-office device training was performed. Distance acuities were 20/60 and 20/70 through the carrier lenses and 20/30 OD through the telescope.

Addressing near goals
- Patient returned for another visit seeking devices that could improve ability to read small print at near.
- 12 D Eschenbach Visolux illuminated stand magnifier (ISM) dispensed; positive patient response to reading material and to the glare filter of the device
- 16 D Eschenbach Easy Pocket dispensed; positive patient response to reading material and portability of device

Other
- Continued care with referring retinal specialist to monitor status of AMD and glaucoma. Conditions remained stable throughout period of low vision care.

Typical Treatment
- Use of multivitamin formulation containing vitamin C and E, lutein, zeaxanthine, and zinc results in reduced progression of intermediate AMD to advanced AMD by 25% over a five year period.²
- Anti-VEGF injections of ranibizumab, bevacizumab, pegaptanib, or aflibercept remain the most effective treatment for CNVM formation.²
- Low vision care remains an important aspect of AMD management as patients show high satisfaction and usage rate of optical devices well after initial device prescriptions.⁶

VI. Conclusion
Clinical pearls
- Low vision exams are often time consuming and can be exhausting for clinician and patient alike if all goals are addressed in one visit. If a patient has multiple goals, it may be best to address some of the goals at one exam time and then address the rest of the goals at a follow-up.
- Though not all optometrists feel comfortable with providing full-scope low vision care, patients with moderate levels of visual impairment can still be managed with relatively simple techniques. Often, improving near reading is a common goal amongst AMD patients. Prescribing single vision reading spectacles with a high add power and emphasizing the importance of
proper working distance and illumination can be a good starting point and relatively easy way of improving a patient’s quality of life.

- If a patient has a lofty goal (i.e. driving) it is not only important to set realistic expectations early, but also a good idea to point out the patient’s progress through the rehabilitative process. Even if achieving their initial goal is not feasible, highlight the gains toward functionality and independence that the patient has made for themselves.

Bibliography


