New findings from a landmark clinical trial show that although certain gene variants may predict whether a person is likely to develop age-related macular degeneration (AMD), a potentially blinding eye disease that afflicts more than nine million Americans, these genes do not predict how patients will respond to Lucentis™ and Avastin, the two medications most widely used to treat the "wet" form of AMD. This new data from the Comparison of AMD Treatment Trials (CATT), published online in Ophthalmology, the journal of the American Academy of Ophthalmology, found no significant association between four gene variants and outcomes that measured the patients' responses to treatment.

The CATT genetics research team wanted to learn whether the major AMD risk genes could be useful in tailoring treatment with Avastin and Lucentis to individual patients' needs to boost treatment effectiveness and safety for patients. The main CATT study had confirmed that both medications significantly reduce or even reverse vision loss in many patients with wet AMD, but that study also found that treatment effectiveness varied among patients. The CATT genetics study, led by Stephanie Hagstrom, Ph.D., at the Cole Eye Institute at the Cleveland Clinic, clearly showed that the major AMD risk alleles do not predict patients' response to treatment.

This genetics study cohort comprised 73 percent of the 1,149 CATT participants. Cohort patients were evaluated for four gene variants linked to AMD risk: CFH, ARMS2, HTRA1, and C3. The patients' genotypes were then compared to their responses to treatment with Lucentis or Avastin. Both medications are anti-vascular epithelial growth factor (anti-VEGF) therapies that work in similar ways to reduce or prevent abnormal blood vessel growth and leakage. The researchers found no significant associations among the four gene variants and the outcomes that measured the patients' responses to treatment, which were improvement or loss of visual acuity, the status of the retinal anatomy, and the number of medication injections given.

"Our genetic research team remains hopeful that gene variants that predict patient response to AMD treatments will be identified soon," said Dr. Hagstrom. "This would enable a significant leap forward in ophthalmologists' ability to individualize treatment and care plans for their patients."

The main CATT study was a multi-center clinical trial that was funded by the National Institutes of Health and led by Daniel F. Martin, M.D., Chairman of the Cole Eye Institute at the Cleveland Clinic. The study compared Lucentis and Avastin for effectiveness and safety in treating the wet form of AMD.

The findings of the CATT genetic study lend further weight to the American Academy of Ophthalmology's 2012 recommendation on the use of genetic testing. This study assessed the same four major gene variants that are most widely used in current AMD genetic tests and found that the treatment response in patients who carried the gene variants was no better or worse than in patients who did not. The Academy advises against routine genetic testing for AMD and other complex eye disorders until specific treatment or monitoring strategies have been shown in clinical trials to be of benefit to people with specific, risk-linked genotypes.

Wet AMD, also called neovascular AMD, can severely damage vision if not treated in time. About 10 percent of patients suffer from the wet form, in which abnormal blood vessels grow underneath the retina, the tissue at the back of the eye that is
crucial to good vision. These vessels leak fluid or blood, which blurs or distorts the central vision that enables people to read, recognize faces, drive, and perform other daily activities. Scientists now think that about half of all cases of AMD are related to specific genes.

Provided by American Academy of Ophthalmology

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