Researchers develop risk assessment model for advanced age-related macular degeneration

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A new risk assessment model may help predict development of advanced age-related macular degeneration, according to a report published Online First by *Archives of Ophthalmology,* one of the JAMA/Archives journals.

Age-related macular degeneration (AMD) is a leading cause of blindness in the United States and the Western world, according to background information in the article. "As progress in designing better preventive measures and earlier treatment options accelerates and new gene associations are identified that add to currently known risk factors, the desirability of having a reliable risk assessment model has become of considerable interest and potential value," write the authors. The model, they explain, should identify individuals with early AMD who are at greatest risk to progress to advanced AMD and should be able to predict when that progression might occur.

Michael L. Klein, M.D., from the Casey Eye Institute, Oregon Health & Science University, Portland, and colleagues sought to design a risk assessment model for development of advanced AMD that included phenotypic (related to observable physical characteristics), demographic, environmental and genetic risk factors. They used longitudinal data from the Age-Related Eye Disease Study, including participants' DNA samples, ocular and medical histories and examinations. The researchers identified two endpoints: development of advanced AMD in either eye

by participants who did not have this condition at baseline, and advanced AMD in a second eye by participants who, at baseline, had it in one eye. Patients were followed for an average of 9.3 years.

The variables included in the final model included simple scale score (a sum of clinical risk factors in both eyes), two genotypes, very large drusen (deposits on the retina associated with AMD), smoking, family history, advanced AMD in one eye and age. The complete model appeared to perform well and to discriminate an individual's risk of advanced AMD. Of the 2,602 participants in the final model who, at baseline, had no advanced AMD, 24 percent (n = 635) developed advanced AMD during follow-up. Of those with advanced AMD at baseline, 82 percent who had the geographic atrophy (gradual deterioration of retinal cells, called "dry AMD") type and 56 percent who had the neovascular type (new blood vessel formation and leakage, called "wet AMD") developed advanced AMD in the other eye.

The results "can be of potential value in clinical practice by helping determine the frequency of follow-up examinations, the use of home monitoring of central vision, and the advisability of initiating preventive measures including beneficial lifestyle changes such as dietary alterations and nutritional supplement use," the authors note. "The short-term end points (e.g., 2 years) may be helpful in planning clinical trials." They add that the model performed well on measures of discrimination, calibration and overall performance. "We believe our current model is of substantial value in assessing AMD risk, and we expect that future advances will further improve its accuracy," they write.

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