Supplementary Online Content


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This supplementary material has been provided by the authors to give readers additional information about their work.
eAppendix 1: Microperimetric Examination
Briefly, microperimetric examinations were performed following pupillary dilation using 1 drop of 1% tropicamide and 1 drop of 2.5% phenylephrine to achieve a pupil diameter of at least 6 mm. All participants were given identical verbal instructions regarding how to perform the microperimetry examination. The Macular Integrity Assessment (MAIA) microperimeter performs fundus tracking using a line-scanning laser ophthalmoscope (SLO) with a super-luminescent diode illumination that has a central wavelength of 850 nm. It uses the entire fundus as a reference when performing fundus tracking, capturing the fundus images at 25 frames per second. With fundus tracking, test stimuli can be presented at the same retinal location throughout the test independent of changes in the fixation location. A red circular fixation target of 1º diameter was used in this study, and Goldman III stimuli were presented for 200 milliseconds against a background of 1.27 cd/m² using a 4-2 threshold strategy. The maximum stimulus luminance was 318 cd/m², creating a dynamic range of 36 dB.
eAppendix 2: Statistical Analysis

To most effectively examine the longitudinal changes in microperimetric sensitivity, it was important to exclude examinations that may be influenced by a significant learning effect. We have previously found a significant learning effect between the first and second examination during the first visit for participants who have not previously performed microperimetry before, but this learning effect was absent in participants examined six months later. To confirm the absence of a significant learning effect in a larger cohort at the subsequent visits in this study, a sub-analysis was performed for participants who had not performed microperimetry before during the first visit; some participants were excluded from this sub-analysis since they had performed microperimetry at an earlier visit during a pilot study (using different test parameters) prior to the baseline examination of this study. The learning effect was determined by examining changes in average point-wise sensitivity (PWS) using a linear mixed effects model, with the test number during each visit being considered as a fixed effect and stimulus points nested within participants were considered a random effect. Linear mixed effects models were used because of the hierarchical and clustered nature of this data, where various forms of correlations that exist within this type of data structure are accounted for using this method.

To examine the longitudinal changes in microperimetric sensitivity, the first examination at baseline was excluded due to the presence of the significant learning effect. For the subsequent visits, the first examination was used since there was no significant intrasession learning effect observed (see Results); the results did not differ when using the first or second examination for these subsequent visits (data not shown), but are presented for the first examination for ease of comparison for future studies. A linear mixed-effects model considering the visit number as a fixed effect and stimulus points nested within participants as a random effect was used to examine longitudinal changes in average PWS separately for each group. The longitudinal changes in average PWS for participants with intermediate AMD that either remained stable or progressed were then separated by stimulus points of different eccentricities; rings 1, 2, 3 and 4 included points from 0º and 1º, 2.33º, 4º and 6º respectively.

Paired-sample t-tests were then used to examine longitudinal changes in visual acuity measures (BCVA and LLVA) for each study group. In this study, the average microperimetric sensitivity of the five points within the central 1º of the stimulus pattern (termed “central microperimetric sensitivity”) was used due to its close correlation with the visual acuity measures. Pearson correlation coefficients were then used to determine the relationship between baseline LLD and changes in BCVA, LLVA and central microperimetric sensitivity over the 12-month period for eyes with intermediate AMD. All statistical analyses were performed using commercially available statistical software (IBM SPSS Statistics, software version 21; IBM/SPSS, Inc., Chicago, IL).

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References.

