

Results of a Multicenter Masked Clinical Trial to Evaluate the Preferential Hyperacuity Perimetry (PHP) Test for Detection of Age-related Macular Degeneration (AMD)

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Abstract

Background:

Objective: To report on the results of a multicenter, masked clinical trial, comparing PHP to the Amsler grid for the detection of AMD-related macular lesions.

Methods: Patients with and without various stages of AMD underwent protocol refraction, standardized visual-acuity examination, the PHP test and conventional supervised Amsler grid examination (performed by a trained technician masked to the patient's retinal condition) and stereoscopic macular color photographs. In the PHP test, which is based on the hyperacuity phenomenon, a dotted line is flashed across different macular loci in a perifoveal radius of 7°. Any distortion or scotoma perceived by the patient are recorded and automatically analyzed yielding a map of the macular visual fields. Color photographs were graded by a Photograph Reading Center grader (Wilmer Eye Institute, Baltimore) who was masked to the retinal diagnosis.

Results: One-hundred fifty-one eyes in 151 patients were included. Visual acuity ranged from 20/20 to 20/160 with a median of 20/32. Of the 19 eyes with neovascular AMD, 19 (100%) were positive on the PHP test and 10 (53%) were positive on the Amsler grid test. Of the 27 eyes with geographic atrophy, 26 (96%) were positive on the PHP test and 12 (44%) were positive on the Amsler grid test. Of the 20 eyes with non-neovascular AMD with high-risk characteristics (HRC) (defined as the presence of > 5 large drusen), 14 (70%) were positive on the PHP test and 4 (20%) were positive on the Amsler grid test. Of the 51 eyes with non-neovascular AMD without HRC, 21 (41%) were positive on the PHP test and 4 (8%) were positive on the Amsler grid test. Of the 33 eyes with no AMD, 6 (18%) were positive on the PHP and none (0%) were positive on the Amsler grid.

Conclusions: The PHP test detected various AMD-related lesions more often than the Amsler grid test, although the PHP test had a higher false positive rate. The PHP test may be the most efficient method currently available for self-detection of AMD-related lesions.

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