

## Macular Perimetry for Diagnosing Neovascular AMD

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### Abstract

**Background:** Many patients with neovascular AMD are diagnosed when severe visual loss has already occurred, when lesions are usually large and subfoveal in location. Since treatment may reduce the risk of additional visual loss but is unlikely to improve vision, detecting choroidal neovascularization (CNV) at an early stage before marked vision loss has occurred may help preserve visual acuity. The most widely used tool for early detection is the Amsler Grid. However, it has been shown to be of low reliability for detection of visual field defects associated with CNV.

**Objective:** The aim of this study was to assess a new method of macular perimetry, the Preferential Hyperacuity Perimetry (PHP) test, for detecting visual disturbances from CNV.

**Methods:** The PHP is a screen-based interactive hyperacuity examination, with online analysis and without the need for professional interpretation of the results. The test is performed by the patient on a PC-like apparatus, with or without assistance. With PHP, a virtual line composed of dots is flashed across different macular loci. It is suspected that the extreme sensitivity of hyperacuity by a patient detects abnormalities in areas of distorted retina. Three groups of patients participated in the study; 45 consecutive symptomatic patients with CNV secondary to AMD, 52 patients with intermediate AMD and 10 asymptomatic patients with CNV. All patients underwent a visual acuity examination, the PHP test, an eye examination, and fluorescein angiography (FA) in the case of CNV and stereoscopic color fundus photographs (CFP) in the case of intermediate AMD; the photographs served as the gold standard for diagnosis.

**Results:** The PHP test had a sensitivity of 91% (41 of 45 patients) for detecting CNV in patients with CNV, and a specificity of 88% (46 of 52 patients) for not detecting CNV in patients with intermediate AMD. Of the 10 asymptomatic patients, the CNV location was non-subfoveal in 8 cases. The PHP test was able to detect a visual field defect in 9 (90%) of these asymptomatic patients.

**Conclusions:** The PHP test showed high sensitivity for diagnosing CNV regardless of symptoms, while maintaining high specificity in differentiating CNV from intermediate AMD. Thus, this tool may be feasible for monitoring patients with intermediate AMD who are at risk for developing CNV.

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