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Diagnostic aid

## PHP can detect retinal toxicity

Preferential hyperacuity perimetry testing sensitive, helpful for early detection

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**Peabody, MA**—Preferential hyperacuity perimetry (PHP) testing (Foresee PHP, Reichert) may be helpful in the detection of retinal toxicity resulting from the administration of hydroxychloroquine (HCQ) or chloroquine, according to a recent study. Originally designed for the diagnosis of



Dr. Anderson

age-related macular degeneration (AMD), the PHP exam may prove to have further diagnostic usefulness in the detection of retinal toxicity, said Carolyn Anderson, MD.

“Ophthalmologists tend to perform a battery of tests in patients with suspected retinal toxicity,” said Dr. Anderson, of the department of ophthalmology, Lahey Clinic, Peabody, MA. “Therefore, it would be ideal to have a test that is very reliable, very sensitive, and very specific for this condition. PHP may be useful in providing some evidence either for or against a patient having retinal toxicity, and, therefore, [it] can be employed as an ancillary diagnostic tool alongside other currently used diagnostic tests.”

Dr. Anderson recently conducted a study (Anderson C, Pahk P, Blaha GR, et al. Preferential hyperacuity perimetry to detect hydroxychloroquine retinal toxicity. *Retina*. 2009;29:1188-1192) of 15 patients to assess whether PHP testing could detect the presence of retinal toxicity as a result of HCQ or chloroquine administration. Patients were divided evenly into three groups: five pa-

### Take-Home Message

Preferential hyperacuity perimetry (PHP) may be useful in detecting retinal toxicity resulting from hydroxychloroquine or chloroquine administration, according to results from a recent study. Traditional tests all can produce varying results and PHP testing may be a useful adjunct to diagnosis.

tients with confirmed HCQ or chloroquine retinal toxicity (demonstrating visual field and fundus changes); five patients with suspected HCQ toxicity (demonstrating visual field defects with or without a normal fundus); and five patients with a history of long-term use of HCQ or chloroquine use but no evidence of retinal toxicity (control group).

Significant hyperacuity defects were detected with PHP testing in patients with either known or suspected retinal toxicity as evidenced on standardized visual field testing and/or fluorescein angiography. None of the patients in the control group showed any PHP hyperacuity defects.

Hydroxychloroquine is frequently prescribed by primary-care physicians and rheumatologists for diseases such as lupus arthritis. Ophthalmologists can become involved in these cases when these patients are screened for of retinal toxicity, a potential side effect of the medication. Screening for retinal toxicity is important in these patients because it can be irreversible and lead to vision loss, particularly if the diagnosis is made late.

“If the retinal toxicity is picked up early on, and the medication is stopped, these

patients likely can regain the function that they lost,” Dr. Anderson said. “In some patients, however, the damage increases over time—even when the medication is discontinued—because HCQ and chloroquine can continue to exert a toxic effect, particularly at higher doses.

“It is paramount to catch the toxicity as early as possible,” she said. “Fortunately, PHP appears to be a sensitive test for this condition.”

Patients with early disease sometimes can be symptom-free and the retinal toxicity can be difficult to detect. Symptoms frequently are vague and can range from disturbances in color vision or a loss of fine discrimination characterized by the patient as an increased difficulty in reading.

Acquiring a thorough patient history is important but often is not enough, according to Dr. Anderson. Advanced-stage retinal toxicity is characterized by appearance of scotoma, as well as a relative loss in near central vision—all of which already can be irreversible at this stage of the disease.

### Adjunct to current diagnostic tools

Current methods used to detect retinal toxicity include a periodic fundus exam, visual field testing, Amsler grid testing, and color vision testing. These are more traditional tests, but all can produce varying test results.

The PHP test was originally designed for detection of AMD, specifically in patients experiencing conversion from the dry form of AMD to the wet form of AMD. The PHP device tests for the central 14° of the visual field and, therefore, can be sensitive for any kind of maculopathy.

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PHP also could have other indications as a diagnostic tool, such as with retinal toxicity.

“Though the patient population in this study was small, PHP appeared to detect retinal toxicity in all patients with known or suspected disease,” Dr. Anderson said. “Retinal toxicity is an uncommon condition and . . . to do sensitivity and specificity studies, we really need to have a larger cohort of patients for future trials [that] could support our initial positive findings.”

According to Dr. Anderson, the PHP test

is easy to learn and perform for this indication. One main advantage of the PHP test is that if a patient has a cataract, the performance of the test is not affected. According to Dr. Anderson, this is not the case with the visual field test.

“It would be interesting to have more patients with HCQ or chloroquine toxicity tested with the PHP device so that we could get better numbers and find out other physicians’ experiences with the device,” she said. “Also, it is very important to be sure that the HCQ or chloroquine dosage is appropriate for the patient . . . possibly

to reduce the frequency of retinal toxicity. This would be the task of both [the] ophthalmologist as well as the prescriber. There should be more dialogue between specialties when patients are prescribed these medications.” **OT**

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