Parkinson's disease patients have reduced visual contrast acuity

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Patients with Parkinson's disease (PD) often have difficulties with visual acuity in low-contrast images. Because they may have normal high-contrast vision, this is often overlooked during routine eye exams. In the current issue of the *Journal of Parkinson's Disease*, researchers report that PD patients had significantly worse vision for low-contrast images at close (40 cm) and far (2 m) distances. Even for high-contrast images, PD patients' vision was deficient at far distances.

In addition, the degree of low-contrast visual deficiency correlated with PD severity, suggesting that such visual testing may provide insights for the physician in the diagnosis and treatment of PD. To provide an easy-to-use screening tool for physicians, the investigators have developed an iPad-based application that can replace the traditional paper charts used in normal eye testing.

Thirty-two patients with PD and 71 control subjects were studied. All subjects received a neurological examination, which included the Unified Parkinson's Disease Rating Scale (UPDRS), and vision testing using the Variable Contrast Acuity Chart displayed on an Apple iPad 2. Usual corrective lenses were worn by subjects that required them.

Testing was done at high contrast (black letters on a white background) and at 2.5% contrast (grey on white) at distances of 40 cm and 2 m. The chart design and testing protocol were based on the Bailey-Lovie and Early Treatment of Diabetic Retinopathy Study (EDTRS) visual acuity tests that are the standards in ophthalmology clinical trials. Using a scale

of visual acuity based on the number of letters correctly identified, PD patients could see about 10% fewer letters than control subjects in the low-contrast tests at either distance and in the high-contrast tests at 2 m. There was no statistically significant difference between PD and control subjects in the high-contrast testing at 40 cm.

"Visual impairments can have a significant impact on quality of life and day-to-day functions," explained lead investigator Charles H. Adler, MD, PhD, Department of Neurology, Mayo Clinic College of Medicine, Scottsdale, AZ. "However, impaired contrast sensitivity in PD patients is a topic that has received relatively little attention in clinical practice. The electronic form of low contrast acuity letter chart we used in this study combines contrast sensitivity with visual acuity testing and is quick and easy to administer. It is portable, quantitative, and adjustable for testing distances and contrast levels."

With the iPad app used as a quick screening tool, better visual testing of PD patients could be implemented. Dr. Adler and his co-investigators stated that, "We believe that an assessment of low contrast acuity should be considered as part of the standard eye exam in PD, as it may reveal an otherwise missed visual impairment in these patients, help clinicians define a set of criteria for counseling them regarding safety while walking and driving at low-light conditions, and guide both pharmacologic and non-pharmacologic interventions that increase functional capacity."

More information: "Abnormal Visual Contrast Acuity in Parkinson's Disease," by Tanya P. Lin, Heather Rigby, Jennifer S. Adler, Joseph G. Hentz, Laura J. Balcer, Steven L. Galetta, Steve Devick , Richard Cronin, and Charles H. Adler (DOI: 10.3233/JPD-140470), Volume 5, Issue 1 (February 2015).

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