Ophthalmologists develop device for monitoring degenerative eye disease

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An ophthalmologist at UT Southwestern Medical Center has helped create a convenient device that lets patients who have a degenerative eye disease better track vision changes.

With the hand-held digital device, called myVisionTrack, patients can now perform an accurate self-test in less than 90 seconds, said Dr. Yu-Guang He, associate professor of ophthalmology at UT Southwestern.

"Many patients do not have timely eye exams and end up suffering preventable vision loss," he said. "Careful self-monitoring is critical because treatment for age-related macular degeneration and diabetic retinopathy is most effective when given at precise stages in the disease's progression."

Supplied as an app on an iPhone or iPod touch, the prototype device displays three circles on a screen, one of which is markedly different from the others. Patients cover one eye, then touch what they perceive to be the odd-shaped circle on the screen. With each click, the differentiation becomes more subtle. The test is then repeated with the other eye. Results are stored in the device so patients do not have to memorize scores. If a significant vision change is detected, patients are instructed to see their doctor.

Degenerative eye diseases affect more than 13 million people in the U.S. Experts estimate that as the population ages up to a fourth of Americans will be affected by 2020.

Patients diagnosed with a degenerative eye disease previously have used an eye chart developed in the 1940s to track distortion in their vision. Known as an Amsler Grid, the chart looks like graph paper with a black dot in the center. When they focus on the dot, patients begin to see blurred, wavy or missing lines on the grid.

Many patients using the grid, however, failed to notice subtle vision changes. By contrast, myVisionTrack's "shape discrimination" tests are twice as sensitive as the paper eye chart in detecting small changes in vision, Dr. He said.

The myVisionTrack device was produced by Vital Art and Science Inc., a Richardson, Texas-based biotech firm that recently received approval for up to $1 million from the Texas Emerging Technology Fund to develop the product.

Researchers at UT Southwestern and the Retina Foundation of the Southwest tested the prototype device in an eight-month clinical study funded by the National Institutes of Health's National Eye Institute. Forty diabetic patients diagnosed with retinopathy used the monitoring device at home each week. Their test results showed a high correlation with an ophthalmologist's reading of their retinal images, taken at the beginning, midpoint and end of the study.

Provided by UT Southwestern Medical Center