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Ophthalmology

OCULAR SURGERY NEWS

SD-tVEP technique may allow objective assessment of glaucoma damage

A new study investigated the correlation between structural and functional damage in patients with asymmetric glaucoma.

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Short-duration transient visual evoked potentials, or SD-tVEP, may be a new method to assess or screen for damage in glaucomatous eyes while minimizing interpreter subjectivity, according to a study.

“SD-tVEP is especially useful in patients in whom subjective assessment with Humphrey visual fields are not reliable or because they perform poorly on these tests for various reasons, such as physical limitations or poor test-taking ability,” study co-author **Celso Tello, MD**, said in an interview with *Ocular Surgery News*. “We believe that objective assessment of visual function with tests like SD-tVEP will bring to the general ophthalmologist a more reliable way to diagnose the early stages of diseases that affect the optic nerve.”

Study method

In the prospective study of 25 patients with glaucomatous optic neuropathy and characteristic visual field defects, patients underwent optical coherence tomography to measure macular thickness and scanning laser polarimetry with variable corneal compensation to measure peripapillary retinal nerve fiber layer thickness. Structural results derived from these measurements were compared with functional results measured by SD-tVEP.

SD-tVEP was generated using the Diopsys Enfant System and two Michelson contrast patterns, 10% and 85%, that would affect visual evoked potential, based on damage of a specific pathway (magnocellular or parvocellular). Stimuli were presented for 20 seconds on each eye.

“The fact [that] the SD-tVEP provides an automated interpretation of the results not only facilitates the testing procedure in a clinical practice but also enhances the reliability and reproducibility of the results,” Tello said.

With the 10% contrast pattern, a significant difference was found in SD-tVEP latency and amplitude between eyes with better and worse visual field mean deviation index ($P < .001$). Mean deviation correlated significantly with both SD-tVEP parameters ($P \leq .01$). With the 85% contrast pattern, visual field mean deviation values correlated significantly with amplitude results ($P = .01$), but not with latency, suggesting a better performance with this technique at lower contrast stimulus, according to the study.

Further investigation

“Using an SD-tVEP technique, we found good correlation between VEP results and the level of [visual field] damage in patients with decreased VEP asymmetric glaucoma,” the authors said, noting that further investigation is required in order to consider SD-tVEP an accurate and reliable method to assess damage in glaucomatous eyes.

Because the SD-tVEP device, marketed as the Diopsys NOVA-VEP Vision Testing System, is mobile, it can be easily integrated into a clinical setting, Tello said. He and colleagues are launching a study to test the efficacy of an add-on module that will allow for additional diagnostic testing to isolate retinal ganglion cell loss. The technology would be based on pattern ERG (PERG).

“Combining SD-tVEP and PERG testing will provide a significant improvement in the assessment of diseases that affect the visual pathway,” Tello said. — *by Cheryl DiPietro*

Reference:

healio.com/ophthalmology/.../sd-tvep-technique-may-allow-objective-assessment-of-glaucoma-damage



Prata TS, et al. *J Glaucoma*. 2012;doi:10.1097/IJG.0b013e3182182551.

For more information:

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