

THE LITERATURE



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DISCRIMINATION OF GLAUCOMA PATIENTS FROM HEALTHY INDIVIDUALS USING COMBINED PARAMETERS FROM SPECTRAL-DOMAIN OPTICAL COHERENCE TOMOGRAPHY IN AN AFRICAN AMERICAN POPULATION

Blumberg DM, Dale E, Pensec N, et al¹



ABSTRACT SUMMARY

This is a prospective analysis of the efficacy of spectral-domain optical coherence tomography (SD-OCT) in discriminating glaucoma patients from healthy individuals in an African American population. The authors recruited 221 African American

subjects; 103 healthy eyes and 118 glaucomatous eyes were enrolled. Glaucoma patients were included if they had a structural change (cup-to-disc ratio > 0.7) and a functional change (glaucomatous visual field defect). All subjects underwent an SD-OCT optic disc cube 200 x 200 scan and a macular cube scan 512 x 128 on the Cirrus HD-OCT (Carl Zeiss Meditec).

The authors found that the best performing parameters to distinguish healthy from glaucomatous eyes were inferior quadrant thickness, average retinal nerve fiber layer (RNFL) thickness, superior 2 (sup2) RNFL thickness, superior quadrant thickness, and vertical cup-to-disc ratio. Sup2 RNFL thickness, inferior quadrant thickness, average RNFL thickness, superior quadrant thickness, and inferior 2 RNFL thickness were found to be the best parameters to discriminate eyes with early glaucoma from healthy eyes. The authors concluded that several RNFL, optic nerve head, and ganglion cell analysis parameters have clinically significant diagnostic accuracy in distinguishing glaucoma patients from healthy individuals and may aid in discriminating eyes with early glaucoma from healthy eyes.

DISCUSSION

What is the role of SD-OCT in early glaucoma?

Computer-based quantitative imaging of the optic nerve has been shown to have a role in the diagnosis and management of glaucoma.² SD-OCT is becoming readily available in most communities. RNFL thickness, optic nerve head characteristics, and retinal ganglion cell characteristics are an adjunct to clinical and functional parameters. Patients with preperimetric and early glaucoma in particular present a diagnostic challenge for eye care providers.

Even with the help of SD-OCT, it is often difficult to decide which parameters to use and when to initiate treatment of these individuals, particularly in the absence of visual field changes. It is for this reason that SD-OCT is not a recommended screening tool for the general population.

Blumberg and colleagues have identified several parameters that show a high association with glaucoma, particularly sup2 RNFL thickness, inferior quadrant thickness, average RNFL thickness, and superior quadrant thickness. These parameters trended toward significance in differentiating patients with and without early glaucoma. Clinicians can use these parameters as an adjunct to the clinical and functional assessment of glaucoma suspects or patients with preperimetric glaucoma.

Should race be a consideration when interpreting these tests?

In the United States, glaucoma is associated with higher rates of progression to blindness in African Americans than in other populations.³ Many studies have found racial differences in RNFL thickness, but none has yet proven their significance relating to diagnostic performance.⁴ The authors mention that their results are consistent with earlier publications regarding SD-OCT in mixed-race populations. Although race is certainly a risk factor for glaucoma, it is not clear that there are any racial differences in SD-OCT parameters when evaluating mixed-race populations for glaucoma.

GEOGRAPHIC VARIATION IN THE USE OF DIAGNOSTIC TESTING OF PATIENTS WITH NEWLY DIAGNOSED OPEN-ANGLE GLAUCOMA

Elam AR, Blachley TS, Stein JD⁵

ABSTRACT SUMMARY

This retrospective study examined the proportion of patients in different regions across the United States with open-angle glaucoma (OAG) undergoing diagnostic testing (visual field testing, fundus photography, and other imaging) in the 2 years after diagnosis. The authors examined the records of enrollees in a large managed care network and identified 56,675 enrollees with a diagnosis of OAG from 201 communities across the country. The performance of visual field testing, fundus photography, and other ocular imaging, including confocal scanning laser ophthalmoscopy and OCT, within the first 2 years of OAG diagnosis was noted for each patient.

The authors found that 74.4% of enrollees underwent

“The proportion of patients [with open-angle glaucoma] receiving [diagnostic] testing varied widely across the United States.”

visual field testing at least once within 2 years of their initial diagnosis, although the rate was as low as 51% for one community. Twenty-seven percent of enrollees received fundus photography, and 61.7% of enrollees underwent other ocular imaging within 2 years of initial diagnosis. The authors found that 14.0% of enrollees did not receive any form of diagnostic testing in the first 2 years after diagnosis. The proportion of patients receiving testing varied widely across the United States. The communities with the highest rate of no diagnostic testing were on the West Coast, in southeastern states, and in the Midwest. The authors concluded that more qualitative research is needed to better understand the reason for the disparity in utilization of OAG diagnostic testing across different communities.

DISCUSSION

What is the role of diagnostic testing in newly diagnosed OAG?

The American Academy of Ophthalmology Preferred Practice Patterns (AAO PPP) lists RNFL thinning and visual field changes as key clinical diagnostic characteristics of OAG. Moreover, the AAO PPP recommends the use of visual field testing and ocular imaging in the diagnosis and management of OAG.⁶ Elam and colleagues have shown that, despite these recommendations, as many as one-quarter of newly diagnosed glaucoma patients have not had visual field testing and one-third have not had ocular imaging. Some of the barriers postulated include lack of access, patients' noncompliance, and patient characteristics precluding these tests (eg, media opacities, poor visual acuity). As the population ages, the incidence of OAG is rising, and the use of these clinical adjunctive tests should become more widespread.⁷

How can the utilization of diagnostic testing be improved?

Elam and colleagues have identified variations among communities in the utilization of diagnostic testing. Further studies are needed to elucidate the reasons for these differences. Is there a lack of education within certain communities? As the authors suggest, it may be beneficial

to learn from the communities with high utilization and to translate these practice patterns to those with poorer rates of testing. Ultimately, the goal is to improve the care of patients, with higher rates of identification of glaucoma patients and treatment of those individuals to lower the rates of blindness in the United States. Formal educational programs within ophthalmology and optometry to elucidate improved diagnostic accuracy with the use of adjunctive testing could increase compliance with the AAO PPP.

Another possible barrier to the usage of diagnostic testing could be financial. With the Centers for Medicare & Medicaid Services increasingly cutting reimbursement for patients' visits and the advent of bundling services, ophthalmologists and optometrists often face difficult decisions on the utilization of costly instruments such as OCT and automated perimetry devices.⁸ In these cases, less costly measures such as fundus photography and manual perimetry can be employed. ■

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