2008

The Year Book of OPHTHALMOLOGY®

Editor-in-Chief

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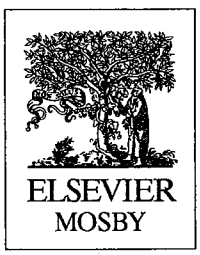

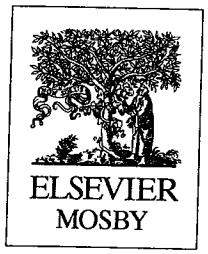

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2008 EDITION

Printed in the United States of America
Composition by TnQ Books and Journals Pvt Ltd, India
Printing/binding by Sheridan Books, Inc.

Editorial Office:
Elsevier
1600 John F. Kennedy Blvd.
Suite 1800
Philadelphia, PA 19103-2899

International Standard Serial Number: 0084-392X
International Standard Book Number: 978-1-4160-5164-0

Editorial Board

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Editorial Board

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To facilitate the use of the YEAR BOOK OF OPHTHALMOLOGY® as a reference tool, all illustrations and tables included in this publication are now identified as they appear in the original article. This change is meant to help the reader recognize that any illustration or table appearing in the YEAR BOOK OF OPHTHALMOLOGY® may be only one of many in the original article. For this reason, figure and table numbers will often appear to be out of sequence within the YEAR BOOK OF OPHTHALMOLOGY®.

Foreword

I am again thrilled that my Edit
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Foreword

I am again thrilled that my Editorial team has done such an outstanding job with the 2008 edition of the YEAR BOOK OF OPHTHALMOLOGY! As always, the goal of the YEAR BOOK is to provide a concise summary of the most important peer-reviewed journal articles covering the span of ophthalmic subspecialties from the previous year. The summary is accompanied by brief discussion of the relevance (or irrelevance) of the paper to practicing ophthalmologists. I believe it does just that!

With the ever expanding number of peer-reviewed journals, not to mention "throw-away" journals, it is getting harder and harder to not only keep up with the latest developments, but also to sift through the literature to find what is important. The YEAR BOOK OF OPHTHALMOLOGY accomplishes that task and puts it into perspective. For those of us with hardly enough time to review the important literature in our own sub-specialties, the YEAR BOOK can't be beat for keeping us abreast of the significant issues in other sub-specialties.

I encourage readers to contact me (via e-mail is the best, at cjrapuano@willseye.org) with comments, criticisms and suggestions. Your input continues to help mold the YEAR BOOK into what is most useful for our readers. I look forward to hearing from you.

Christopher J. Rapuano, MD

)pen-angle glaucoma randomized to axolol (n = 129) or no immediate 3 months for up to 11 years.
ırd analyses, expressed by hazard ervals (CIs).
) progression, defined by perimetric

as 67% when follow-up ended oximately halved progression risk ults were similar for patients with 0.41 and 0.55). Baseline progression re higher IOP, exfoliation, bilateral reported. New baseline predictors fusion pressure in all patients 1.04–1.94), cardiovascular disease 26) in patients with higher baseline sure (BP) (£125 mmHg; HR, 0.46; h lower baseline IOP. Postbaseline at follow-up, with 12% to 13%

: Progression in the Early Manifest Glaucoma nts (n = 255)

erence	Hazard Ratio (95% Confidence Interval)	*P* Value*
	0.53 (0.39–0.72)	<0.0001
	1.77 (1.29–2.43)	0.0005
	2.12 (1.30–3.46)	0.0026
	1.88 (1.35–2.63)	0.0002
	1.51 (1.11–2.07)	0.0095
	1.42 (1.04–1.94)	0.0268
	1.39 (1.00–1.91)	0.0510
	0.69 (0.44–1.07)	0.0971
Hg lower	0.92 (0.89–0.96)	0.0001
Hg higher	1.13 (1.08–1.18)	<0.0001
Hg higher	1.12 (1.07–1.16)	<0.0001
igher	1.02 (1.01–1.02)	0.0014
ım lower	1.25 (1.01–1.55)	0.0422

tolic perfusion pressure.
line IOP, exfoliation, number of eligible eyes, age, and lower nus last follow-up visit and (d), (e) for mean follow-up IOP.

ors of long-term progression in the early manifest glaucoma from the American Academy of Opthalmology.)

average increase per millimeter of mercury in all patients (HRs, 1.12–1.13 per mmHg higher) and similar results in patients with higher and lower baseline IOP (HRs, 1.15 and 1.13 per mmHg higher). Disc hemorrhages (HR, 1.02; 95% CI, 1.01–1.03 per percent higher frequency) also predicted progression. Thinner central corneal thickness (CCT) (HR, 1.25; 95% CI, 1.01–1.55 per 40 μm lower) was a new significant factor, a result observed in patients with higher baseline IOP (HR, 1.42; 95% CI, 1.05–1.92 per 40 μm lower) but not lower baseline IOP, with significant IOP–CCT interaction.

Conclusions.—Treatment and follow-up IOP continued to have a marked influence on progression, regardless of baseline IOP. Other significant factors were age, bilaterality, exfoliation, and disc hemorrhages, as previously determined. Lower systolic perfusion pressure, lower systolic BP, and cardiovascular disease history emerged as new predictors, suggesting a vascular role in glaucoma progression. Another new factor was thinner CCT, with results possibly indicating a preferential CCT effect with higher IOP (Table 2).

▶ Treatment of glaucoma in this trial halved the progression risk. Baseline progression risk factors were as follows: Higher IOP, exfoliation, bilateral disease, older age, low ocular systolic perfusion pressure, cardiovascular disease, and thinner corneal pachymetry. Post-baseline progression factors were as follows: IOP level (12% increase per mm Hg) and disc hemorrhages. These are in concordance with findings from other major glaucoma trials and support the use of these in the clinical management of patients with glaucoma.

L. J. Katz, MD

Early detection of glaucoma by means of a novel 3D computer-automated visual field test

Nazemi PP, Fink W, Sadun AA, et al (Doheny Eye Inst and Keck School of Medicine at the Univ of Southern California, Los Angeles; et al)
Br J Ophthalmol 91:1331-1336, 2007

Purpose.—A recently devised 3D computer-automated threshold Amsler grid test was used to identify early and distinctive defects in people with suspected glaucoma. Further, the location, shape and depth of these field defects were characterised. Finally, the visual fields were compared with those obtained by standard automated perimetry.

Patients and Methods.—Glaucoma suspects were defined as those having elevated intraocular pressure (>21 mm Hg) or cup-to-disc ratio of >0.5. 33 patients and 66 eyes with risk factors for glaucoma were examined. 15 patients and 23 eyes with no risk factors were tested as controls. The recently developed 3D computer-automated threshold Amsler grid test was used. The test exhibits a grid on a computer screen at a preselected

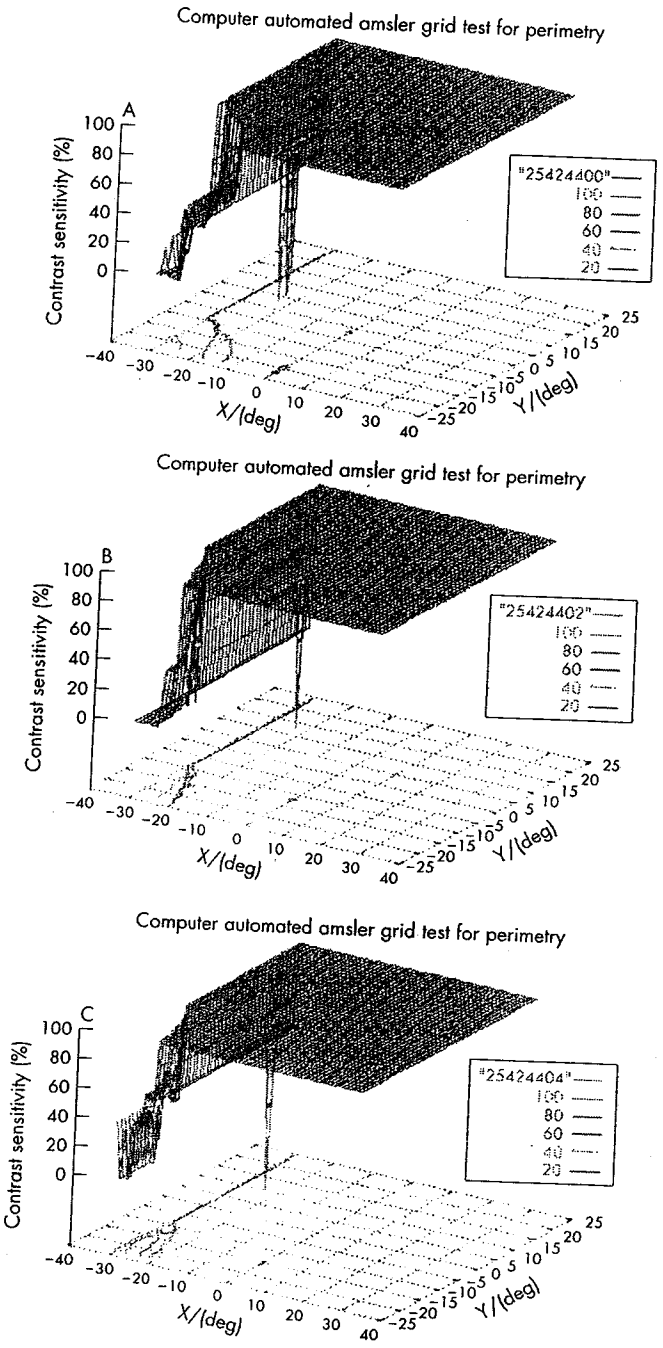


FIGURE 6.—A–C. Three repeated measurements of the same eye in a patient with inferior nasal step demonstrating the reproducibility of the 3D visual field test. (Reprinted from Nazemi PP, Fink W, Sadun AA, et al. Early detection of glaucoma by means of a novel 3D computer-automated visual field test. *Br J Ophthalmol*. 2007;91:1331-1336.)

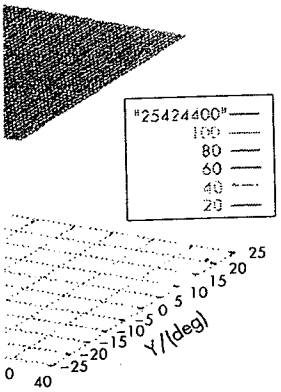
greyscale and angular resolution, on the grid that are missing in thei minute test required that the pa a touch screen with varied displa gaze on a central fixation marker. was then obtained that was furth and depth of the scotomas. The e The results were compared to Hu standard or SITA standard 30-2 o

Results.—In this pilot study 79 suspect group repeatedly demonst metry. The 3D depictions of visu factors were all characteristic of the eyes demonstrated arcuate def fields were shown in 29% of th detected in the control group.

Conclusions.—The 3D compute may demonstrate visual field abno glaucoma suspects with normal ach This test may be used as a scre glaucoma (Fig 6).

▶ Current visual field testing is not o tion, is not particularly sensitive to earl attempts to overcome one or more of t ways to test the field. A recent compu This new test varies contrast to test th and render a 3D reconstruction of t a central target and outlines any scot sensitive computer screen. The test contrast levels during 3 to 5 minutes and normal patients, were asked to Humphrey perimetry. The control grou In the glaucoma suspect group, 79% that were not apparent on Humphrey and typical of glaucoma. This pilot defects would eventually become ap it able to compare the test with the r wavelength perimetry or frequency d of the test is that it is probably much m It still relies on the patient's coopera enough stylus to outline some scotor the test difficult for some subjects, promising field testing strategy that co and screening for the disease.

ler grid test for perimetry



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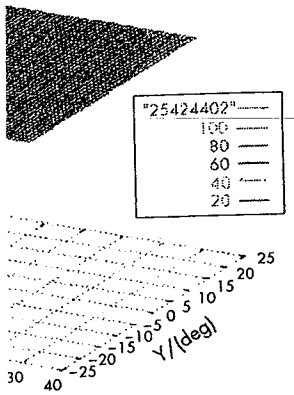

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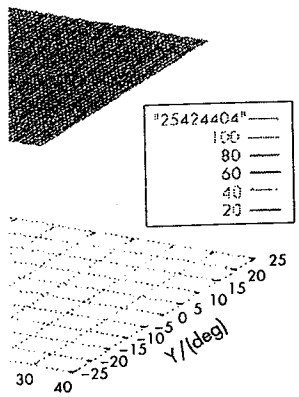

of the same eye in a patient with inferior nasal step
ld test. (Reprinted from Nazemi PP, Fink W, Sadun
novel 3D computer-automated visual field test. *Br J*

greyscale and angular resolution, and allows patients to trace those areas on the grid that are missing in their visual field using a touch screen. The 5 minute test required that the patients repeatedly outline scotomas on a touch screen with varied displays of contrast while maintaining their gaze on a central fixation marker. A 3D depiction of the visual field defects was then obtained that was further characterised by the location, shape and depth of the scotomas. The exam was repeated three times per eye. The results were compared to Humphrey visual field tests (ie, achromatic standard or SITA standard 30-2 or 24-2).

Results.—In this pilot study 79% of the eyes tested in the glaucoma-suspect group repeatedly demonstrated visual field loss with the 3D perimetry. The 3D depictions of visual field loss associated with these risk factors were all characteristic of or compatible with glaucoma. 71% of the eyes demonstrated arcuate defects or a nasal step. Constricted visual fields were shown in 29% of the eyes. No visual field changes were detected in the control group.

Conclusions.—The 3D computer-automated threshold Amsler grid test may demonstrate visual field abnormalities characteristic of glaucoma in glaucoma suspects with normal achromatic Humphrey visual field testing. This test may be used as a screening tool for the early detection of glaucoma (Fig 6).

▶ Current visual field testing is not optimal. It relies on the patient's cooperation, is not particularly sensitive to early glaucoma, and it is not portable. Several attempts to overcome one or more of these shortcomings have resulted in novel ways to test the field. A recent computer-based field test is one such example. This new test varies contrast to test the central vision in an Amsler grid fashion and render a 3D reconstruction of the hill of vision. The patient fixates on a central target and outlines any scotomas with his or her finger on a touch-sensitive computer screen. The test is repeated 5 times with varying preset contrast levels during 3 to 5 minutes time. Two groups, glaucoma suspects and normal patients, were asked to take both this test and conventional Humphrey perimetry. The control group of normal patients all had normal fields. In the glaucoma suspect group, 79% of eyes had field defects on the new test that were not apparent on Humphrey perimetry. The defects were reproducible and typical of glaucoma. This pilot study was not able to determine if the defects would eventually become apparent on Humphrey perimetry, nor was it able to compare the test with the results of other field strategies like short wavelength perimetry or frequency doubling perimetry. The other advantage of the test is that it is probably much more portable than conventional perimetry. It still relies on the patient's cooperation and I wonder if a finger is a fine enough stylus to outline some scotomas. Although those issues might make the test difficult for some subjects, overall though this seems to be a very promising field testing strategy that could very well help in the care of glaucoma and screening for the disease.

J. D. Henderer, MD