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Using Stratus OCT To Detect Early Glaucoma

The patient

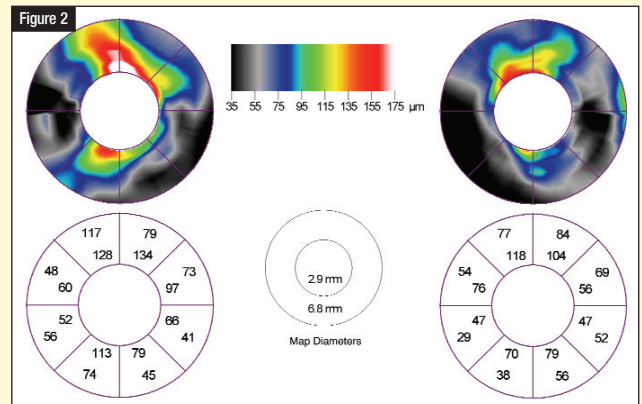
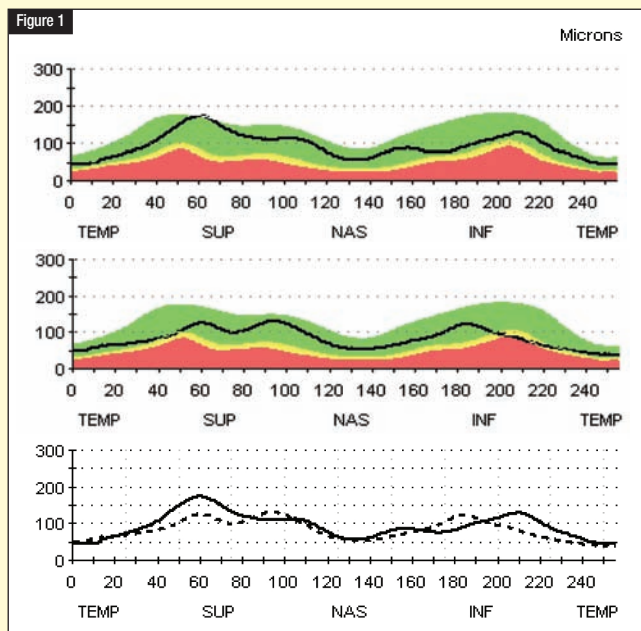
A 55-year-old man was referred for evaluation for possible glaucoma. He had received a diagnosis of primary open-angle glaucoma 10 years earlier. A few years prior to this visit, he had discontinued glaucoma medication after being told his IOPs had stabilized in both eyes.

The patient was asymptomatic. His visual acuity was 20/20 in each eye, and slit lamp biomicroscopy of the anterior segment was unremarkable. His IOPs were 26 mm Hg in the right eye and 27 mm Hg in the left eye. The cup-to-disc ratio were 0.65 in the right eye and 0.70 in the left, with temporal sloping in each eye. The visual fields (Humphrey 24-2 SITA Standard strategy) for both eyes were normal.

The Stratus OCT diagnosis

To assess the retinal nerve fiber layer (RNFL) and identify potential structural changes indicative of early glaucoma, we performed optical coherence tomography (OCT) using the Stratus OCT. Three strategies were chosen: The fast RNFL thickness scan; the fast macular thickness scan; and the RNFL map scan protocols.

Figure 1 shows the RNFL thickness for each eye as plotted against a normative adult database. The super-



otemporal and inferotemporal regions of the left eye measurements are below normal.

The bottom graph in Figure 1 compares the RNFL thickness of the two eyes. The dotted line represents the RNFL of the left eye; the solid line, the RNFL of the right eye. The RNFL of the left eye is thinner than that of the right eye in the two regions.

Figure 2 shows another representation of the RNFL distribution using the six peripapillary concentric rings of the RNFL map scan protocol. The red and yellow areas of the figure indicate the locations in which the RNFL is most prominent. When comparing the plots for each eye, the lack of red and yellow inferiorly in the left eye represents thinning of the RNFL.

Treatment and outcome

The patient's elevated IOPs, along with evidence of structural damage to the RNFL as revealed by Stratus OCT, indicate the patient has preperimetric early open-angle glaucoma in the left eye. Therapy was initiated.

Discussion

More than 40% of the optic nerve axons can be damaged before glaucomatous changes are detectable on achromatic perimetry.¹ This case shows the Stratus OCT can be a useful resource in early identification and, thus, treatment of glaucoma before functional changes occur.

Reference

1. Quigley HA, Addicks EM, Green WR. Optic nerve damage in human glaucoma. III. Quantitative correlation of nerve fiber loss and visual field defects in glaucoma, ischemic optic neuropathy, papilledema, and toxic optic neuropathy. *Arch Ophthalmol*.1982;100:135-146.

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