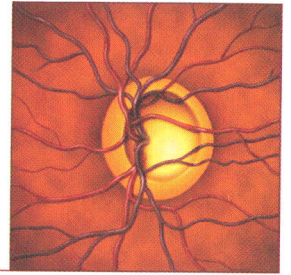


Glaucoma



Case Studies

The Importance of Imaging

Optic nerve damage can be detected long before visual field data uncovers the problem.

BY ADAEL SOARES, M.D., AND RAYMOND LEBLANC, M.D., FRCSC

Presenting complaint and history: In 1994, a 44-year-old white female patient was referred to our office because of high IOP in both eyes. Although she said her father had glaucoma and was being treated with glaucoma drops, her medical history was negative.

She had no history of ocular trauma, ocular disease and/or surgery, and she wasn't being treated with any ocular medications.

Examination: During the initial consultation, we gave the patient a complete ocular examination; external examination, ocular motility and pupil reflexes were completely normal. Visual acuity was 20/20 in each eye and the anterior segment was normal on slit-lamp examination. IOP (measured with Goldmann tonometry) was 21 mmHg in each eye.

Fundus examination revealed 0.3 cupping with intact neuro-retinal rim in each eye. Visual field analysis using the Humphrey Field Analyzer (Carl Zeiss Meditec) was normal in the right eye, but in the left eye we noted a small change in the superior hemi-field. However, we couldn't confirm this on subsequent examinations.

We prescribed no treatment, but followed the patient as a glaucoma suspect because of her mild ocular hypertension and family history.

Follow-up: During the following years, IOP in her right eye fluctuated from 20 to 24 mmHg; IOP in the left eye fluctuated from 20 to 26 mmHg. However, she remained asymptomatic.

During this time, in addition to visual field assessments

and optic disc stereo photos, we took scanning laser tomographs using the HRT (Heidelberg Retina Tomograph) from Heidelberg Engineering. When the software for probability map analysis became available in 2000, we reviewed all of the HRT scans we'd taken. The software showed that concentric cup enlargement had occurred in the left eye by January 1997, and in the right eye in June 1998. (Note the red areas on the HRT scans shown on page 73). These optic disc changes were confirmed with careful review of the optic disc photos.

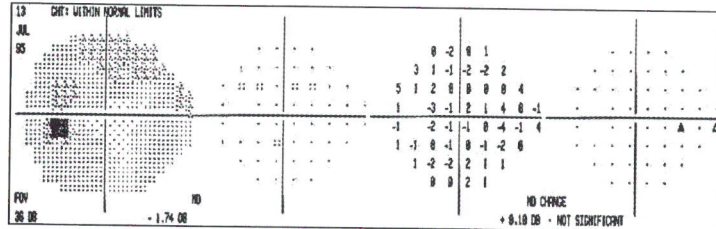
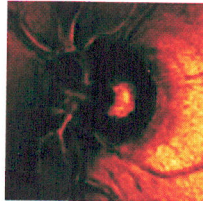
At this point we initiated appropriate treatment to lower IOP. Since then, neither visual field nor optic disc analysis have shown any sign of progression.

Discussion: This case demonstrates the importance of imaging the optic nerve when ocular hypertension and the possibility of early glaucoma are present, even when the visual field is normal. This patient, whose IOP was in the low to mid twenties, continued to show a normal visual field analysis even while HRT analysis of the optic disc showed concentric cup enlargement (confirmed by optic disc photos).

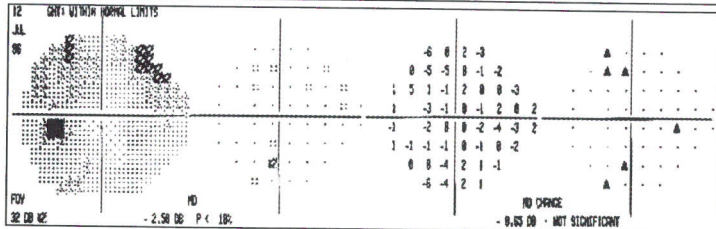
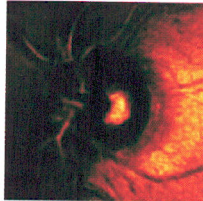
Structural changes in the optic nerve appear to precede functional changes in many, if not most, cases of glaucoma. For that reason, when ocular hypertension and the possibility of early glaucoma are present, imaging the optic nerve is an important way to detect clinically significant change and establish the appropriate treatment as early as possible. **OM**

HRT images of the patient's left eye, using probability analysis to highlight changes over time, show progressive damage not revealed in concurrent visual fields.

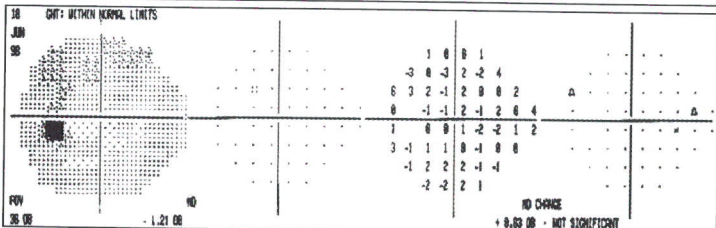
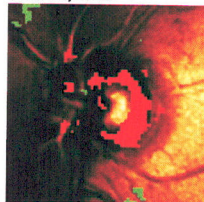
July 15, 1994



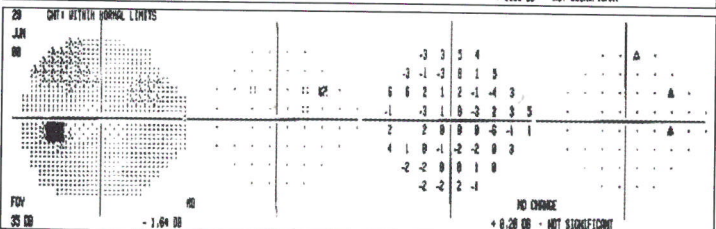
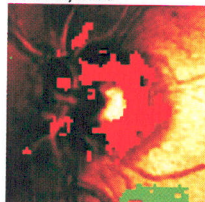
July 12, 1996



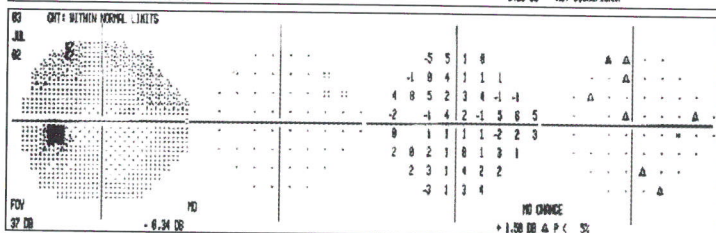
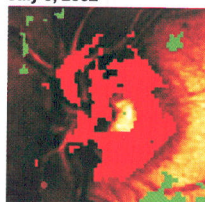
June 18, 1998



June 29, 2000



July 3, 2002



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