

**Quantitative Measurements of Optic Disc Asymmetry in Patients with Glaucoma and Normal subjects.** C.A. Girkin<sup>1</sup>, C. Bowd<sup>2</sup>, E.Z. Blumenthal<sup>2</sup>, L.M. Zangwill<sup>2</sup>, R.N. Weinreb<sup>2</sup>. Department of Ophthalmology, University of Alabama at Birmingham, Birmingham, AL<sup>1</sup>, Glaucoma Center and Diagnostic Imaging Laboratory, University of California, San Diego, La Jolla, CA<sup>2</sup>.

**Purpose:** To determine if interocular asymmetry of optic disc topography can serve to differentiate between glaucoma patients and normal subjects. **Methods:** Interocular asymmetry of optic disc topography was assessed with a confocal scanning laser ophthalmoscope (HRT). Measurements were assessed both globally and regionally (30-degree sectors) in 15 glaucomatous and 26 normal subjects. Asymmetry was quantified as the absolute value of the difference between topographic parameters measured in the right and left eyes for each parameter. The magnitude of the interocular asymmetry in glaucoma patients and normal subjects was compared. **Results:** Significant differences were found between glaucoma patients and normal subjects for global asymmetry of cup volume (CV), cup area (CA), and mean height contour (MHC) (see table). Regional analysis revealed significant differences in asymmetry of CV ( $p=0.0006$ ), MHC ( $p=0.004$ ), rim area ( $p=0.003$ ) cup/disc ratio ( $p=0.001$ ), and mean cup depth ( $p=0.003$ ), primarily in the inferior and superior regions of the optic disc.

Global Parameter	Glaucoma (mean,SD)	Normal (mean,SD)	p-value
MHC Asymmetry (mm)	0.072, 0.041	0.037, 0.022	0.0008
CA Asymmetry (mm <sup>2</sup> )	0.298, 0.225	0.121, 0.101	0.0013
CV Asymmetry (mm <sup>3</sup> )	0.145, 0.121	0.055, 0.049	0.0019

**Conclusions:** Differences between glaucoma patients and normal subjects were observed in interocular asymmetry both globally and regionally for several optic disc topographic parameters. Further evaluation of quantitative measurements of asymmetry in early glaucoma is necessary to determine the diagnostic utility of this technique.

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