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Macular Ganglion Cell/Inner Plexiform Layer Measurements by Spectral Domain Optical Coherence Tomography for Detection of Early Glaucoma and Comparison to Retinal Nerve Fiber Layer Measurements

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Reply to 'Letter to Editor'

We greatly appreciate Drs Padhy and Rao's comments regarding our study.¹ We would like to address the criticisms they raised as follows.

We certainly agree with them that imaging modalities such as spectral-domain optical coherence tomography need to be used only as ancillary tools for diagnosis of glaucoma. As far as our sample of glaucoma patients is concerned, glaucoma subjects enrolled in our study were all patients with known glaucoma as diagnosed by the attending physician before they were invited to be enrolled in the study. The diagnosis by the attending physician necessarily relied on the correlation of structural changes of the optic nerve with abnormal findings at the level of the visual field. We relied on visual field findings in this study so as to include only eyes with perimetric glaucoma. Diagnostic studies such as ours mostly rely on convenience sampling from clinic patients. The authors' criticisms would have been valid had we used a random group of patients taken from a population-based survey, in which setting the diagnosis of glaucoma certainly needs to be verified with both structural and functional measures. In addition, the optic disc photographs for this study were reviewed and validated in the original database by 2 of the authors (K.N.M. and J.A.G.).

The relationship of the ganglion cell/inner plexiform layer (GC/IPL) thickness with mean deviation (MD) in normal subjects was actually only seen in univariate analyses and disappeared after adjusting for confounding factors (including age and axial length). In Figure 1, we believe there is a reasonable boundary between normal and glaucoma subjects, with some overlap in the 80–90 μ m range. Additionally, any diagnostic bias or inaccuracy with regard to glaucoma patients would not have affected the relationship of GC/IPL and MD in the *normal* subjects who all had a normal disc examination.

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We presented the *standard errors* (not standard deviations) for the mean of various retinal nerve fiber layer and GC/IPL measurements in Table 2 since we were interested in comparing the means in the 2 groups. Hence, the real within-group variability of the glaucoma or normal subjects cannot be observed in this table because the standard errors are a function of sample size *and* the standard deviation. Also, glaucoma eyes show more variability with regard to such outcome measures as a function of glaucoma severity criteria used for inclusion of patients. Our results are indeed consistent with those published by other investigators, such as Mwanza and associates² or Jeoung and associates.³

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