

## Macular Ganglion Cell Inner Plexiform Layer Thinning

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**Abstract :** Background: To compare the thinning patterns of the ganglion cell-inner plexiform layer (GCIPL) and peripapillary retinal nerve fiber layer (pRNFL) as measured using Cirrus high-definition optical coherence tomography (HD-OCT) in patients with visual field (VF) defects that respect the vertical meridian. Methods: Twenty eyes of eleven patients with VF defects that respect the vertical meridian were enrolled retrospectively. The thicknesses of the macular GCIPL and pRNFL were measured using Cirrus HD-OCT. The 5% and 1% thinning area index (TAI) was calculated as the proportion of abnormally thin sectors at the 5% and 1% probability level within the area corresponding to the affected VF. The 5% and 1% TAI were compared between the GCIPL and pRNFL measurements. Results: The color-coded GCIPL deviation map showed a characteristic vertical thinning pattern of the GCIPL, which is also seen in the VF of patients with brain lesions. The 5% and 1% TAI were significantly higher in the GCIPL measurements than in the pRNFL measurements (all  $P < 0.01$ ). Conclusions: Macular GCIPL analysis clearly visualized a characteristic topographic pattern of retinal ganglion cell (RGC) loss in patients with VF defects that respect the vertical meridian, unlike pRNFL measurements. Macular GCIPL measurements provide more valuable information than pRNFL measurements for detecting the loss of RGCs in patients with retrograde degeneration of the optic nerve fibers.

**Keywords :** brain lesion, macular ganglion cell, inner plexiform layer, spectral-domain optical coherence tomography

**Conference Title :** ICGS 2015 : International Conference on Glaucoma Surgery

**Conference Location :** London, United Kingdom

**Conference Dates :** September 25-26, 2015