Journal Article Review

Possible Undiagnosed Glaucoma Detected by MultiColor Imaging of Retinal Diseases

Based on:

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Background and Purpose

SPECTRALIS® MultiColor imaging is confocal scanning laser ophthalmoscopy combining three lasers optimized for different retinal depths. While the blue laser (488 nm) penetrates to the vitreoretinal interface and superficial retinal layers, the green laser (515 nm) penetrates to the middle retinal layers, including blood vessels. Lastly, the infrared laser (820 nm) penetrates to the outer retinal layers and choroid. Clinically, MultiColor images show retinal nerve fiber layer (RNFL) details with improved clarity compared to fundus and red-free photography. MultiColor images were evaluated for the presence of visible RNFL defects on undiagnosed glaucoma patients.

Methods

A retrospective chart review was conducted on 157 consecutive retina clinic patients, in which MultiColor images were obtained as part of care. Two glaucoma specialists assessed MultiColor images (SPECTRALIS, Heidelberg Engineering, Heidelberg, Germany) for RNFL defects in the superotemporal or inferotemporal quadrants. No consideration was given to the optic nerve. Patients were excluded if RNFL defects traced to regions of architectural loss, such as atrophy from vascular etiology, laser scars, surgical retinotomy or lesions, if images had low quality or artifacts, or if they had a suspected or actual glaucoma diagnosis. Images with RNFL defects included in the review had to have the temporal edge of the optic nerve, the fovea, and the arcades nasal to the fovea at minimum.

Results

- In this study, 134 eyes (80 patients) met inclusion criteria.
- Average age with possible undiagnosed glaucoma was 67 years.
- 13 eyes (10 patients) had visible RNFL defects consistent with possible undiagnosed glaucoma.
- All eyes presumed to have glaucoma also had a retinal diagnosis in the same eye (in 9 out of 13 eyes vascular diagnosis was made).
- Most common retinal diagnosis was branch retinal vein occlusion (4 out of 13 eyes).
- However, none of these 13 eyes (10 patients) were evaluated for glaucoma.

Conclusions

There is risk for glaucoma in a retinal clinic population due to history of vitrectomies, topical steroids, and intravitreal injections causing a transient increase in intraocular pressure. RNFL defects visualized on MultiColor images in this patient group suggest that MultiColor imaging is an adjunctive, qualitative tool and may enable diagnosis of multiple coexisting retinal diseases. Furthermore, MultiColor imaging may be used in retinal clinics to ensure glaucoma evaluations are conducted on patients with visible RNFL defects.

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