

Optical Coherence Tomography and Lenticular Opacification

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PURPOSE

To evaluate the correlation between varied lenticular opacification, visual acuity and signal to noise ratio on optical coherence tomographic measurements. Could variance of the signal to noise ratio in optical coherence tomography be used as a objective measurement criteria of the degree of lenticular opacity.

METHODS

This is a retrospective noncomparative case series. This included 27 eyes in 22 patients. A clinical examination included Snellen visual acuity measurements, biomicroscopy of the anterior segment, lens and dilated retinal exams. All patients underwent in-vivo retinal optical coherence tomography.

RESULTS

The patient Snellen visual acuities ranged from 20/40-1 to 20/200. Lenticular biomicroscopy revealed 17 patients with mild cataracts, 8 with moderate cataracts and 2 with severe cataracts. Dilated funduscopy revealed 13 patients with mild drusen, 16 patients in various stages of diabetic retinopathy from mild dot/blot hemorrhages to severe diabetic related fibrosis. 5 patients with mild to moderate hypertensive retinopathy. The optical coherence tomographic signal strength on a scale from 1 to 10 varied as follows: mild cataracts mean signal strength 5.5 (range 3-10), moderate cataracts mean signal strength 3.63 (range 1-4), and severe cataracts mean signal strength 2.5 (range 2-3). The mean signal to noise ratio in patients with mild cataracts is 33.78 db (range 26 to 44), with moderate cataracts is 29.3 db (range 22 to 42), and with severe cataracts is 28.5 db (range 23 to 34).

CONCLUSION

The quantitative effect of progressive lenticular opacification is a gradual decrease in signal strength, with a resultant inverse relationship noted between lenticular opacification and signal to noise ratio in OCT. As to whether one could potentially use variance in the signal to noise ratio in OCT as a objective lenticular opacity measurement criteria would require further large scale studies.