

Accepted Manuscript

Optical Coherence Tomography Protocols for Screening of Hydroxychloroquine Retinopathy in Asian Patients

Seong Joon Ahn, MD, Jooyoung Joung, MD, Han Woong Lim, MD, PhD, Byung Ro Lee, MD, PhD



PII: S0002-9394(17)30409-9

DOI: [10.1016/j.ajo.2017.09.025](https://doi.org/10.1016/j.ajo.2017.09.025)

Reference: AJOPHT 10273

To appear in: *American Journal of Ophthalmology*

Received Date: 25 April 2017

Revised Date: 19 September 2017

Accepted Date: 19 September 2017

Please cite this article as: Ahn SJ, Joung J, Lim HW, Lee BR, Optical Coherence Tomography Protocols for Screening of Hydroxychloroquine Retinopathy in Asian Patients, *American Journal of Ophthalmology* (2017), doi: 10.1016/j.ajo.2017.09.025.

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ABSTRACT

Purpose: To investigate the distribution of outer retinal changes in hydroxychloroquine (HCQ) retinopathy and explore optical coherence tomography (OCT) protocols to maximize the sensitivity of HCQ retinopathy detection in Asian patients.

Design: Diagnostic validity assessment

Methods:

Setting: Institutional

Patient Population: Forty-eight eyes (24 patients) with HCQ retinopathy underwent 6-mm horizontal and vertical line scans and 6 × 6-mm² volume scans using spectral-domain OCT (SD-OCT), and 9-mm line scans and 6 × 6-mm² and 12 × 9-mm² volume scans using swept-source OCT (SS-OCT).

Observation Procedures: Distances from the fovea to the defective photoreceptors were measured in the temporal, nasal, superior, and inferior directions from line scan OCT images. The sensitivity of retinopathy detection, indicated by photoreceptor defects, was compared among protocols.

Main Outcome Measures: Detection of photoreceptor defects and distances from the fovea to the defects

Results: The average minimum distance from the fovea to an area of photoreceptor defects was 1.84 ± 1.26 mm (mean ± standard deviation). The distances were greater than 3 mm horizontally and vertically in 15 (31.3%) and 17 (35.4%) eyes with HCQ retinopathy, respectively, and only wide-field line or volume scans could detect defects in the eyes. The 9-mm line scans detected HCQ retinopathy significantly better than 6-mm scans ($P < .001$); the sensitivity of the wide volume scan was significantly greater than the standard volume scan ($P = .001$). The 12 × 9-mm² volume scan detected retinopathy with the greatest sensitivity (100%).

Conclusions: Our study recommends a wide-field OCT scan to screen Asian patients taking HCQ medications.

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