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Choroidal Thinning Associated with Hydroxychloroquine Retinopathy

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ABSTRACT

Purpose: To investigate choroidal thickness in patients using hydroxychloroquine (HCQ) and compare choroidal thickness between eyes with and without HCQ retinopathy.

Design: Retrospective case series

Methods:

Setting: Institutional

Patients: We included 124 patients with systemic lupus erythematosus or rheumatoid arthritis who were treated with HCQ. The patients were divided into an HCQ retinopathy group and a control group, according to the presence or absence of HCQ retinopathy.

Observation: Total choroidal thickness and choriocapillaris-equivalent thickness were measured manually by two independent investigators using swept-source optical coherence tomography (SS-OCT; DRI-OCT, Topcon Inc., Tokyo, Japan). These measurements were made at the fovea and at nasal and temporal locations 0.5, 1.5, and 3 mm from the fovea. Medium-to-large vessel layer thickness was calculated accordingly. The thicknesses were compared between the HCQ retinopathy and control groups. We performed correlation analyses between choroidal thicknesses and details regarding HCQ use.

Main outcome measures: Total choroidal thickness and choriocapillaris-equivalent thickness

Results: Choroidal thicknesses were significantly decreased (P<.05) in the HCQ retinopathy group compared to the control group except at the temporal choroid 1.5 mm from the fovea. Choriocapillaris-equivalent thicknesses were significantly different in all choroidal locations between the groups. In contrast, the medium-to-large vessel layer thickness was only significantly different at a few locations. The cumulative dose/body weight was significantly correlated with subfoveal choroidal and choriocapillaris-equivalent thicknesses (both P=.001). The association between presence of HCQ retinopathy and choroidal thicknesses was also statistically significant after adjusting for age, diagnosis for HCQ use, refractive errors, and duration of HCQ use (P=.001 and .003 for subfoveal choroidal and choriocapillaris-equivalent thickness, respectively).

Conclusions: These results all suggest that HCQ retinopathy is associated with choroidal thinning, especially in the choriocapillaris. Our results may suggest choroidal involvement of HCQ toxicity.