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Letter to the Editor

Reply to comments on "A pilot study assessing retinal pathology in psychosis using optical coherence tomography: Choroidal and macular thickness"

To the Editor:

We are delighted by the interest in our report (Joe et al., 2018). The opportunity to assess the neurovasculature, neuronal integrity, and inflammation that are afforded with OCT are highly promising for mental health research. The authors of both letters have quite accurately indicated that a large number of variables can affect choroidal thickness, all of which should be considered in a larger study, as suggested (Tan et al., 2018; Desideri et al., 2018). Diurnal variation in choroidal thickness is indeed demonstrated by prior studies. Steady decreases throughout the day are seen in healthy individuals at 2-hour intervals, varying by up to 33.7 μm (Tan et al., 2012). In our study, all retinal imaging was conducted randomly between the hours of 12 noon and 5 pm for both cases and controls. While it may be impractical to measure choroidal thickness at precisely the same hour in all subjects, larger studies might demonstrate a difference in choroidal thickness between psychosis and healthy subjects that exceeds the range observed due to diurnal variation, which would yield greater confidence in the results.

As the authors of both letters point out, choroidal thickness is also influenced by many systemic conditions, including diabetes, hypertension, and cardiovascular disease. However, we propose that a shared pathophysiologic etiology between psychosis and cardiometabolic disorders may underlie a portion of cases with serious mental illness, including microvascular and endothelial dysfunction. The overlap of type 2 diabetes and severe mental illness is sufficient to suggest shared neural substrates, so design issues will be important in jointly considering metabolic and psychiatric disorders. The pathways of both psychosis and cardiometabolic disease may each be contributing to a reduction in choroidal thickness, so choroidal thickness may be an independent marker of both states. Whether choroidal changes precede psychosis onset would be another area for future investigation.

Complete ophthalmological exam was not performed on our cohort of patients, and the authors agree that future studies would benefit from incorporating a full ophthalmic exam. While it is true that many ocular parameters have been postulated as affecting choroidal thickness, including corneal curvature, corneal thickness, IOP, anterior chamber depth, and lens thickness, the validity of these determinants has not been fully established. For example, in a population-based study of choroidal thickness in 540 participants, only age, sex and axial length proved to be significant predictors of chroidal thickness (Gupta et al., 2015). Our study had the advantage of age and sex matching. Although high myopes (> -6D) were excluded, we agree that further correction for lower degrees of myopia would be beneficial.

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