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Seeking clarity on retinal findings in patients with COVID-19

We read with interest the Correspondence by Paula M Marinho and colleagues,¹ in which they describe retinal findings in patients with COVID-19. We agree that the small cotton wool spots and retinal microhaemorrhages in a subset of these patients represent important findings showing the non-respiratory aspects of COVID-19, which are probably relevant to the neurological findings seen in some patients.

The authors also report hyper-reflective features in the inner retina on optical coherence tomography (OCT) images from all 12 patients.¹ The OCT findings appear to take three forms: (1) pairs of thin, parallel, hyper-reflective bands; (2) thicker, horizontally oriented, hyper-reflective bands occupying nearly the entire thickness of the ganglion cell layer; and (3) moderately hyper-reflective foci.

We reviewed our database of OCT images acquired between 2009 and 2019 (before the COVID-19 pandemic) from more than 400 individuals with normal vision. We identified these same inner retinal features in every individual, which is inconsistent with the supposed pathological origin (appendix). Blood vessels appear as hyper-reflective structures in the inner retina and are accompanied by a hyporeflective, vertical tail (shadow) through the retina (appendix).² The variable appearance of the hyper-reflective signal is due to the varying angle at which the OCT scan intersects the blood vessel, with orthogonal sectioning resulting in the smallest profile.

A finding present in a large proportion of patients with COVID-19 would be of great potential diagnostic value. However, many, if not all, of the OCT findings reported by Marinho and colleagues¹ represent normal retinal anatomy.

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*Frederick T Collison, *Joseph Carroll*
jcarroll@mcw.edu

The Chicago Lighthouse, Chicago, IL, USA (FTC); Chicago College of Optometry, Midwestern University, Downers Grove, IL, USA (FTC); and Department of Cell Biology, Neurobiology and Anatomy (JC) and Department of Ophthalmology and Visual Sciences (JC), Medical College of Wisconsin, Milwaukee, WI 53226-0509, USA

- 1 Marinho PM, Marcos AAA, Romano AC, Nascimento H, Belfort Jr R. Retinal findings in patients with COVID-19. *Lancet* 2020; **395**: 1610.
- 2 Cense B, Nassif N, Chen T, et al. Ultrahigh-resolution high-speed retinal imaging using spectral-domain optical coherence tomography. *Opt Express* 2004; **12**: 2435-47.

See Online for appendix

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