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Reply to Comment on: Morphologic Features of Buried Optic Disc Drusen on En Face Optical Coherence Tomography and Optical Coherence Tomography Angiography

WE GREATLY APPRECIATE THE INTEREST THAT SIBONY and associates[1] demonstrated in our study. The authors raised an important question regarding the definition of optic disc drusen (ODD) in our study. We know that the Optic Disc Drusen Studies Consortium defined ODD as hyporeflective lesions surrounded by hyperreflective capsules using optical coherence tomography (OCT). We previously showed that this kind of visible drusen can be observed especially in the eyes of the elderly associated with degenerative changes on OCT.[2] However, in young patients, ODD can be seen as a hyperreflective mass on OCT, located nasal to the optic disc. The Consortium denies the latter ODD as true drusen and named them peripapillary ovoid mass-like structures (PHOMS) instead. PHOMS is a vague term denying any cause for or mechanism of the lesion. The most important reason why the Consortium used the term PHOMS instead of ODD is based on the histopathological examination described in their paper in 2018 (see their Figure 4C-E).[3] However, we are still doubtful about the histological images, and the true pathogenesis of PHOMS or buried ODD (by our definition) remains to be defined.[4]

To prove whether PHOMS is merely herniated optic nerve fibers or not, we analyzed the en face OCT images in this study.[1] Cross-sectional OCT, en face OCT, and OCT angiography simulate in vivo histology and could be superior to ex vivo histopathology in certain aspects, as the last could be influenced by postmortem changes

and preparation artifacts. In our study, there is no evidence suggesting that PHOMS is composed of herniated optic nerve fibers. Rather, it is a mass lesion clearly distinct from optic nerve fibers with poor vascularity, suggesting an accumulation of extracellular deposits. Therefore, we called it ODD in our study.

We speculated that the mechanism of buried ODD or PHOMS is the accumulation of intracellular microorganisms from disturbed axonal flow of the optic nerve. Sibony and associates[1] suggested 3 kinds of PHOMS in their comment. The 3-PHOMS categories perfectly explains the condition of disturbed axonal flow. Our previous study results showing that ODD occurs in eyes with small optic discs and small scleral canals also support the mechanism of buried ODD or PHOMS as the accumulation of axoplasmic materials.[2,5]

To finalize this dispute, more histology data regarding PHOMS or buried ODD should be obtained and analyzed. Another way to prove that PHOMS is a feature of ODD is to show the de novo development of PHOMS in eyes without ODD. In addition, long-term follow-up of PHOMS or buried ODD using en face OCT could provide additional evidence of its true pathophysiology and its association with visible ODD.

Finally, we want to highlight our main study conclusion that en face OCT and OCT angiography could be used to differentiate optic disc edema from pseudopapilledema regardless of whether it is ODD or PHOMS.

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