Author Reply

Taiwan J Ophthalmol 2021;11: 427-428

Reply to "the spectrum of neuro-ophthalmologic involvement in mitochondrial disorders is broad"

Dear Editor,

We thank Dr. Finsterer for his interest in our manuscript. As dysfunction of the mitochondria likely represents the final common pathway of nearly every pathophysiologic process, it is not surprising that mitochondrial disorders can present with a wide variety of common and uncommon ophthalmologic and neurologic involvement. Our review, which was limited in space by editorial constraints, was meant to highlight those specific neuro-ophthalmologic manifestations that should raise suspicion for underlying mitochondrial disorders. We are happy to briefly address a few of Dr. Finsterer's points and the readership is directed to the references included in both letters for further discussion of these topics.

While we agree with the author that cataracts and glaucoma may occur in patients with mitochondrial disorders, these are unarguably two of the most common presentations to the eye clinic and far more likely to be coincidental than related to an occult mitochondrial disorder, especially when presenting in isolation. Although it is plausible that mitochondrial dysfunction underlies the complex pathophysiology of glaucoma, it is much more important for the general ophthalmologist to consider the diagnosis of a mitochondrial disorder such as dominant optic atrophy when assessing a patient with excavated cupping, but also pallor of the retained neuroretinal rim, temporal retinal nerve fiber thinning cecocentral scotomas and normal intraocular pressures, rather than diagnosing the patient with normal-tension glaucoma.

Megalocornea, keratoconus, choroidal atrophy and pupillary dysfunction when associated with certain neuro-ophthalmic, neurologic or systemic signs should certainly prompt clinicians to consider underlying mitochondrial disorders.[1-3] However, in isolation, they are unlikely to represent a mitochondriopathy.

We agree with Dr. Finsterer that nystagmus can be a manifestation of mitochondrial disorders which affect vision (especially in early childhood) or those portions of the brain involved in gaze holding or vestibular function.[4] However, in isolation, nystagmus is exceedingly rare as a presenting feature of mitochondrial disorders[5-8] and should in fact prompt evaluation for alternative etiologies, both acquired and inherited.

Finally, migraine is a very common disabling neurobiological headache disorder with an estimated 1-year prevalence of 15% worldwide.[9] We agree that migraines with aura when associated with other discriminating features such as retrochiasmal visual field loss, strokes, seizures, hearing loss, cardiomyopathy, diabetes mellitus and short stature should prompt a workup for potential mitochondrial disorders and this has been highlighted in our article. However, with such a high prevalence of migraine in the general population, evaluation of an occult mitochondriopathy in migraineurs without other suspicious features would be low yield.

Within the space constraints of our manuscript, our focus was to distinguish those neuro-ophthalmologic presentations that should prompt the readership to consider underlying mitochondrial diseases in the appropriate clinical context.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interests of this paper.

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Submission: 06-04-2021
Accepted: 05-05-2021
Published: 16-07-2021

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Access this article online	
Quick Response Code:	Website: www.e-tjo.org
	DOI: 10.4103/tjo.tjo_19_21

How to cite this article: Lock JH, Irani NK, Newman NJ. Reply to "the spectrum of neuro-ophthalmologic involvement in mitochondrial disorders is broad". Taiwan J Ophthalmol 2021;11:427-8.