Author Response: Increased mtDNA Copy Number Protects Against LHON

Although we appreciate the major interest of Josef Finsterer and Sinda Zarrouk-Mahjoub[1] in our recent publication in *Investigative Ophthalmology and Visual Science* entitled "High Mitochondrial DNA Copy Number Is a Protective Factor from Vision Loss in Heteroplasmic Leber's Hereditary Optic Neuropathy (LHON)," [2] we wish to clarify two issues. First, in our published studies, our findings strongly support the concept that in unaffected LHON subjects there is an increase of mitochondrial DNA (mtDNA) copy number in peripheral blood, as already reported in *Brain*[3] and in *Acta Myologica*,[4] and we also acknowledged a possible contribution of mtDNA haplotype. Our working hypothesis is in keeping with work by others.[5–9] A recent review[10] is also in line with our data.

Second, we did not overlook that Idebenone is a useful drug in LHON during the acute stage of the disease, thereby preventing further vision loss and promoting recovery of vision. We agree that commencing treatment shortly after the onset of symptoms is likely to have the best therapeutic effect, whereas it is hard to weight the usefulness of therapy to treat the healthy relatives.

We hope that we have fully clarified our opinion.

Angelica Bianco
Luigi L. Palese
Silvana Guerriero
Vittoria Petruzzella

Dipartimento di Scienze Mediche di Base, Neuroscienze e Organi di Senso - Università degli Studi Aldo Moro, Piazza G. Cesare, Bari.
E-mail: vittoria.petruzzella@uniba.it

References

1. Finsterer J, Zarrouk-Mahjoub S. Increased mtDNA copy number does not protect against LHON. *Invest Ophthalmol Vis Sci*. 2018;59:330.
2. Bianco A, Bisceglia L, Russo L, et al. High mitochondrial DNA copy number is a protective factor from vision loss in heteroplasmic Leber's hereditary optic neuropathy (LHON). *Invest Ophthalmol Vis Sci*. 2017;58:2193–2197.
3. Bianco A, Martinez-Romero I, Bisceglia L, et al. Mitochondrial DNA copy number differentiates the Leber's hereditary optic neuropathy affected individuals from the unaffected mutation carriers. *Brain*. 2016;139:e1.
4. Bianco A, Bisceglia L, Russo L, et al. Leber's hereditary optic neuropathy (LHON) in an Apulian cohort of subjects. *Acta Myologica*. 2017;XXXVI:163–177.
5. Giordano C, Iommarini L, Giordano L, et al. Efficient mitochondrial biogenesis drives incomplete penetrance in Leber's hereditary optic neuropathy. *Brain*. 2014;137:335–353.
6. Giordano C, Carelli V. Reply: Mitochondrial DNA copy number differentiates the Leber's hereditary optic neuropathy affected individuals from the unaffected mutation carriers. *Brain*. 2016;139:e2.
7. Giordano L, Deceglie S, d'Adamo P, et al. Cigarette toxicity triggers Leber's hereditary optic neuropathy by affecting mtDNA copy number, oxidative phosphorylation and ROS detoxification pathways. *Cell Death Dis*. 2015;6:e2021.
8. Yen MY, Chen CS, Wang AG, et al. Increase of mitochondrial DNA in blood cells of patients with Leber's hereditary optic neuropathy with 11778 mutation. *Br J Ophthalmol*. 2002;86:1027–1030.
9. Nishioka T, Soemantri A, Ishida T. mtDNA/nDNA ratio in 14484 LHON mitochondrial mutation carriers. *J Hum Genet*. 2004;49:701–705.
10. Caporali L, Maresca A, Capristo M, et al. Incomplete penetrance in mitochondrial optic neuropathies. *Mitochondrion*. 2017;36:130–137.

Citation: *Invest Ophthalmol Vis Sci.* 2018;59:331.
https://doi.org/10.1167/iovs.17-22822

iovs.arvojournals.org | ISSN: 1552-5783