EBioMedicine 49 (2019) 24

Contents lists available at ScienceDirect

EBioMedicine

journal homepage: www.elsevier.com/locate/ebiom

Letter

Neuropathy due to impaired axonal transport of non-fragmented mitochondria in *MYH14* mutation carriers

Josef Finsterer*

Krankenanstalt Rudolfstiftung, Messerli Institute, Vienna, Austria

ARTICLE INFO

Article history:
Received 3 September 2019
Accepted 17 September 2019
Available online 22 October 2019

Keywords:
Neuropathy
Myh14
Mitochondrial
Fission
Hearing loss
Oxidative phosphorylation

With interest we read the article by Almutawa et al. about a family with neuropathy, hypoacusis, and foot deformity, being attributed to the heterozygous variant R941L in *MYH14* [1]. Neuropathy was attributed to impaired fission of mitochondria resulting in oversized organelles inappropriate for retrograde axonal transportation [1,2]. We have the following concerns.

A main shortcoming of the study is that no nerve biopsies were carried out. Assuming that neuropathy was due to impaired fission and thus reduced axonal transport of mitochondria [1], it is conceivable that nerve biopsy may show paucity of mitochondria within motor and sensory axons and in nerve terminals. Concerning mitochondrial functions, it is desirable to confirm normal function of the respiratory chain by appropriate biochemical investigations [3].

A further shortcoming is that neuropathy was classified as axonal [1] although there was only borderline CMAP reduction, thus not fulfilling the criteria for axonal degeneration [4]. Additionally, we should know which nerves were involved, if involvement was symmetric/asymmetric, if there was upper/lower limb predominance, and if there was distal, proximal, or diffuse distribution of the lesions. We also should know if motor and sensory nerves were equally affected and if there was involvement of the autonomic fibres.

Missing is an explanation of hypoacusis. We should know if it was due to sensory or neuronal involvement, which could be best achieved by application of acoustically-evoked potentials [5]. We should know why among the cranial nerves only the acoustic nerve was affected and why this cranial nerve was affected long before the onset of peripheral neuropathy.

No funding was received

Author contribution: JF: design, literature search, discussion, first draft, critical comments

Informed consent: was obtained

The study was approved by the institutional review board

Declaration of Competing Interest

None.

References

[1] Almutawa W, Smith C, Sabouny R, Smit RB, Zhao T, Wong R, Lee-Glover L, Desrochers-Goyette J, Ilamathi HS, Suchowersky O, Germain M, Mains PE, Parboosingh JS, Pfeffer G, Innes AM, Shutt TECare4Rare Canada Consortium. The R941L mutation in MYH14 disrupts mitochondrial fission and associates with peripheral neuropathy. EBioMedicine 2019;45:379–92. doi:10.1016/j.ebiom.2019.06.018.

[2] Ueda E, Ishihara N. Mitochondrial hyperfusion causes neuropathy in a fly model of cmt2a. EMBO Rep 2018;19 pii: e46502. doi:10.15252/embr.201846502.

[3] Amiott EA, Lott P, Soto J, Kang PB, McCaffery JM, DiMauro S, Abel ED, Flanigan KM, Lawson VH, Shaw JM. Mitochondrial fusion and function in charcot–marie-tooth type 2A patient fibroblasts with mitofusin 2 mutations. Exp Neurol. 2008;211:115–27.

[4] Yadegari S, Nafissi S, Kazemi N. Comparison of electrophysiological findings in axonal and demyelinating guillain-barre syndrome. Iran J Neurol 2014;13:138–43.

[5] Abou-Elew MH, Hosni NA, Obaid EA, Ewida AH. The N3 potential and the efferent cochlear pathway in profound sensorineural hearing loss. J Laryngol Otol 2017;131:334–40.

* Finsterer J., MD, PhD, Postfach 20, 1180 Vienna, Austria, Europe.
E-mail address: fifigs1@yahoo.de

https://doi.org/10.1016/j.ebiom.2019.09.056