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LETTER TO THE EDITOR

Tinnitus is multicausal and may not only be related to DNA variants

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With interest we read the article by Lechowicz et al. [1] about a study of 17 Polish patients with impaired hearing due to the mtDNA variants m.1555A >G, m.3243A >G or 7511T> C, of whom four patients reported tinnitus in addition to hypoacusis. It was found that in patients with tinnitus the variant m.7511T>C was more frequent than among those without tinnitus, and in patients carrying the variant m.1555A>G tinnitus was less frequent than in Polish patients carrying the same mutation [1]. We have the following comments and concerns.

More challenging than the comparison of frequencies of mtDNA variants between patients with and without tinnitus would be the comparison of heteroplasmy rates between the two groups. This is because it is conceivable that patients with high heteroplasmy rates will develop a more severe phenotypes (tinnitus plus hypoacusis) than patients with low heteroplasmy rates (only hypoacusis). To assess heteroplasmy rates from a clinical point of view it would be interesting to know if patients with and without tinnitus differed with regard to the severity of the entire phenotype. Since mitochondrial disorders (MIDs) are frequently multisystem diseases at onset or become multisystem diseases during the disease course, we should know if those with several affected organs had more frequently tinnitus than those with only one or two affected organs.

Since it was proposed that oxidative stress could play a causative role in the development of tinnitus, we should know if the four patients with tinnitus and hypoacusis received any antioxidants and if this treatment exhibited a beneficial effect or not. Particularly, coenzyme-Q has been identified as one of the most potent among the antioxidants currently available [2]. It would also be interesting to know if any of the included patients was put on a ketogenic diet, which has been shown beneficial in single MID patients, particularly those with epilepsy [3]. In this respect we should be informed if any of the 17 included patients suffered from epilepsy and was regularly taking antiepileptic drugs.

Since tinnitus has also been reported in association with hypertension of the cervical muscles [4], we should know how many patients had myopathy, which frequently goes along with weakness of the cervical muscles and thus secondary orthopedic disease of the cervical spine. Weakness may lead to deformity and this may cause hypertension of cervical muscle due to asymmetric demands.

Since mtDNA mutations are maternally inherited in 75% of the cases [5], we should know how many of the mothers of the presented patients carried the mutation of their offspring as well, and in case the variant was inherited, how many of the mothers manifested with similar phenotypic features, particular tinnitus and hypoacusis as their offspring.

Since there are a number of drugs known to trigger tinnitus [6], we should be informed about the drugs the 17 included patients were regularly taking.

Overall, this interesting study would profit from correlating heteroplasmy rates with severity of the audiological and general phenotype, from providing a detailed family history, and from excluding other causes of tinnitus than the ones mentioned in the article.

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Compliance with ethical standards

Conflict of interest There are no conflicts of interest.

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