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Letter to the Editor

Work-up for stroke-like episodes requires not only multimodal cerebral MRI but also positron emission tomography

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We read with interest the article by Prabhu *et al*. reporting on an 8 years-old male with early onset mitochondrial encephalopathy, lactic acidosis, and stroke-like episodes (MELAS) syndrome who developed three distinct stroke-like episodes (SLEs) which responded to nitric-oxide (NO)-precursors [1]. Corresponding stroke-like lesions (SLLs), the morphological correlate of a SLE, showed typical T2, fluid attenuated inversion recovery (FLAIR), diffusion weighted imaging (DWI), perfusion weighted imaging (PWI), and susceptibility weighted imaging (SWI) hyperintensity, and a lactate peak on magnetic resonance spectroscopy (MRS) [1]. The study is appealing but raises concerns that warrant further discussion.
Though it is mentioned that the causative mtDNA variant m.3243A>G occurred with a heteroplasmic distribution [1], the exact heteroplasmy rate was not provided. We should know the heteroplasmy rate and the tissue in which it was determined. Heteroplasmy rates from different tissues would be desirable.
We should know if the causative mtDNA variant occurred de novo or was inherited from the mother. Did the mother of the index patient manifest clinically? About three quarters of the mtDNA variants are inherited via the maternal trait.
Fever is an unusual manifestation of a SLE. We should know if alternative causes, such as a respiratory, gastrointestinal, or cerebral infection could explain fever at two of the three SLEs.
There is no information on the reference limits for serum lactate and for creatine-kinase and on the timeline of the SLEs in relation to the clinical neurological exam.
We disagree with the notion that panel C of figure 1 shows reduced susceptibility signals on SWI. On the contrary, SWI showed hyperintensity in the left occipital lobe according to figure 1 [1].
We disagree that the left posterior cerebral artery (PCA) was relatively prominent. The difference between left and right PCA in figure 1 is not impressive, and could be due to a physiological difference.
Regarding the third SLE, we should know with what symptoms and signs this episode manifested clinically.
We disagree that lactate peaks are seen in ischemic stroke. Lactate peaks are pathognomonic for SLEs and may be only exceptionally seen in ischemic stroke, particularly if a SLE is misdiagnosed as ischemic.
Oxygen extraction fraction (OEF) MRI typically shows reduced oxygen extraction from the arterial blood manifesting as hypointensity of the SLL area. We should know the results of OEF MRI.
SLLs manifest as hypometabolism on positron-emission tomography (PET) [2]. What were the results of FDG-PET in the index patient?
Whether SLEs are actually triggered by NO deficiency is controversial [3, 4]. NO precursors were not effective in various studies [5].
There is no information on how the epilepsy was treated. Treating epilepsy also means treating SLEs since seizures can trigger a SLL, but not all SLE manifest with seizures. There is no the information on how the SLLs manifested themselves on ADC maps.
Overall, the study carries obvious limitations that require re-evaluation and discussion. Clarifying these weaknesses would strengthen the conclusions and could improve the study. SLEs require extensive clinical and instrumental work-up by multimodal MRI and PET.

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References

1. Prabhu SM, Banerjee B, Acharya U, Hegde PP, Shetty M. MELAS (Mitochondrial Encephalopathy, Lactic Acidosis and Stroke-Like Episodes)-Usual and Unusual MRI Finding. Indian J Radiol Imaging. 2022; 32(4):625-626. Doi: 10.1055/s-0042-1755241
2. Kim JH, Lim MK, Jeon TY, Rha JH, Eo H, Yoo SY, Shu CH. Diffusion and perfusion characteristics of MELAS (mitochondrial myopathy, encephalopathy, lactic acidosis, and stroke-like episode) in thirteen patients. Korean J Radiol. 2011; 12(1):15-24. Doi: 10.3348/kjr.2011.12.1.15
3. Almannai M, El-Hattab AW. Nitric Oxide Deficiency in Mitochondrial Disorders: The Utility of Arginine and Citrulline. Front Mol Neurosci. 2021; 14:682780. Doi: 10.3389/fnmol.2021.682780
4. Rashid J, Kumar SS, Job KM, Liu X, Fike CD, Sherwin CMT. Therapeutic Potential of Citrulline as an Arginine Supplement: A Clinical Pharmacology Review. Paediatr Drugs. 2020; 22(3):279-293. Doi: 10.1007/s40272-020-00384-5
5. Scaglia F, Northrop JL. The mitochondrial myopathy encephalopathy, lactic acidosis with stroke-like episodes (MELAS) syndrome: A review of treatment options. CNS Drugs. 2006; 20(6):443-64. Doi: 10.2165/00023210-200620060-00002