P-019 - KETOGENIC DIET IN MITOCHONDRIAL DISEASE: EFFICACY AND TOLERABILITY IN TWO PATIENTS

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BACKGROUND: Mitochondrial diseases (MD) are a clinically heterogeneous group of disorders caused by defects in the respiratory chain, the pathway of the ATP production system. The ketogenic diet (KD) is the gold standard therapy for pyruvate dehydrogenase (PDH) deficiency because it targets the metabolic defect directly, however, its use is extended to other MD since it may improve clinical symptoms, specially epilepsy and nutritional status. The aim is to describe the clinical efficacy and tolerability of the KD in two patients with MD. Case 1: A 2-year-old boy presented at 3 months with swallowing and respiratory difficulties, central hypotonia, and seizures with persistent lactic-acidosis. The EEG revealed bilateral occipital spike wave and brain MRI showed increased white matter intensity and cerebellar atrophy. Molecular study confirmed PDH deficiency showing a heterozygous pathogenic variant in PDHA1(c.905G>A p.Arg302His). At 8 months of age the KD was started with formula. He was overweight with a weight-for-height of 140%. After 3 months on KD he improved significantly, became more alert, regaining the ability to swallow, seizures were completely controlled, and his EEG normalized. Antiepileptic treatment was discontinued and plasmatic lactate decreased. After 2 years weight-for-height was 117%. Case 2: A 9-year-old boy presented with failure to thrive since birth. At the age of 6 he was admitted because of myoclonic epilepsy, cerebellar ataxia, and developmental regression. He had increased lactic acid. Brain MRI disclosed bilateral subthalamic nucleus involvement and EEG showed generalized spike-and-wave complexes. Muscle biopsy revealed ragged red fibers and MERRF disease was confirmed with a heteroplasmic variant in MT-TK (m. 8344A>G). Antiepileptic drugs failed to control epilepsy. Therefore, at the age of 7, he was put on a classical KD at a ratio of 2:1 with semisolids and ketogenic formula via nasogastric tube. After 20 months on the KD his weight-for-height improved from 75% to 81% with control of generalized seizures of more than 75%. CONCLUSION: In both cases the KD was safe and effective. Early treatment with the KD may be considered in mitochondrial patients, not only for those with PDH deficiency but also for other clinical phenotypes, especially those with refractory epilepsy.