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Temporary Fetal Intestinal Pseudo obstruction in Leigh Syndrome

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LETTER TO THE EDITOR

In a recent article Itai et al. reported about a female fetus with chronic intestinal pseudoobstruction (CIPO) attributed to a postnatally diagnosed Leigh syndrome due to the mtDNA variant m.8993T>G in the ATP6 (MT-ATP6) gene [1]. CIPO resolved shortly before birth but the neonate died at age 14 months from central respiratory failure [1]. We have the following comments and concerns.

Since clinical manifestations of mtDNA variants depend on heteroplasmy rates (mutational load) of a mtDNA variant, it should be mentioned at which heteroplasmy rate the disease causing variant was present in various tissues, such as hair follicles, buccal mucosa cells, skin fibroblasts, muscle cells, lymphocytes, and urinary epithelial cells. Since the m.8993T>G variant is known to occur with high heteroplasmy rates in patients with Leigh syndrome [2], it is quite likely that this was also the case in the presented patient. However, variability of heteroplasmy rates between tissues may cause vasriability of phenotypes,and could explain CIPO.

Since mtDNA variants are inherited via a maternal trait of inheritance in two thirds of the cases [3], it would be interesting to know if the mother of the index case was clinically affected and if she carried the same mtDNA variant as her daughter. In case she was a carrier of this variant, it should be indicated at which heteroplasmy rate the variant was found in the mother.

Gastrointestinal manifestations in mitochondrial disorders (MIDs) may not only include CIPO and vomiting, as present in the index case, but also a number of other abnormalities, such as poor appetite, gastroesophageal sphincter dysfunction, constipation, dysphagia, gastroparesis, diarrhea, pancreatitis, and hepatopathy [4]. Rare gastrointestinal manifestations of MIDs include dry mouth, paradontosis, tracheoesophageal fistula, stenosis of the duodeno-jejunal junction, atresia or imperforate anus, liver cysts, pancreas lipomatosis, pancreatic cysts, congenital stenosis or obstruction of the gastrointestinal tract, recurrent bowel perforations with intraabdominal abscesses, postprandial abdominal pain, diverticulosis, and pneumatosis coli [4]. Were any of these manifestations present in the index case in addition to CIPO and vomiting?

CIPO in the index case was reported to have resolved after age 36 weeks of gestation until age 6 months [1]. Missing is a discussion about this phenomenon. Was any treatment applied which could explain the improvement? Is the improvement attributable to the improved functioning of the organ with duration of the pregnancy?

Since MIDs are frequently supplied with cocktails of vitamins, antioxidants, and other cofactors [5], we should be informed if such a treatment was provided to the index case. It would be also worth mentioning if the patient was put on a ketogenic diet, which has been occasionally shown to be beneficial in patients with a MID [6].

Overall, this report could profit from provision of heteroplasmy rates in various tissues, from providing clinical and genetic information about the mother of the index case, from explaining the temporary improvement of CIPO, and from provision about an eventual treatment of the patient.

REFERENCES

[1] Itai T, Ishikawa H, Kurosawa K, Tsuyusaki Y. A case of prenatal chronic intestinal pseudo-

obstruction associated with Leigh syndrome. Clin Case Rep 2018;6:1474-1477.

[2] Finsterer J. Leigh and Leigh-like syndrome in children and adults. Pediatr Neurol 2008;39:223-35.

[3] Finsterer J, Zarrouk-Mahjoub S, Shoffner JM. MERRF Classification: Implications for Diagnosis and Clinical Trials. Pediatr Neurol 2018;80:8-23.

[4] Finsterer J, Frank M. Gastrointestinal manifestations of mitochondrial disorders: a systematic review. Therap Adv Gastroenterol 2017;**10**:142-54.

[5] Omata T, Fujii K, Takanashi J, Murayama K, Takayanagi M, Muta K, Kodama K, Iida Y, Watanabe Y, Shimojo N. Drugs indicated for mitochondrial dysfunction as treatments for acute encephalopathy with onset of febrile convulsive status epileptics. J Neurol Sci 2016;360:57-60.

[6] Frey S, Geffroy G, Desquiret-Dumas V, Gueguen N, Bris C, Belal S, Amati-Bonneau P, Chevrollier A, Barth M, Henrion D, Lenaers G, Bonneau D, Reynier P, Procaccio V. The addition of ketone bodies alleviates mitochondrial dysfunction by restoring complex I assembly in a MELAS cellular model. Biochim Biophys Acta Mol Basis Dis 2017;1863:284-291.

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