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Letter to the Editor

The Diagnosis of Pearson Syndrome Requires the Detection of a Single mtDNA Deletion

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Letter to the Editor

We read with interest the article by Faisal *et al*. regarding a nine-month-old boy from a consanguineous family who suffered from failure to thrive, persistent pancytopenia, exocrine pancreatic insufficiency, status epilepticus, cardiac arrest, tubular renal dysfunction, and lactic acidosis [1]. The family history noted early infant deaths and hematological abnormalities [1]. The peripheral blood smear showed anisopoikilocytosis with vacuolization of erythropoietic precursors, while bone marrow analysis revealed erythropoietic hyperplasia, dyserythropoiesis, and ring sideroblasts. Treatment with blood transfusions, pancreatic enzymes, vitamins, and nutritional interventions proved beneficial [1]. Based on the clinical presentation and laboratory findings, the patient was diagnosed with Pearson syndrome (PS) [1]. Although the study is noteworthy, several points warrant discussion.

A first point is that the patient was not investigated for the underlying genetic defect [1]. Without evidence of a single mtDNA deletion typical of PS, the diagnosis cannot be reliably confirmed. Chromosomal analysis is also lacking. Furthermore, genetic evaluation of the consanguineous parents and genetic testing of the index patient's symptomatic siblings are missing.

A second point is that differential diagnoses for PS were not adequately considered and ruled out. These include Diamond-Blackfan anemia, Shwachman-Diamond syndrome, myelodysplastic syndrome, hereditary sideroblastic anemia, primary or secondary copper deficiency, DiGeorge syndrome (22q11.2 deletion syndrome), and Kearns-Sayre syndrome (KSS) [2]. A strong argument against PS in the index family is the fact that PS usually occurs sporadically and is inherited via the maternal line in only four percent of cases [3]. Has the index patient's mother ever developed clinical symptoms of a mitochondrial disorder?

A third point is that - assuming the patient in question harbored an mtDNA deletion - the key determinants of the phenotype were not listed [1]. These include the heteroplasmy level, mtDNA copy number, haplogroup, threshold effect, mitotic segregation, tissue energy demand, interactions between the nuclear and mitochondrial genomes, the nature and extent of the mutation, environmental toxins, mitochondriotoxic drugs, diet, and physiological oxidative stress [4]. Understanding the determinants of phenotypic expression is important not only for genetic counseling but also for predicting the course of the disease.

A fourth point is that various clinical findings in the index patient remain unexplained [1]. Given that the patient experienced a seizure, the cause of this event, the EEG findings, and the results of the cerebral MRI should be clarified. No explanation is provided for the metabolic acidosis either. Was the metabolic acidosis attributable to elevated serum lactate levels? What caused the oral mucosal ulcers, significantly enlarged lymph nodes, and diarrhea? Were blood, urine, or stool cultures positive at any point? Did the patient suffer from recurrent or chronic infections at the time of examination? What were the results of the standard and long-term ECG recordings? Were the echocardiography findings unremarkable? Did the patient actually have a mitochondrial multisystem disorder such as KSS?

Another point is that the long-term clinical course was not reported [1]. Since a PS can evolve into KSS over time, it would be important to know whether the patient subsequently developed typical features of KSS [5]. Furthermore, it should be reported whether recurrent seizures or additional cardiac complications occurred following the cardiac arrest.

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References
1. Faisal A, Waqas H, Masood H, Butt A, Rahman S, Hameed MS, *et al*. Pearson syndrome: Expanding the clinical spectrum of a mitochondrial cytopathy-a case report. J Med Case Rep. 2026; 20(1):390. Doi: 10.1186/s13256-026-06288-1
2. Yoshimi A, Ishikawa K, Niemeyer C, Grünert SC. Pearson syndrome: A multisystem mitochondrial disease with bone marrow failure. Orphanet J Rare Dis. 2022; 17(1):379. Doi: 10.1186/s13023-022-02538-9
3. Poulton J, Finsterer J, Yu-Wai-Man P. Erratum to: Genetic Counselling for Maternally Inherited Mitochondrial Disorders. Mol Diagn Ther. 2017; 21(4):465-466. Doi: 10.1007/s40291-017-0286-8
4. Shi Y, Chen G, Sun D, Hu C, Liu Z, Shen D, *et al*. Phenotypes and genotypes of mitochondrial diseases with mtDNA variations in Chinese children: A multi-center study. Mitochondrion. 2022; 62:139-150. Doi: 10.1016/j.mito.2021.11.006
5. Richmond C, Powell L, Brittingham ZD, Mancuso A. Kearns-Sayre syndrome: Two case reports and a review for the primary care physician. J Family Med Prim Care. 2023; 12(4):792-795. Doi: 10.4103/jfmpc.jfmpc_1790_22