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LETTERS TO THE EDITOR
Cord Blood Transplantation in a Child With Pearson's Disease

To the Editor: We report the first case of successful CBT in a molecular proved Pearson Disease (PD). The indication was hematologic but the interesting finding is the correction of non hematologic issues as metabolic acidosis and liver involvements.

The patient presented neonatal hypoglycemia, metabolic acidosis, hyperlactacidemia and progressive pancytopenia treated by GCSF (5 μg/Kg three times a week) and transfusions. He never suffered from pancreatic insufficiency or neurologic disturbances (MRI normal). Diagnosis of PD [1–4] was established by bone marrow analysis (macrocytic sideroblastic anemia, ring sideroblasts and hematopoietic precursor vacuolization) (Fig. 1) and liver biopsy: mitochondrial respiratory enzymes measurements (spectrophotometry) revealed a combined deficiency of complexes I, III and IV (mitochondrial complexes) with an increase in complex II and in citrate synthetase (nuclear complexes). Mitochondrial DNA studies performed on blood sample (Southern Blot Analysis) detected deletion mutation (40% mutant mtDNA).

Clinical symptoms from age 2 years onward worsened and blood products requirements increased; dysplasic features of red cells and platelet precursors were observed. Chromosome 7 deletion—del(7)(q22q32)—was detected in bone marrow until reaching 50% of hematopoietic cells. Because of these myelodysplasic finding, an unrelated cord blood transplantation (CBT) was performed at the age of nearly 3 years. The conditionning regimen included busulfan (37.5 mg/m^2 days 8, 7, 6, 5), cyclophosphamide (60 mg/Kg days 4, 3) and Anti ThymoGlobulin (30 mg/Kg days 5, 4, 3). Hematopoietic recovery was normal and no major complications occurred.

Three years after CBT the patient is doing well; hemogram is normal with complete engraftment of all donor cell lineages. Metabolic features of acidosis and lactacidemia as well as biological hepatic abnormalities resolved. A liver biopsy was performed showing resolution of morphological abnormalities; liver mitochondrial respiratory enzymes activities returned to normal range.

Deletions of chromosome 7 in PD have not yet been reported, except after a double myeloablative therapy with reinfusion of PBSC [5]. Our patient had a successful hematopoietic transplant with correction of hematologic and non-hematologic features. These observations suggest possible interactions between hematopoietic tissue and mitochondrial abnormalities. Our clinical experience suggests hematopoietic transplantation is feasible in PD and could be useful in management of other severe mtDNA defect syndromes.

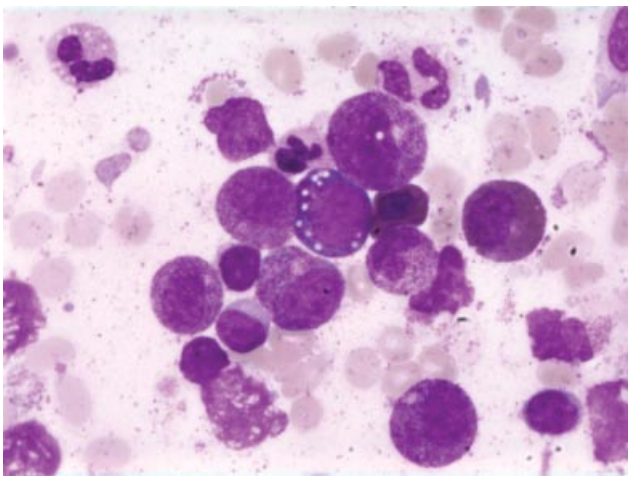

Fig. 1. Bone marrow myeloid precursors showing cytoplasmic vacuoles.

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REFERENCES

1. Pearson HA, Lobel JS, et al. A new syndrome of refractory sideroblastic anemia with vacuolization of marrow precursors and exocrine pancreatic dysfunction. J Pediatr 1979;95:976.
2. Rötig A, Bourgeron T, Chretien D, et al. Spectrum of mitochondrial DNA rearrangements in the Pearson marrow-pancreas syndrome. Oxford University Press; 1995. pp. 1327–1330.
3. Kerr DS. Protean manifestations of mitochondrial diseases: A minireview. J Pediatr Hematol Oncol 1997;19:279–286.
4. Knerr I, Metzler M, Niemeyer CM, et al. Hematologic features and clinical course of an infant with Pearson syndrome caused by a novel deletion of mitochondrial DNA. J Pediatr Hematol Oncol 2003;25: 948–951.
5. Faraci M, Cuzzubbo D, Micalizzi C, et al. Allogenic bone marrow traansplantation for Pearson's syndrome. Bone Marrow Transplant 2007;39:563–565.

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