The Indian Journal of Pediatrics (June 2021) 88(6):611
https://doi.org/10.1007/s12098-021-03706-8

SCIENTIFIC LETTER

Compound Heterozygote Hemoglobin Lepore-Baltimore Haplotype with β-Thalassemia

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Received: 6 November 2020 / Accepted: 12 February 2021 / Published online: 10 March 2021

To the Editor: A transfusion dependent 6-y-old boy first born to nonconsanguineous marriage presented with fever (38.2 °C), mild jaundice, pallor, hepatosplenomegaly (liver: 12.3 cm, Spleen: 10.5 cm) and thalassemia facies was screened for hemoglobinopathy along with his parents at ICMR-RMRC, Bhubaneswar. The patient was anemic [hemoglobin (Hb): 7.2 g/dL] showing microcytosis, anisopoikilocytosis, polychromatic red cells with basophilic stippling, and target cells in blood smear. The father's mean corpuscular hemoglobin (MCH) was 21.4 pg and mother's hemoglobin 10.1 g/dL along with reduced mean corpuscular volume (MCV) (63.5 fL), but both blood smears showed microcytosis and target cells.

The VARIANT II System (Bio-Rad Laboratories, USA) uncovered presence of Hb Lepore in father {Hb A2: 12.3% [retention time (RT): 3.52 min], Hb A_0: 75.3%, and Hb F: 4.7%} and β-thalassemia carrier state in mother [Hb A2: 5.4% (RT: 3.69 min), Hb A_0: 82.7%, and Hb F: 0.6%]. Since the boy was receiving transfusion frequently, deoxyribonucleic acid (DNA) analysis was carried out by passing high-performance liquid chromatography (HPLC) with a presumptive diagnosis of compound heterozygote Hb Lepore/β-thalassemia.

The presence of heterozygous Hb Lepore in father, β-thalassemia (IVS I-5 G>C) mutation in mother and compound heterozygote Hb Lepore/β-thalassemia (IVS I-5 G>C) in patient was confirmed by gap polymerase chain reaction (Gap-PCR) [1] and amplification-refractory mutation system (ARMS)-PCR [2]. α and γ^G (*Xmn-1 polymorphism*) globin in parents and child were normal. Sequencing of $\delta\beta$ fusion gene (777bp mutant fragment) found similarity with *Homo sapiens* Hb Lepore-Baltimore (δ68Leu/β84Thr) (Accession # AY695366.1).

Hb Lepore is an uncommon variant of hemoglobinopathy [3]. Of the three sub-types of Hb Lepore, Hb Lepore-Hollandia ($\delta22/\beta50$) and Hb Lepore Boston-Washington ($\delta87/\beta116$) have been reported in India [3, 4]. This is the first report of Hb Lepore-Baltimore with β-thalassemia in a nontribal family of Odisha, India. Our observation highlights that presumptive diagnosis can be made by HPLC but DNA analysis is essential for accurate diagnosis, hence appropriate clinical management and genetic counseling.

Declarations

Conflict of Interest None.

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