First Case Detection of Homozygous Haemoglobin L'Aquila [Codon 106, CTG>GTG] in Malaysia Population

Toh Chia Thing[1]*, Norafiza Mohd Yasin[1], Yuslina Mat Yusoff[1], Ermi Neiza Mohd Sahid[1], Faidatul Syazlin Abdul Hamid[1], Syahzuwan Hassan[1], Ezalia Esa[1]

[1]Haematology Unit, Cancer Research Centre, Institute for Medical Research (National Institute of Health), 50588, Jalan Pahang, Kuala Lumpur

Haemoglobin (Hb) gene mutations are common, estimated 7% of the world's population affected. These mutations are broadly subdivided into those that impair globin protein subunit production (thalassemia) and those that produce structurally abnormal globin proteins (Hb variants). To the best of our knowledge, this is the first case report of homozygous haemoglobin L'Aquila in our population. A four years old Malay boy presented with upper respiratory tract infection symptoms associated with lethargy and loss of appetite. Incidentally noted severe hypochromic microcytic anaemia (haemoglobin level of 6.7g/dL) and moderate hepatosplenomegaly during his admission. Cation-exchange high-performance liquid chromatogram & capillary electrophoresis showed increase level of HbA2 (5.8% & 6.6%) with high HbF (26.1% & 32.7%). No abnormal haemoglobin fractions were observed. Patient and parent's samples were referred to Institute for Medical Research for beta-thalassemia molecular analysis. Beta globin gene sequencing of the index patient revealed homozygous Hb L'Aquila while his father was found to have heterozygous Hb L'Aquila and mother was found to have compound heterozygous Hb L'Aquila and HbE. Hb L'Aquila is the result of point mutation of codon 106 (CTG>GTG) with a substitution of leucine by valine at position 106 in the beta-globin chain. Although many Hb variants are clinically silent in heterozygous, some produce clinical manifestations of varying severity in combination with other pathogenic variants or in homozygous state. As for this patient, he was diagnosed with thalassaemia intermediate that required infrequent transfusion. The need for appropriate characterization of the variant haemoglobin is emphasized mainly for therapeutic and genetic counselling purposes to recognize certain variants that lead to clinical consequences.

Keywords: Haemoglobin (Hb), homozygous haemoglobin L'Aquila

Acknowledgements
We would like to extend our gratitude to the Director-General of Health Malaysia, Deputy Director General (Research & Technical Support) of Health Malaysia and Director of Institute for Medical Research (IMR), National Institute of Health (NIH) for support and approval of this poster. We also thank the staff of Molecular Genetic Laboratory, IMR for performing the molecular laboratory procedures involved.

***Correspondence:** Toh Chia Thing
Telephone /fax number: +60326162666/ +60326162707
Email address: tohct@moh.gov.my