Haematological parameters in patients with co-inheritance of Southeast Asian Ovalocytosis (SAO) and beta globin chain disorders

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Abstract

Southeast Asian Ovalocytosis (SAO) and thalassaemia-haemoglobinopathies are common inherited red blood cell (RBC) disorders in Southeast Asian countries. Unlike SAO, thalassaemia-haemoglobinopathies is characterised by hypochromic RBC parameters. To evaluate the RBC parameters in patients with co-inheritance of SAO and globin chain disorders. Total of 120 /1500 respondents blood samples sent for thalassaemia screening to Hospital Kuala Lumpur were selected randomly. Their blood samples also were subjected for complete blood count (CBC), blood smear and high performance liquid chromatography (HPLC). The DNA analysis was performed for respondents suspected of alpha thalassaemia and SAO. Thirty of 120 samples belong to Malay ethnic group were with SAO. Forty percent (12/30) respondents were with co-inheritance with thalassaemia-haemoglobinopathies of Hb E trait and Beta thalassaemia trait; three and nine respondents respectively. All the participants in this study were divided into normal and anaemic groups. The non-anaemic SAO respondents showed normal mean of RBC parameters. Co-inheritance of Hb E trait and SAO were anaemic where their mean of RBC parameters like RBC count, Hb, MCV, MCH, MCHC and RDW were 4.5x10^6/µL, 10.33 g/dL, 66.33 fl, 22.5 pg, 33.96g/dL, 18.3% respectively. Mean RBC parameters in SAO co-inheritance with β-thalassaemia trait showed RBC count, Hb, MCV, MCH, MCHC and RDW were of 3.98x10^6/µL, 9.41 g/dL, 73 fl, 23.81 pg, 32.68 g/dL, 21.25% respectively. Both the mean of MCV and MCH values were significantly lower in co-inheritance groups of 66.33-73fl and 23.81pg respectively. Current RBC parameters cut-off values used for thalassaemia-haemoglobinopathy screening program with careful interpretation of several laboratory methods helps to precise identification the co-inheritance of RBC disorders.

Keywords: co-inheritance; thalassaemia; haemoglobinopathy; RBC membrane

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