

The Cut-Off Value of Mean Corpuscular Volume for Screening Thalassaemia Carrier State

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Thalassaemia is a fairly common haematological disease in Sri Lanka and screening programmes on the general population are done to detect thalassaemia carrier state as a preventive measure. In these screening programmes, the Mean Corpuscular Volume (MCV) is currently used as the screening test and the value of 80 femtolitres (fl) is taken as the cut-off. Blood specimens with MCV < 80 fl is directed for confirmatory tests, such as, High Performance Liquid Chromatography (HPLC) technique.

The objective of the present study was to evaluate a new cut-off value for MCV which is most compatible for screening thalassaemia carrier state in the Sri Lankan population as the current value has a high false positive detection.

A retrospective analysis was conducted on 1287 individuals attending the thalassaemia screening programme at the General hospital, Kurunegala from 1st May, 2010 to 31st July, 2010. Both male and female subjects above 6 months of age were included in the study. Routine data from automated haematology analyser and haemoglobin values from HPLC technique were collected. Data were analysed to detect the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of each MCV value below 80 fl, up to 70 fl for screening thalassaemia carrier state.

Based on the statistical analysis, the sensitivity, specificity, PPV and NPV of 80 fl cut off MCV value were 100%, 6.12%, 62.81% and 100%, respectively. The sensitivity and the NPV for MCV value between 80 fl and 75.3 fl were the same (100%). The specificity and the PPV increased to 13.87% and 64.80%, respectively at MCV of 75.3 fl.

Therefore, the cut off MCV of 75.3 fl is the most suitable for screening of Sri Lankan population for thalassaemia carrier state.