Validity of a new flow cytometric protocol in diagnosis of low-grade myelodysplastic syndromes

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ABSTRACT

BACKGROUND: Myelodysplastic syndromes (MDS) are the most common of myeloid malignancies, yet the morphological diagnosis is usually not straightforward especially in the low-grade forms. Immunophenotyping by Flow cytometry (FCM) is considered essential in the WHO's co-criteria for diagnosis of MDS. The Existing FCM Protocol utilizes a 2-tube, 2-colour approach to identify lineage specific cluster of differentiation (CD) markers, which is labour-intensive and time-consuming. A new FCM was recently developed and validated among Japanese cohorts. It utilizes a 3-tube, 5-colour approach and generates more information in the form of 'cardinal parameters'. The aim of this study is to determine the diagnostic utility of the new protocol by comparing it with the existing protocol, in the diagnosis of low-grade MDS in our study population.

SUBJECTS AND METHODS: We analyzed bone marrow samples of 40 subjects. They comprised of 27 patients who had a tentative diagnosis of MDS and 13 healthy bone marrow donors as controls. Immunophenotyping by FCM was performed using the Existing and New Protocols and the data obtained by the 2 different methods were compared.'Cardinal parameters' were generated in the new protocol, which are not applicable to the existing protocol.

RESULTS: There was no statistical difference between the data generated by the 2 protocols in the diagnosis of MDS. The sensitivity and specificity of the 'cardinal parameters' of the new protocol appeared to be outstanding

CONCLUSION: It has been shown that the new multiplex FCM protocol for the diagnosis of MDS is relatively easy, cost effective and not inferior, compared to the Existing Protocol. However, small sample size has been identified as a limitation to the study and therefore a larger, multicenter study is recommended to assess this validation exercise.

Key words: Validity, New flowcytometry protocol, diagnosis, Low grade, Myelodysplastic syndromes

Image

Figure 1. **Gating for the cardinal parameters**. Panel (a) SSC vs FSC was plotted to generate all nucleated cells. Panel (b) P1 clusters (arrow) displayed on CD45 vs CD34 plot to generate granulocytes and lymphoblasts. In panels (c) and (d), SSC vs CD45 was plotted to generate granulocytes and lymphocytes. Panels (e) and (f) display channels of lymphoblasts and myeloblasts expressing CD45 respectively.

Biography

B Yusuf Jamoh has completed his MBBS programme from Bayero University, Kano, Nigeria and had MSc Cancer Biology, with commendation, from Kingston University, London. He is a Fellow of National Postgraduate Medical College of Nigeria and was appointed as Honorary Consultant Physician, Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, Nigeria. He is the Head of Clinical Haematology Unit, ABUTH. He has published 12 papers in reputed journals and he is currently acting Postgraduate Coordinator, Department of Medicine, Ahmadu Bello University, Zaria, Nigeria.

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