MINDRAY MC80 DETECTION OF ABNORMAL CELLS IN HEMATOLOGICAL DISEASES AND COMPARISON WITH CELLAVISION DM9600

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INTRODUCTION

Automatic systems for the classification of blood cells have been implemented in hematology laboratories during the last years. They are able to perform an automatic pre-classification of individual images of peripheral blood (PB) cells from the smear. However, these systems are not able to recognize most of the abnormal cell types circulating in blood in hematological diseases. **The objective of this work is to compare the automatic pre-classification of cells in Mindray MC-80 (MC80) and CellaVision DM9600 (DM9600) analyzers using abnormal samples.**

Acute Leukaemia

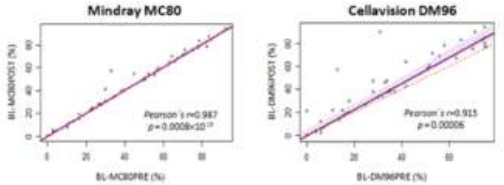


Figure 1. Passing Bablok Regression, Pearson´s coefficient and p value for blast cells in acute leukaemia.

Myelodysplastic and Mieloproliferative diseases (MDS-MPD)

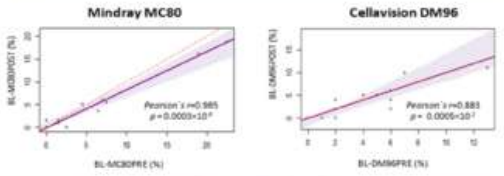
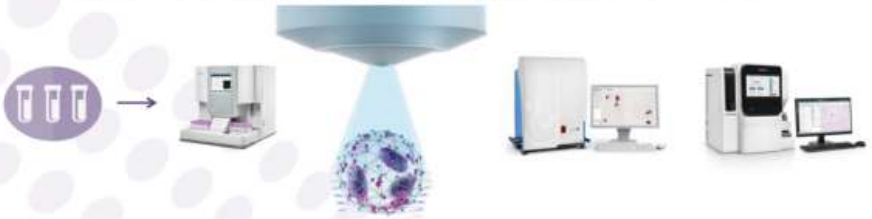


Figure 2. Passing Bablok Regression, Pearson´s coefficient and p value for blast cells in MDS-MPD

METHODS

A total of 91 samples from patients with the following diagnosis: 46 acute leukemia (AL), 16 myelodysplastic (MDS) or myeloproliferative syndrome (MPS) and 29 lymphoma were analyzed in the BC-6800Plus .



Cell images were obtained using the following image analysers: 1) Mindray MC80 and 2) CellaVision DM9600. To compare the obtained results, Passing Bablok regression was used.

RESULTS

Correlation between blast cell pre-classification and post-classification by the expert showed higher values in MC80 than those obtained in DM9600 (r = 0.987 and 0.915, respectively). See Figure 1. For acute leukemia cases, none of the smears containing blast cells showed absence of them using the MC80 (false negatives: 0). Nevertheless, 1/46 samples containing blasts was classified as containing normal cells using the DM9600 (false negatives: 2.17%). Whit respect to detection of abnormal promyelocytes, only available for the MC80, it was noted that in the 65% of acute leukemia cases some of the blasts were pre-classified as abnormal promyelocytes. Considering MDS-MPD samples, pre-classification values obtained for blast cells compared to those revised by the clinical pathologist showed a higher correlation using the MC-80 (0.985) than using the DM9600 (0.883). See Figure 2.

Finally, in a total of 9 patients with B or T lymphoma (31%), the MC80 detected abnormal lymphoid cells in the corresponding smear.

CONCLUSIONS

MC80 showed a good performance for blast detection in peripheral blood samples corresponding to acute leukemia or MDS/MPS patients. When comparing blast cell preclassification values obtained by the MC80 and DM9600 and those of the post-classification performed by the clinical pathologist, a higher correlation was obtained using the MC80. MC80 detected the presence of abnormal lymphocytes in almost a third of lymphoma cases, while DM9600 in none.