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PLATELET COUNT COMPARISON BETWEEN DXH 900, MINDRAY BC-6800PLUS AND FLOW REFERENCE METHOD

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BACKGROUND-AIM

Precise and accurate platelet count is critically important for patients' care. Hematology analyzers are using different technologies to avoid potential interferences and obtain reportable and reliable results, but for some instruments this may require additional time, reagents, and cost. Our objective was to evaluate the platelet count (Plt) on Beckman Coulter DxH900 and Mindray BC-6800plus analyzers comparing results with flow reference method.

METHODS

104 samples, collected in K3 EDTA tubes, were analyzed on Beckman Coulter DxH900, Mindray BC-6800plus and with flow cytometry according to ISCH recommendations (with CD41 and CD61). For Plt analysis DxH900 uses Advanced Coulter principle, while on Mindray BC-6800plus 2 technologies – impedance and optical - are used. We compared DxH Plt count, Mindray optical Plt count and flow Plt count. MedCalc software was used for statistical analysis.

RESULTS

Platelet count ranged from 4x109 cells/L to 1135x109 cells/L. For the whole dataset correlation coefficients between hematology analyzer and flow were 0.989 for DxH900 and 0.987 for BC-6800plus. Passing-Bablok regression for DxH900 [DxHPlt]=2.28+1.08*[FlowPlt] revealed slightly better agreement with flow than for Mindray [BC-6800PltO]=0.13+1.21*[FlowPlt]. On the dataset of 41 samples with Plt count<50x109 cells/L we obtained Passing-Bablok regressions [DxH PLT]=1.33+1.14*[FlowPLT] and [BC-6800PltO]=-0.059+1.22*[FlowPlt], and correlation coefficients with flow were 0.928 for DxH900 and 0.954 for BC-6800plus. In the very low range of Plt count<20x109 cells/L (22 samples) both instruments demonstrated still very good agreement with reference method, with correlation coefficients of 0.816 for DxH900 and 0.875 for BC-6800plus, with Passing-Bablok regressions [DxH PLT]=2.01+1.22*[FlowPLT] and [BC-6800 PLTO]= -0.43+1.28*[FlowPLT]. Comparing BC-6800plus to DxH900 on the whole dataset, we obtained correlation of 0.993 and Passing-Bablok regression [BC-6800 PltO]=-1.87+1.13*[DxH Plt].

CONCLUSIONS

Our results demonstrated very good level of agreement for platelet count between both instruments and for each analyzer compared to ICSH flow reference method. Under normal conditions, DxH900 is capable of reporting high quality results using single technology, without the need for additional reagents and at no extra cost.