Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
low quality control programs to ensure the reliability and accuracy of the results and the overall quality of the report submitted to clinician. We aim to calculate sigma metrics for Complete Blood Counts (CBC), using total allowable error (TEA) requirements, in order to identify areas for improvement in patient care.

Methods

CBC were performed in a Mindray BC-6800Plus analyzer. Red cell count (RBC), hemoglobin (Hb), hematocrit (HTC), mean cell volume (MCV), mean cell Hb, (MCH), mean cell Hb concentration (MCHC), platelets counts (PLT), mean platelet volumen (MPV) leucocyte counts (WBC), neutrophil absolute count (NEUT), lymphocytes (LYMPH), monocytes (MONO), eosinophils (EO), basophils (BAS).

Data from quality controls Mindray BC-6D were used for the sigma calculation of each parameter during the 60 days period in use.

The total analytical error (TE) for each measurand is compared to the total allowed error (TEa). http://www.westgard.com/biodatabase

\[ TE = bias + 1.96 \times CV \] and sigma calculated Sigma \((TEa - bias)/CV\)

Results

Except MCHC and BAS all parameters got TE less than their corresponding TEa. Mindray BC-6800 Plus analyzer has excellent quality (sigma>6) for NEUT, WBC, Hb, RDW, sigma>3 for platelets, MPV and LYMPH. Red cell derived indices are not independent parameters; MCH, MCHC and HTC are calculated from the primary parameters RBC, Hb, MCV (sigma 3.0, 8.4, 2.9, respectively) which is the reason for the lower sigma values, acceptable in clinical practice, sigma>2.5 for MCH and HTC.

Conclusions

The application of Sigma metrics to CBC demonstrates the need to maintain strict limits in the quality control of the primary parameters of the analyzer, in order to ensure the quality required in the derived parameters. Sigma metrics is a procedure that can be applied in Hematology laboratories and a good method to ensure and compare the quality control programs.

Methods

Two case reports of multiple myeloma transformed into plasma cell leukemia. This was diagnosed in the medical biology laboratory at Cheikh Zaid International Hospital in Rabat and was found in a five year period (from 2015 to 2019 included).

Results

The diagnosis of plasma cell leukemia was established on the cytophological study of the blood smear for both patients which revealed an infiltration of the white line by plasmoblasts of 28 and 30% respectively.

Conclusions

Through the two observations we emphasize the importance of blood smear in detecting plasma cell leukemia in patients with multiple myeloma, a rare pathology with very poor prognosis.

doi: 10.1016/j.cca.2022.04.709

T222

Screening for Covid-19 with cellular morphometric parameters on the routine hematology analyzer DXH 800

M. Vasse, M. Ballestèr, D. Ayaka, D. Sukhachev, F. Delcominette, E. Sukhacheva, F. Habarou, E. Jolly, T. Pascreau, E. Farfour

a Beckman Coulter Eurocenter, Nyon, Switzerland
b Biology Department, Foch Hospital & UMR-S 1176, Suresnes and Kremlin-Bicêtre, France
c Biology Department, Foch Hospital, Suresnes, France
d Emergency Unit, Foch Hospital, Suresnes, France
e LabTech Ltd, Saint-Petersburg, Russian Federation

Background-aim

Coronavirus disease (COVID-19) caused by SARS-CoV-2 is characterized by high contagiousness requiring isolation measures. Currently, diagnosis is based on the RT-PCR and/or chest computed tomography (CT) scan, but these methodologies are time-consuming and may delay the diagnosis. CBC-Diff analysis is the first step in patient assessment and may contribute to the diagnosis of COVID-19. Morphological changes of the immune cells can be identified by electro-optical analysis on the hematology analyzer DxH 800 (Beckman Coulter, Inc., Brea, CA). We studied whether the analysis of cellular population data (CPD), provided as part of CBC-Diff analysis by the DxH 800 analyzers can help to identify SARS-CoV-2 infection.

Methods

The study included 322 consecutive patients from the emergency unit with positive RT-PCR (Allplex 2019 nCoV Assay, Eurobio, Les Ulis, France) and 285 consecutive patients with clinical suspicion for COVID-19, but who had negative RT-PCR and CT-scan not suggestive of SARS-CoV-2 infection. We also included 137 subjects with a normal CBC-Diff analysis provided as part of CBC-Diff analysis by the DxH 800 analyzers can help to identify SARS-CoV-2 infection.

Background-aim

Plasma cell leukemia is a rare malignant hemopathy defined by the presence of more than 20% of plasma cells of the leukocyte formula or a rate of circulating plasma cells greater than 2 × 10^9 / L (2G / L). It can be primary, in 60% of cases, and manifest itself immediately on a leukemic mode, or it can be secondary, in 40% of cases, complicating an already known multiple myeloma.
Results

The majority of CPD was different between the 3 groups; CPD of patients (with or without COVID-19) were significantly different of CPD of controls. Four, six and nine CPD for NE, LY, and MO, respectively, were significantly different between COVID-19+ and COVID-19- patients. Using ROC analysis, we identified parameters, which were able to discriminate COVID-19+ patients from COVID-19- patients. The best parameter was SD-V-Mo (Standard Deviation of Monocyte Volume), with AUC 0.819, sensitivity of 91.59% and specificity of 63.03% at the cut-off > 21.71. MN-V-Mo (Mean Monocyte Volume) demonstrated AUC 0.742 with sensitivity of 76.64%, specificity of 65.85% at cut-off > 180. SD-AL2-MO (Standard Deviation of Axial Light Loss for Monocytes) provided AUC 0.722 with sensitivity of 85.67%, specificity of 52.11% at cut-off > 17.51. Currently CPD are research use only; their clinical utility has not been established.

Conclusions

Consideration of CPD could constitute a first step and potentially aid in the early diagnosis of COVID-19.

doi: 10.1016/j.cca.2022.04.710

T223

Validation and clinical application of a novel platelet function analyzer (Anysis-200) in cardiology patients

B. Lee, Y.H. Chung, K.A. Lee, S. Shin

a Department of Laboratory Medicine, College of Medicine, Yonsei University, Seoul, South Korea
b Division of Cardiology, Department of Internal Medicine, College of Medicine, Yonsei University, Seoul, South Korea

BACKGROUND-AIM

Evaluation of antiplatelet therapeutic responsiveness is crucial in the management of patients with cardiovascular disease. This study aimed to assess a new platelet function analyzer (Anysis-200) and to compare it with VerifyNow in cardiology patients.

Methods

Anysis-200 measured platelet function with blood migration distance (MD) until clogging of flow passage, which is comparable to aspirin resistance units obtained using VerifyNow. Platelet assays were simultaneously conducted with Anysis-200 and VerifyNow and compared. A total of 125 citrated blood samples were collected from 85 cardiology patients who were referred for platelet function testing.

Results

In the Anysis-200 assay, the intraclass correlation coefficient (ICC) was 0.960 (95% confidence interval [CI], 0.948–0.970). The MDs before and after taking aspirin were 174 ± 51 and 247 ± 27 mm, respectively (p < 0.0001). Compared with VerifyNow (reference), the sensitivity and specificity of Anysis-200 was 91.5% and 75.5%, respectively (area under the curve, 0.829). The agreement rate between two devices was 0.682 (95% CI, 0.551–0.812; Cohen’s kappa coefficient), which is the second highest level among the agreement comparisons.

Conclusions

Conclusively, Anysis-200 system has equivalent accuracy and precision, and moderate agreement to VerifyNow. This new platelet function test can significantly improve prognosis and survival by identifying patients who are not responding to aspirin in order to prevent thrombosis and allow replacing aspirin with other effective treatments.

doi: 10.1016/j.cca.2022.04.711

T224

Hematological changes among Ethiopian petroleum station workers

S. Getu, M. Melku, E. Shiferaw

a Department of Medical Laboratory Science, Debre Tabor University, Ethiopia
b Department of Medical Laboratory Science, University of Gondar, Ethiopia

Background and aims

Petrol is the non-specific term for petroleum which is used for inside combustion of engines. Petrol filling workers are highly vulnerable to occupational exposure to these harmful substances which leads to hematotoxicity and blood disorders such as leukemia, aplastic anemia and dysplastic bone marrow. Thus, the current study aimed to assess hematological parameters of petrol filling workers in Gondar town, North West Ethiopia.

Methods

A comparative cross-sectional study was conducted from January to March 2019 in Gondar town, North West Ethiopia. A total of 110 study participants comprising 55 study groups and 55 controls group were recruited by convenient sampling technique. Socio-demographic data was collected using structured questionnaire and 3 ml of venous blood was collected for the determination of hematological parameters. The data was entered using Epi info 7.2.0.1 and analyzed by SPSS version of 20. Mean, standard deviation, median and interquartile ranges were used to present the data. Independent t-test and Mann-Whitney U- test were used to compare the mean difference between parametric and non-parametric hematological parameters, respectively. Moreover, Pearson and Spearman’s rank-order correlations analysis were used to describe the association between hematological parameters and duration of work. P value of < 0.05 was statistically significant.

Results

The current study figure out mean red blood cell count and hemoglobin level as well as the median hematocrit, mean cell hemoglobin concentration, platelet count, absolute lymphocytes count and red cell distribution width values of petrol filling workers showed a significant increment compared to control group. On the other hand mean cell hemoglobin value of petrol filling workers showed a significant decrement compared to healthy controls. Moreover, duration of petrol exposures showed a significant strong positive correlation with red blood cell count.