[b]Division of Chemical Pathology, National Health Laboratory Service (NHLS) and University of Stellenbosch, Tygerberg Hospital, Cape Town, South Africa
[c]Division of Haematology, National Health Laboratory Service (NHLS) and University of Stellenbosch, Tygerberg Hospital, Cape Town, South Africa

Background-aim

The correct identification of all pre-analytical variables that can adversely affect coagulation specimen quality is of paramount importance. Heterogeneity among laboratory personnel with regards to the knowledge of coagulation pre-analytical variables can lead to inconsistent identification of these variables and spurious test results. The aim of this study was to determine the impact of a training workshop on coagulation specimen rejection rates and to ascertain the level of knowledge and understanding of laboratory personnel concerning coagulation sample rejection criteria.

Methods

Initially, a retrospective audit was performed where coagulation specimen rejection data was collected over a period of three months. Training workshops and evaluation sessions were subsequently presented and the adherence to International Organization for Standardization (ISO) guidelines for coagulation specimen rejection was emphasised. A revised standard operating procedure for pre-analytical variables and coagulation specimen rejection criteria was then implemented and a repeat audit was performed.

Results

The coagulation specimen rejection rate prior to the presentation of the training workshops was 11.34%. Following the introduction of training workshops, the coagulation specimen rejection rate increased to 17.42%. Evaluation sessions performed before and after the training workshops revealed an overall 95% improvement in knowledge among the attending laboratory personnel.

Conclusions

Training workshops were performed to highlight the need for correct identification of pre-analytical variables that impair coagulation specimen quality. The significant increase in the coagulation specimen rejection rates following these workshops demonstrates their success in educating laboratory personnel. As many pre-analytical variables occur outside the laboratory environment, these workshops will need to be extended to phlebotomists and clinicians who are responsible for the initial blood collection.

doi:10.1016/j.cca.2019.03.827

W053

Homogeneity and stability of hemoglobin E in prepared blood material when characterized by DCIP, micro column and capillary electrophoresis

N. Apiratmateekul[a,b], J. Tokham[a], K. Kongros[a,b], W. Treebuphachatsakul[a,b]
[a]Reference Material and Medical Laboratory Innovation Research Unit, Thailand
[b]Reference Material and Medical Laboratory Innovation Research Unit, Department of Medical Technology, Faculty of Allied Health Sciences, Naresuan University, Phitsanulok, Thailand

Background-aim

Thalassemias are inherited blood disorders and hemoglobin E (Hb E) is a common type that found in Thailand, Laos, and Cambodia. Several techniques are used to diagnose for Hb E such as dichlorophenol indophenol precipitation (DCIP), micro column (MC) and capillary electrophoresis (CE) are useful to screen for thalassemia carrier, to identify abnormal hemoglobin in prenatal testing, and to manage thalassemia patients in hospital settings. This study aims to investigate on homogeneity, stability and characterization of Hb E in blood material that prepared by using donated blood from blood bank.

Methods

Hb E was screened by DCIP and MC while Hb E typing was quantified by CE. Normal blood and Hb E blood samples were used and prepared in phosphate buffered saline (PBS) with and without preserved by 0.02% NaN_3. Homogeneity and stability were investigated for 8 weeks by following the statistical analysis of ISO Guide 35 and according to guidelines of reference material production by ISO 17034.

Results

The results shown prepared blood materials in PBS with and without 0.02% NaN_3 were homogenized in those with Hb E positive and Hb E negative results by DCIP, MC and CE. HbE in blood materials was stable up to 8 weeks when determined by DCIP and MC while the stability of HbE positive in quantification by CE was lower than 4 days. However, the level of Hb E was in the carrier interpretation range with Hb E 15–24% at 8th week. Decreasing rate of Hb E in blood materials with buffer and 0.02% NaN_3 was lower than those in buffer without 0.02% NaN_3.

Conclusions

Blood material with and without Hb E could be prepared in PBS with 0.02% NaN_3 and used for Hb E screening by DCIP and MC up to 8 weeks and lower than 4 days for CE. Prepared blood material obtained from this study may be useful for using as material in proficiency testing or inter-labs comparisons for Hb E testing.

doi:10.1016/j.cca.2019.03.828

W054

Comparison of automatic peripheral blood smear to manual blood smear technique

E. Avci[b], B. Unver Koluman[a], R. Nar[b], H. Aybek[b], S. Demİr[b]
[a]Hematology Department, Faculty of Medicine, Pamukkale University, Denizli, Turkey
[b]Medical Biochemistry Department, Faculty of Medicine, Pamukkale University, Denizli, Turkey

Background-aim

A manual blood smear review (MBSR) is defined as the attentive and careful microscopic analysis of a well-prepared and stained

smear of peripheral blood, with the objective of seeking morphological changes relevant to the diagnosis and monitoring of patients. Over the last few years, the performance and abilities of automatic haematology analyzers have improved considerably. Although they still cannot identify all morphological abnormalities that may occur in peripheral blood, they can reliably decrease the MBSR without sacrificing quality. For this purpose, we evaluated Mindray BC6800 peripheral smear performance simultaneous MBSRW by a hematologist.

Methods

The examination was conducted in the haematology unit of biochemistry laboratory of Pamukkale University Hospital. For each sample, a blood smear was prepared and stained using the Mindray 6800 BCE automatic slide maker-stainer (Mindray Corporation, China). From each sample manual blood smear was prepared manually by the wedge-spread film technique, using the May-Grunewald & Giemsa stains. All review was done by a single-blind hematologist.

Results

Thirteen slights were analyzed. Automatic peripheral smear and manual smear were good correlated. Platelet count similar to each other. Platelet count and images more clear than the manual smear. Erythrocyte morphology was similar in two review slights. The side fields of the slights were not appropriate to evaluate, because of smear techniques. The central area, which the erythrocytes were more clear and selectable, was enough for the understanding the erythrocyte morphology. In some areas, artifacts were present to inhibit the evaluating these fields. Another rare cell etc. eosinophil was more apparent and clear in the automatic peripheral smear. Manual blood smear more effective to evaluate leucocytes morphology. We reached two hundred cell counts in manual blood smear, but in automatic smear, we sometimes could not reach this count. In some areas, neutrophil-lymphocyte discrimination was difficult to analyze.

Conclusions

The efficiency and reliability of this analyzer in performing peripheral smear and found acceptable with the need to review a stained blood smear. Additional, we need further examinations to obtain additional information on selected cases.

doi:10.1016/j.cca.2019.03.829

W055

Thrombin generation in patients with systemic lupus erythematosus (SLE)

N.K. Tóth[b], T. Tarr[a], P. Soltész[a], L. Lóczi[b], L. Muszbek[b], Z. Bagoly[b]
[a]*Department of Clinical Immunology, Faculty of Medicine, University of Debrecen, Debrecen, Hungary*
[b]*Division of Clinical Laboratory Sciences, Department of Laboratory Medicine, Faculty of Medicine, University of Debrecen, Debrecen, Hungary*

Background-aim

Patients with systemic lupus erythematosus (SLE) are subject to significant morbidity and mortality due to atherosclerotic diseases, which cannot be fully explained by traditional risk factors. Thrombin generation test (TGT) is a global haemostasis test providing information about the speed and amount of generated thrombin in plasma. Our aim was to find out whether results of this test might differ in patients with SLE as compared to healthy individuals and to see whether TGT parameters are associated with thrombotic episodes in SLE patients.

Methods

Forty-six patients with SLE not taking anticoagulants and 70 age and sex-matched healthy controls were enrolled. Thrombin generation using the calibrated automated thrombogram (CAT) assay was performed using platelet poor plasma and results were evaluated by the Thrombinoscope software. Lagtime, endogen thrombin potential (ETP), peak thrombin, time-to-peak and velocity index were calculated. Clinical parameters including age, sex, BMI, smoking habit, traditional risk factors, thrombotic history and disease activity were registered.

Results

In SLE patients lagtime and time-to-peak parameters were significantly prolonged, while ETP was significantly reduced as compared to controls ($p < .0001$).

TGT parameters showed significant positive correlation with BMI and CRP in patients and in controls, as well. The presence of lupus anticoagulant increased lagtime and time-to-peak parameters significantly, while the presence of anticardiolipin antibodies was associated with significantly lower ETP. SLE patients with history of thrombotic events had significantly higher ETP values, pregnancy morbidity was associated with elevated peak thrombin levels.

Conclusions

In patients with SLE, the extent of TG was significantly lower as compared to controls, which might be associated with the presence of antiphospholipid antibodies. The history of thrombosis or pregnancy morbidity was associated with increased TG, indicating that the test might be suitable for identifying those with elevated thrombotic risk in this patient population.

Funding

NKFI 128582.

doi:10.1016/j.cca.2019.03.830

W056

Bone marrow gouty tophi secondary to multiple myeloma

H.I. Bang, T.Y. Choi, J. Kim, R. Park, W.Y. Shin, J.W. Shin
Department of Laboratory Medicine, Soonchunhyang University Seoul Hospital, Seoul, Republic of Korea