Letters to the Editor

Usefulness of Automated Hb-HPLC Analyzer Based on Reverse-Phase Cation-Exchange Chromatography for Hemoglobin A1C Determination in the Setting with High Prevalence of Hemoglobin E Disorder

Sir,

Dear Editor, diabetes is a common endocrine disorder that affect millions of world population. For management of people living with diabetes, good glycemic control is required. Laboratory monitoring of glycemic control of the patient is used in general practice. In people living with diabetes, glycohemoglobin (GHb) plays an important role in determining glycemic control. The outcome of an irreversible non-enzymatic glycation of the beta chain of hemoglobin A, GHb is assessed as hemoglobin (Hb) A1C. In patients with diabetes, HbA1C is regularly used to determine long-term glycemic management. The monitoring of HbA1C is accepted as a useful tool for management of the patient. At present, the new analyzer for HbA1C is available and allow convenient point of care analysis.

The measurement of HbA1C in patients with Hb variations or derivatives might be hampered by a number of patient and laboratory-related issues. The challenge of employing hemoglobin A1C measurement in hemoglobinopathy prevalent areas is recognized. This becomes the big problem for using Hb1C for monitoring of diabetes in the area with high prevalence of hemoglobinopathy. In our setting, Southeast Asia, the Hb E disorder is highly prevalent. Effect of HbE disorder, especially for with homozygous HbE trait, on HbA1C measurement is well recognized. Here, the authors report the clinical usefulness of using new automated Hb-HPLC analyzer based on reverse-phase cation-exchange chromatography for hemoglobin A1C determination in the setting with high prevalence of hemoglobin E disorder. The new analyzer is ARKRAY ADAMS A1c HA-8180T analyzer, which is proven for accuracy in determination of HbA1C. Regarding this analyzer, inter and intra operation coefficients of variation are equal to 0.43% and 0.29%, respectively. The measurement range for HbA1C is 3–20%. The system can report flags and for HbE and other hemoglobinopathies including HbS, HbC, and HbD based on identification of the variant peak. The new tool can offer an analytical result in a short amount of time and can be utilized as a point-of-care testing analyzer. It is superior to the traditional analyzer in that it may offer results for HbA1C and other hemoglobinopathies on a single analyzer.

This new tool has just been implemented in our setting, a primary medical center for 1 year. The tool can perform dual analysis of HbA1c and HbA2 on a single run. In our area in Southeast Asia, the diagnostic accuracy of the analyzer for specific analysis of HbA1C and hemoglobinopathy is reported. Here, the authors retrospectively review the record of HbA1C analysis in this setting. The analyzer was able to detect 38 individuals (0.3%) with homozygous HbE trait from 12,578 HbA1C tests over a one-year period. In those individuals, there is no previous history of diagnosis of HbE disorder. In these cases, HbA1C result is discarded and the fructosamine is used for monitoring of diabetes instead. Consider the cost and benefit of the new analyzer in our setting, the cost is 5 USD per one analysis while the cost for the classical HbA1C analyzer is 6 USD per analysis. For classical HbE analysis by electrophoresis is 12 USD per one analysis. Therefore, for detection an HbA1C result with concurrent HbE, the new analyzer can reduce cost up to 13 USD per case. This result can imply the usefulness of the new analyzer for help detect unknown interference on HbA1C measurement from HbE disorder in the setting with high prevalence of hemoglobinopathy.

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Conflicts of interest
There are no conflicts of interest.

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