VALIDITY OF RANDOM BLOOD GLUCOSE AS A PREDICTOR OF THE QUALITY OF GLYCAEMIC CONTROL BY GLYCATED HAEMOGLOBIN IN OUT-PATIENT DIABETIC PATIENTS AT KENYATTA NATIONAL HOSPITAL

F.C.F. OTIENO, L. NG'ANG'A, M. KARIUKI

Abstract

Background: Patients with diabetes mellitus in Kenya come to the hospital for followup visits very infrequently. For most of these patients their blood glucose monitoring is done only on the day of visit to the doctor.

Objective: To determine how well the physician-based morning random blood level determines or reflects the quality of glycaemic control.

Design: Cross-sectional study (morning, random blood glucose taken between 8.00 a.m. and 12.00 noon).

Setting: Out-patient diabetic clinic of Kenyatta National Hospital.

Subjects: Patients with diabetes mellitus either type 1 or type 2 attending the out-patient clinic.

Main outcome measures: Random blood glucose (morning) and glycated haemoglobin (HbA1c).

Results: The morning random glucose level had a linear relationship with glycated haemoglobin levels taken simultaneously. A blood glucose level of 7 mmol/l had 92.7% sensitivity for good control (HbA1c£7.8%) on a blood sample which was taken simultaneously and 59.8% specific for the same. When blood glucose cut-off level was raised to 10 mmol/l sensitivity fell to 66.3% for HbAlc£7.8%, and 83.2% specificity for poor glycaemic control (HbAlc>7.8%). There was marked fall in sensitivity of rising random blood glucose level in predicting good glycaemic control in our study, with concomitant rise in specificity of those high cut-off levels of blood glucose in predicting poor glycaemic control.

Conclusion: Morning random blood glucose in the ambulatory diabetic patients related well to simultaneously assayed HbAlc. Blood glucose within usual therapeutic targets of 4-8mmo1/1 predicted good glycaemic control (HbAlc£7.8%) with high sensitivity at the range of 86.3-98.4%. In resource-poor settings, the morning random blood glucose assay, which is done in patients who may attend the diabetic clinic in the morning hours, may be used to predict the quality of their diabetic control. However caution should be exercised in its widespread use because its overall applicability may be clinic-specific depending largely on the average metabolic control of the diabetic population using that clinic. Further studies need to be done to relate HbAlc to blood glucose levels obtained at different times of the day in this population to determine the best predictor of good glycaemic control.