Abstract citation ID: bvac150.663

Diabetes & Glucose Metabolism

ODP211

Impact of Race and Chronic Kidney Disease on the Correlation between HbA1c and Continuous Glucose Monitoring (CGM) Glycemic Measures

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Objective: To determine whether the correlation between hemoglobin A1c (HbA1c) and continuous glucose monitoring (CGM) derived glycemic measures differs by patient race and stage of chronic kidney disease (CKD). **Methods:** Two hundred thirty patients with type 1 or type 2 diabetes and a minimum of 10 days of CGM data collected with the Freestyle Libre CGM (personal or professional) immediately before measurement of HbA1c were included in this clinic-based observational study. The correlation between HbA1c and CGM derived glycemia was analyzed by race and by CKD stage. Similar analysis was performed between HbA1c and CGM derived time-in-range (TIR, glucose 70-180 mg/dL). **Results:** Mean age ± SD of patients was 63 ± 14 years. 45.7% of patients self-identified as White, 31.3% as Asian, and 15.7% as Black; 84.3% of patients had type 2 diabetes and mean HbA1c was 7.9%. The mean [range] number of CGM days was 40.5 [10-90]. Correlation between HbA1c and CGM mean glycemia for all patients was r=0.75. Correlations for White, Asian and Black patients were 0.84, 0.75, and 0.54 respectively. Correlation between HbA1c and CGM mean glycemia among CKD stage 1, 2 and 3 was 0.894, 0.723 and 0.717, respectively (all patients, regardless of race). Correlation between HbA1c and TIR was r=-0.71 for all patients. Correlations between HbA1c and TIR for White, Asian, and Black patients were -0.78, -0.73 and -0.42, respectively. **Conclusions:** The correlation between HbA1c and CGM mean glycemia appears to differ by race and CKD stage. These results have implications when using correlations between HbA1c and CGM mean glycemia to derive equations for the Glucose Management Indicator.

Presentation: No date and time listed