COMMENT ON GAROFOLO ET AL.

Insulin Resistance and Risk of Major Vascular Events and All-Cause Mortality in Type 1 Diabetes: A 10-Year Follow-up Study. Diabetes Care 2020;43:e139–e141

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Garofolo et al. (1) reported that insulin resistance (IR) is an independent predictor of cardiovascular events and coronary artery disease after adjustment for multiple cofounders including diabetic kidney disease in a 10-year prospective cohort study of 774 patients with type 1 diabetes (T1D). They assessed IR by calculating the estimated glucose disposal rate (eGDR) using the previously validated equation of the Pittsburgh Epidemiology of Diabetes Complication (EDC) Study, which includes only three variables: waist circumference, hypertension, and glycated hemoglobin (HbA_{1c}) (the lower the eGDR, the higher the IR) (1,2). They concluded that such a practicable clinical variable could improve cardiovascular risk stratification in T1D. Nonetheless, they did not attempt to further simplify the prediction of cardiovascular events by developing an eGDR-based predictive model to produce a future risk estimate.

Cardiovascular disease (CVD) is the major cause of death in T1D, and simple models are urgently needed to guide its prediction in clinical practice. Current models for predicting cardiovascular risk in T1D have not been taken up widely by specialists, likely because too many factors are considered (3,4). Risk scores are typically compared with the C-statistic, which is a useful measure of model performance and quantifies the probability that a randomly selected patient who experienced an event had a higher risk score than a patient who had not experienced the event, and ranges from 0.5 (chance prediction) to 1.0 (perfect prediction). The CVD model with the higher C-statistic—the Steno Type 1 Risk Engine (ST1RE) (4)—includes 10 factors (age, sex, smoking, exercise, diabetes duration, systolic blood pressure, LDL cholesterol, HbA_{1c}, estimated glomerular filtration rate [Chronic Kidney Disease Epidemiology Collaboration equation], and micro/macroalbuminuria) and classifies patients with T1D and no previous CVD according to their 5- and 10-year cardiovascular risk into low ($<$10%), moderate (10–20%), and high ($\geq$20%) risk; its C-statistic is 0.82 (95% CI 0.80–0.83) for 10-year prediction (3). In a cross-sectional cohort of 179 patients with T1D and no prior CVD, we used the ST1RE (10-year risk) to classify patients into three risk levels: 105 with low risk, 53 with moderate risk, and 21 with high risk (5). Like Garofolo et al., we calculated the eGDR using the EDC equation, and, additionally, we reported two cutoffs of eGDR with potential relevance for routine clinical practice due to their high C-statistics for 10-year prediction: eGDR $<$8.52 mg/kg/min for moderate/high risk (C-statistic 0.82, 95% CI 0.75–0.88) and eGDR $<$8.08 mg/kg/min for high risk (C-statistic 0.84, 95% CI 0.77–0.91) (5). We recognize that these cutoffs will need validation in larger prospective cohorts of patients with T1D. Consequently, it could be of interest for clinicians managing patients with T1D if Garofolo et al. could provide cutoffs of eGDR with their respective C-statistic values for predicting cardiovascular events in their prospective cohort. We believe that this would increase the impact of their results in routine clinical practice and might promote more effective management of cardiovascular risk in patients with T1D.

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