RESPONSE TO 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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González-Clemente et al. (1) claim that a simpler though efficient assessment of cardiovascular risk in people with type 1 diabetes (T1D) is much needed. Since we showed that the estimated glucose disposal rate (eGDR) was an independent predictor of cardiovascular (CVD) and coronary artery disease (CAD) in people with T1D, they evaluated whether cutoff eGDR values could be calculated to be used in clinical practice to stratify CVD risk. They used the Steno Type 1 Risk Engine (ST1RE) (2) in 179 T1D subjects without CVD to identify 10-year risk level for a first CVD event: low (<10%), moderate (10–20%), and high (≥20%) risk. An eGDR <8.52 mg/kg/min was associated with moderate/high risk and an eGDR <8.08 mg/kg/min predicted for high risk, both with high C-statistics.

To gain further validation, as suggested by González-Clemente et al. (1), we assessed the 10-year CVD risk by ST1RE (2) in our population as well (3). After exclusion of 41 subjects with prior CVD events (5.3%), 453 (61.7%) were defined as low risk, 179 (24.5%) as moderate risk, and 101 as high risk (13.8%). Such distribution was similar (χ^2 2.205, $P = 0.332$) to that reported by González-Clemente et al. (1). We then calculated cutoff levels of eGDR associated with ST1RE categories based on the Youden index calculation. The value associated with moderate/high risk (<7.65 mg/kg/min; C-statistic 0.75, 95% CI 0.71–0.79) was similar to that associated with high risk (<7.59 mg/kg/min; C-statistic 0.80, 95% CI 0.75–0.84). These values and their relative C-statistics (area under the receiver operating characteristic curve) are somewhat lower than those reported by González-Clemente et al. (1).

Incidence of CVD outcomes and CAD events was available for 697 participants (95.1%) and vital status for all participants over a median follow-up of 11 years (interquartile range 9.95–13.04), allowing respective calculation of eGDR cutoff values. An eGDR <7.42 mg/kg/min was predictive for CVD events (C-statistic 0.72; 95% CI 0.63–0.82), while the eGDR cutoff for CAD events was <5.87 mg/kg/min (C-statistic 0.68; 95% CI 0.55–0.81). Finally, the predictive eGDR cutoff for all-cause death was <7.43 mg/kg/min (C-statistic 0.71; 95% CI 0.62–0.79). All cutoff levels had sensitivity ranging between 65% and 78% and specificity from 61% to 80%. Of interest, an eGDR cutoff ≥8 mg/kg/min has been previously used to identify T1D subjects with normal insulin sensitivity in the Swedish National Diabetes Register (4).

By using the ST1RE score as a predictor of incident CVD outcomes and CAD events, C-statistics of 0.77 (95% CI 0.70–0.84) and 0.73 (95% CI 0.65–0.83), respectively, were found, suggesting an eGDR performance as good as the ST1RE one, although an overestimation of the absolute risk of CVD events has been previously reported in Italian T1D subjects (5).

In conclusion, in a prospective observational study of a cohort of T1D individuals, predictive eGDR cutoff values for CVD and CAD events and all-cause mortality can be calculated just on the basis of waist circumference, hypertension, and HbA_{1c} with a performance as good as the one calculated with scores requiring a larger number of clinical variables.

Duality of Interest. No potential conflicts of interest relevant to this article were reported.

References

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