Key Summary of Published Article

An Insulin Resistance Score Improved Diabetes Risk Assessment in the Malmö Prevention Project—A Longitudinal Population-based Study of Older Europeans

Background

- Type 2 diabetes (T2D) prevalence continues to grow worldwide, despite effective interventions. Identifying and focusing preventive interventions on people at high risk of T2D may reduce T2D incidence.
- Previously, the investigators of this study developed an insulin resistance (IR) score (IRScore) based on measurement of insulin and C-peptide by mass-spectrometry to assess the probability of IR in an apparently healthy US population (mean age: 48-49 years).[1]
- Because the average age of the world population is increasing, notably in Europe and the United States, identifying persons at high risk for developing T2D is of particular interest.
- **Objectives:** In the current study, the investigators examined an older European population to determine whether this IRScore improves prediction of T2D risk beyond that of established T2D risk factors.

Methods

- The case-cohort study was based on the Malmö Prevention Project, a longitudinal study of a population (N=18,240) in southern Sweden; baseline assessments occurred in 2002 to 2006.[2]
  - A random sample of study participants (excluding those with T2D at baseline or with missing information) was supplemented with all incident T2D events (n=772) outside of the sample population
  - The resulting study had 4,865 participants (1,095 incident T2D events).
- Incident T2D was determined in December 2014 (median follow-up: 9.1 years).
- The top tertile of IRScore was compared to the bottom tertile to determine if IRScore was associated with incident T2D after adjustment for established risk factors: age, sex, body mass index, waist circumference, family history of T2D, hypertension, HDL-C, triglycerides.
  - A separate model included those factors plus prediabetes status (fasting glucose ≥100 indicated prediabetes).

Results

- The overall study population had 4,865 participants (68% men; median age, 68 years).
- IR score was associated with incident T2D after adjusting for T2D risk factors (excluding prediabetes status): hazard ratio (HR), 2.1; 95% CI, 1.7-2.5 (*P*<0.0001).
- When prediabetes was included in the model, IRScore was still associated with incident T2D, but the association was weaker: HR, 1.5; 95% CI, 1.3-1.8 (*P*<0.0001).
- The 5-year T2D risk prediction improved when the IRScore was included in a model with the established T2D risk factors (including prediabetes); the net reclassification index was 42% (95% CI, 34%-50%).
  - Among those with incident T2D, 21% (95% CI: 13-29%) were reclassified to higher risk. Among participants without incident T2D, 21% (95% CI: 18-24%) were reclassified to lower risk.
  - The area under the receiver operator curve improved from 0.77 to 0.78 (*P*<0.001) when IRScore was added to a model with T2D risk factors (including prediabetes status).

Conclusions

- The findings of this study suggest that the IRScore has good utility for predicting T2D risk in older European persons, especially for those who would not have been identified based on only established risk factors and prediabetes status.

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