Opinion

Screening for Dysglycemia: A Comment on Classification and Diagnosis of Diabetes in American Diabetes Association Standards of Medical Care in Diabetes-2016

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Based on the most recent evidence, the American Diabetes Association (ADA) annually releases and updates the "Standards of Medical Care in Diabetes".[1] Many clinicians and policy makers worldwide rely on and use these Standards of Care recommendations as guidelines in their clinical practice.

Type 2 diabetes (T2DM) has a long presymptomatic stage. Data are promising regarding simple and generally available cost-effective interventions to prevent or postpone T2DM, and to reduce the risk of complications of diabetes[2]; hence, screening of high risk individuals seems reasonable.

Different predictors with variable power for prediction have been used in different risk models for T2DM, developed and validated across many countries.[3] Regarding the impact of these predictors, the results of blood glucose measurement as an invasive, and body mass index (BMI) as a non-invasive risk predictor, have the highest odds ratio for prediction of T2DM.

In the section of "Classification and Diagnosis of Diabetes" of the ADA position statement, testing to detect prediabetes or diabetes has been recommended for any overweight or obese adults that have ≥1 additional risk factors for diabetes, indicating that existence of an abnormal BMI is a necessary component. The issue arising here is that when we are faced with an individual having prediabetes as an important risk predictor with maximum benefits from the interventions[4] or a person with several dysglycemia risk factors (history of gestational diabetes, relatives with diabetes, etc.) or possibly someone with metabolic syndrome but a normal body mass index, would his/her screening be cost-effective or not? To illustrate this, based on the findings of a recent meta-analysis, the overall prevalence of metabolically obese but normal weight individuals is considerable[5]; on the other hand, the results of another meta-analysis regarding metabolic health and incident diabetes demonstrate that in all categories of BMI, including lean individuals, being metabolically unhealthy is associated with higher risk of T2DM; also regarding the predictive performance of current metabolic health definitions, the highest diagnostic odds ratio was observed in the lean category albeit the absolute risk of incident diabetes being low (2.2% at 10 years) in this BMI category.[6]

To help practitioners apply these guidelines prudently in clinical decision making, one possibly helpful solution could be determining the weight of different diabetes risk factors for predicting diabetes, using statistical criteria such as odds or likelihood ratio. Likewise, studies could be designed to evaluate the importance of different constellations of risk factors for prediction of diabetes in different ethnicities; although, ideally, for an evidence-based response, trials need to be planned to compare the impact of screening versus not screening of individuals with different combinations of diabetes risk factors, on the diagnosis and on the hard outcomes i.e., morbidity and mortality of diabetes, even though this rigorous study design may not seem feasible.

There is no conflict of interest.

All authors contributed to the opinion.

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References

1. American Diabetes Association. Standards of Medical Care in Diabetes. Diabetes Care. 2016; 39(Suppl 1): S1 – S112.
2. Gillies CL, Abrams KR, Lambert PC, Cooper NJ, Sutton AJ, Hsu RT, et al. Pharmacological and lifestyle interventions to prevent or delay type 2 diabetes in people with impaired glucose tolerance: systematic review and meta-analysis. BMJ. 2007; 334(7588): 299.
3. Noble D, Mathur R, Dent T, Meads C, Greenhalgh T. Risk models and scores for type 2 diabetes: systematic review. BMJ. 2011; 343: d7163.
4. Knowler WC, Barrett-Connor E, Fowler SE, Hamman RF, Lachin JM, Walker EA, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med. 2002; 346(6): 393 – 403.
5. Wang B, Zhuang R, Luo X, Yin L, Pang C, Feng T, et al. Prevalence of Metabolically Healthy Obese and Metabolically Obese but Normal Weight in Adults Worldwide: A Meta-Analysis. Horm Metab Res. 2015; 47(11): 839 – 845.
6. Lotta LA, Abbasi A, Sharp SJ, Sahlqvist A-S, Waterworth D, Brosnan JM, et al. Definitions of Metabolic Health and Risk of Future Type 2 Diabetes in BMI Categories: A Systematic Review and Network Meta-analysis. Diabetes Care. 2015; 38(11): 2177 – 2187.