Gestational Diabetes Mellitus: Squaring the Circle

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The World Health Organization (WHO) has recently released a new classification and diagnostic criteria for hyperglycemia first diagnosed in pregnancy (1). These new criteria are an update of the 1999 WHO criteria, which defined gestational diabetes mellitus (GDM) as diabetes or impaired glucose tolerance with onset or first recognition in pregnancy. This definition was not based on a review of the evidence, but took into account the already recognized negative effect of uncontrolled diabetes on pregnancy outcome and a suspicion that milder hyperglycemia in pregnancy could also have a negative effect on maternal and child outcomes (2).

The ad hoc expert group convened for the update accepted the reasoning of the International Association of the Diabetes and Pregnancy Study Groups (IADPSG) (3) and decided to endorse the separation of diabetes and GDM. The WHO has accepted the same glucose diagnostic thresholds for GDM as proposed by IADPSG.

Globally, there is general agreement over how to diagnose diabetes in nonpregnant individuals, based on the relationship between glycemia and microvascular complications specific for diabetes. Such is the allure of a threshold that hardly anyone has questioned the validity of these criteria, despite their imprecision, differences across populations, and differences in the statistical methods used to derive them. In contrast to the diagnosis of diabetes, there are several national and international diagnostic criteria for the diagnosis of GDM. These criteria, promulgated in the past by various authoritative bodies, are in general arbitrarily defined and based predominantly on the maternal risk of developing type 2 diabetes. Recently some national bodies, including the American Diabetes Association (4), have followed the guidance of the IADPSG. Only the IADPSG criteria and subsequently the new criteria, including those of the WHO, are based on a quantified relationship between glycemia and adverse short-term pregnancy outcomes for both the mother and the newborn derived from the Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study (5).

Disappointingly but unsurprisingly, data from the HAPO study showed a continuous relationship between glycemia and adverse events, with not even a hint of a threshold effect to facilitate decisions (5). This necessitated the IADPSG to use consensus diagnostic cutoff points, hence providing potential areas of contention for the selection of any particular glucose value.

The WHO expert group decided to adopt the IADPSG criteria with the hope of arriving at the long-wished-for global consensus, preferring this to the establishment of yet another set of arbitrary global criteria that again would not address the specificities of all settings, the different hierarchy of obstetric and other health priorities, and different resource levels. The group recognized the potential problems, but observed that the problems are yet to be experienced and documented and can provide a basis for any future updates if or when it may be deemed necessary. It was also recognized that the HAPO study is not totally representative. Its results, although using a large and varied population base, have limitations and cannot answer all the questions.

The WHO criteria have a lower fasting plasma glucose and a higher 2-h postload cutoff point than most other existing criteria. Despite the now higher 2-h diagnostic value, several studies have estimated that the implementation of these new criteria would substantially increase the prevalence of GDM and potentially result in an increased treatment burden for already strained health care budgets. This anxiety is combined with uncertainty over the trade-off between benefits and harms of implementing these criteria at a population level. The positive impact of therapeutic interventions on adverse outcomes in GDM has been proven in several clinical trials, but the definitions used as inclusion criteria in each trial were different from each other and different from the new WHO criteria. It is possible that the additional burden of treating pregnant women diagnosed as having GDM might not be unmanageable, as a high proportion of the interventions could be the relatively simple and not costly advice on behavior modification.

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As with the previous criteria, the new criteria cannot be all things to everyone. Countries that adopt a policy of screening and/or testing for hyperglycemia in pregnancy may have to consider options other than the gold standard of the oral glucose tolerance test. In practical terms, the choice may be between not testing at all or using an alternative to the full glucose tolerance test. There are as many options for alternatives as there are different populations and health systems. This practical situation has not altered with the change from the old to the new criteria. However, it is hoped that the new criteria will gain acceptance and result in increased international consensus to the benefit of the health of pregnant women.

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