EDITORIAL (SEE IADPSG CONSENSUS PANEL, P. 676)

New Consensus Criteria for GDM

Problem solved or a Pandora's box?

For at least a generation there has been a divergence of opinions about gestational diabetes mellitus (GDM). On one hand were those who, on the basis of largely observational studies in humans and extrapolation of animal data, felt that women should be tested for GDM and have their diagnosed GDM treated. On the other hand, there were the "obskeptics" who felt that no significant action should be taken until evidence of benefits and risks was available. Clinicians of either persuasion undoubtedly have found developments over the last few years most exciting.

In 2005, Crowther et al. (1) published the results of the Australian Carbohydrate Intolerance Study in Pregnant Women (ACHOIS). For women diagnosed with GDM, the rate of prespecified perinatal complications was lower for the women randomized to the intervention (treatment) group. In a recent publication, Landon et al. (2) found that women with mild glucose intolerance who were assigned to treatment had a significant reduction in prespecified complications, mainly related to fetal size.

Although universal testing for GDM was not applied in either study, the advantages of treatment were clear. However, what was not clear was how the two studies could be compared. Crowther et al. used a 2-h plasma glucose test with a 75-g glucose load and the World Health Organization (WHO) criteria designated to diagnose impaired glucose tolerance in a nonpregnant population (3). Landon et al. used a 3-h 100-g glucose load and criteria ultimately derived from the prediction of future diabetes in the mother (4). The use of these criteria, none of which have been derived for pregnancy outcomes, makes comparison of outcome data problematic.

However, while these two treatment trials were being conducted, another study was underway specifically to determine the risks of adverse pregnancy outcomes related to the maternal glucose level. The Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) Study was a large multicenter multinational blinded study published in 2008 (5). This effectively demonstrated a continuum of risk for maternal glucose levels and adverse pregnancy outcomes. The HAPO Study used a 2-h 75-g glucose load with no preliminary screening based on either risk factors or a challenge test.

After the release of the HAPO Study, a group designated the International Association of Diabetes in Pregnancy Study Groups (IADPSG) was created to formulate recommendations for glucose tolerance testing in pregnancy based on the results of the HAPO Study, and these results appear in this issue of *Diabetes Care* (6).

Given that a continuum of risk was found in HAPO, the recommendations of IADPSG are, of necessity, based on a consensus around an arbitrary decision about odds ratios. That so many leading experts in the field from a wide range of countries were able to meet and come to an agreement is a credit to the perseverance of the organizing committee, a reflection of the strength of the database, and a desperate desire for international uniformity.

However, the new criteria proposed would diagnose ~18% of all women in pregnancy as having GDM, which is about double the proportion of women hitherto designated. Clearly the implications of this doubling will need serious consideration.

The most obvious problems will relate to the health care costs of these additional diagnoses as well as possible perceptions about the "medicalization" of pregnancy. The inevitable increase in costs may be a disincentive for some national health care systems to adopt a consensus approach. It may also lead, for pragmatic reasons, to the adoption of a different odds ratio for risk stratification that may result in a lesser number of women being diagnosed.

The majority of women diagnosed with the IADPSG criteria are diagnosed on the basis of glucose results, fasting and at 1 h. A more convenient 1-h glucose tolerance test may increase patient adherence and compensate for the small number of additional cases identified by the 2-h glucose level. So far, no mention has been made of consumer preferences.

The IADPSG has been concerned with developing criteria based on pregnancy outcomes. Women identified will presumably also be women at higher risk of progressing to type 2 diabetes. What maternal glucose criteria are associated with adverse intrauterine programming is a question that only the future will determine.

Currently, there is broad consensus about the upper range for fasting and postprandial glucose target levels for treated women with GDM. The International Diabetes Federation (7), for example, has recommended that a fasting glucose ≥100 mg/dl (≥5.5 mmol/l) should be one of the action points for starting insulin or oral agents. How should this be revised in light of the new diagnostic criterion of a fasting glucose ≥92 mg/dl (≥5.1 mmol/l)?

Could the identification of a greater number of women at risk of an adverse pregnancy outcome itself cause harm? It is well documented that a diagnostic category of GDM, irrespective of the glucose control achieved, in some instances is likely to result in increased interventions, earlier delivery, an increased cesarean section rate, and a higher number of babies being admitted to special care nurseries. Could these real hazards offset some of the potential advantages?

The work of the IADPSG has been a significant contribution to our knowledge and understanding of GDM. As always, solutions of an immediate problem raise questions for the future. "May you live in interesting times" will certainly be the future for GDM research and management.

ROBERT G. MOSES, MD

From the South Eastern Sydney and Illawarra Area Health Service, Wollongong, New South Wales, Australia.

Corresponding author: Robert G. Moses, robert.moses@sesiahs.health.nsw.gov.au.

DOI: 10.2337/dc09-2306

Acknowledgments— No potential conflicts of interest relevant to this article were reported.

References

1. Crowther CA, Hiller JE, Moss JR, McPhee AJ, Jeffries WS, Robinson JS, Australian Carbohydrate Intolerance Study in Pregnant Women (ACHOIS) Trial Group. Effect of treatment of gestational diabetes mellitus on pregnancy outcomes. N Engl J Med 2005;352:2477–2486
2. Landon MB, Spong CY, Thom E, Carpenter MW, Ramin SM, Casey B, Wapner RJ, Varner MW, Rouse DJ, Thorp JM Jr, Sciscione A, Catalano P, Harper M, Saade G, Lain KY, Sorokin Y, Peaceman AM, Tolosa JE, Anderson GB, Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. A multicenter, randomized trial of treatment for mild gestational diabetes. N Engl J Med 2009; 361:1339–1348
3. World Health Organization: *Diabetes Mellitus: Report of a WHO Study Group*. Geneva, World Health Org., 1985, (Tech. Rep. Ser., no. 727)
4. Metzger BE, Coustan DR. Summary and recommendations of the Fourth International Workshop-Conference on Gestational Diabetes Mellitus. Diabetes Care 1998;21(Suppl. 2):B161–B167
5. HAPO Study Cooperative Research Group, Metzger BE, Lowe LP, Dyer AR, Trimble ER, Chaovarindr U, Coustan DR, Hadden DR, McCance DR, Hod M, McIntyre HD, Oats JJ, Persson B, Rogers MS, Sacks DA. Hyperglycemia and adverse pregnancy outcomes. N Engl J Med 2008; 358:1991–2002
6. International Association of Diabetes and Pregnancy Study Groups. International Association of Diabetes and Pregnancy Study Groups recommendations on the diagnosis and classification of hyperglycemia in pregnancy. Diabetes Care 2010;33: 676–682
7. International Diabetes Federation Clinical Guidelines Task Force: *Global Guideline on Pregnancy and Diabetes*. Brussels, International Diabetes Federation, 2009