ISSN: 2377-9004

Obstetrics and Gynaecology Cases - Reviews

Case Report: Open Access

Case Report: Gestational Diabetes Mellitus: 2 Cases Diagnosed and Treated Using IADPSG Criteria. The Debate Goes On

Alejandra Durán Rodriguez-Hervada[1], Amparo Sabaté Garcia[1], Consuelo Auñón Pereda[1], Carla Assaf-Balut[1], Miguel A Rubio[1], Nuria Izquierdo Mendez[2], Noelia Pérez Pérez[2], Miguel A Herraiz Martínez[2], and Alfonso L Calle-Pascual[1]*

[1]Department of Endocrinology and Nutrition, Hospital Clínico San Carlos, Universidad Complutense, Madrid, Spain

[2]Department of Gynecology and Obstetrician, Hospital Clínico San Carlos, Universidad Complutense, Madrid, Spain

***Corresponding author:** *Alfonso L Calle-Pascual, Department of Endocrinology and Nutrition, Hospital Clínico San Carlos, c/prof Martín Lagos s/n. 28040 Madrid, Spain, E-mail: acallepascual@hotmail.com*

Abstract

Background: How best to define Gestational Diabetes Mellitus (GDM) is the object of debate, with International Association of Diabetes in Pregnancy Study Groups criteria (IADPSGc) differing from Coustan and Carpenter criteria (CCc).

Cases: We present the cases histories of two patients diagnosed as having GDM using the new IADPSGc, who would not have been diagnosed using CCc. In both cases glycemic profiles revealed marked hyperglycemia. In one case, when treated according to CCc, ultrasound revealed that the fetus was large for gestation age.

Conclusions: The use of IADPSG criteria permits the identification of a larger number of women at risk for the adverse maternal and fetal outcomes associated with GDM, thus permitting adequate therapy. Furthermore, given the increased risk for future metabolic disease observed in patients with a history of GDM, the detection of GDM in these women could reduce future morbidity if preventive lifestyle changes and targeted follow-up are implemented.

Keywords

Gestational Diabetes Mellitus (GDM), International Association of Diabetes and Pregnancy Study Groups criteria (IADPSGc), Carpenter and Coustan criteria (CCc), Hyperglycemia, adverse pregnancy outcomes (HAPO)

Introduction

Gestational Diabetes Mellitus (GDM) is an important public health problem, given its high prevalence and its association with adverse maternal and fetal outcomes. Recent evidence has confirmed that the risk of adverse outcomes is a continuum, increasing as maternal blood glucose levels rise [1]. Furthermore, women with prior GDM are a high-risk group for the future development of diabetes, metabolic syndrome, and cardiovascular disease [2]. The use of the new International Association of Diabetes and Pregnancy Study Groups criteria (IADPSGc) significantly increases the number of women diagnosed as having GDM [3].

Since the IADPSGc were established, they have been adopted by several scientific societies. However, some societies, including the American College of Obstetricians and Gynecologists (ACOG), still use the Carpenter and Coustan criteria (CCc). These groups argue that there is insufficient data in favor of adopting the new strategy, and consider the increase in the observed prevalence of GDM to be a drawback.

Our group has recently published a prospective study comparing the cost/effectiveness of the one-step IADPSGc for screening and diagnosis of GDM with the traditional two-step CCc. Our study found that IADPSGc application was associated with a 3.5 fold increase in GDM prevalence in our population, as well as with significant improvements in pregnancy outcomes, and was cost-effective [4,5].

Yet the use of IADPSGc could have further advantages. A recent report also demonstrates a greater than threefold prevalence of metabolic syndrome (MS) three years following delivery in women diagnosed with IADPSGC as compared to women with NGT (Normal Glucose Tolerance) during pregnancy. The detection of pregnant women at risk for MS could permit the implementation of preventive health strategies, directed towards reducing the rate of development of future metabolic disease and its consequences [2].

In this report we describe 2 cases of women diagnosed as having GDM using IADPSGc, who would not have been diagnosed according to CCc.

Case (i)

XYPY was a 26-year-old woman from Honduras.

Obstetrical History: She had had a prior pregnancy, ending in a miscarriage.

Her Personal history was unremarkable. The patient did not smoke.

Pregestational body weight (BW) was 57 kg and body mass index (BMI) 23.7 $Kg.m^{-2}$. An OGTT with 75 g of glucose was performed at 25 weeks of gestational age, when she weighed 67 Kg of BW and had a BMI of 27.9 $Kg.m^{-2}$. At the OGTT: The fasting serum glycemia was

ClinMed International Library

Citation: Rodriguez-Hervada AD, Garcia AS, Pereda CA, Assaf-Balut C, Rubio MA, et al. (2015) Case Report: Gestational Diabetes Mellitus: 2 Cases Diagnosed and Treated Using IADPSG Criteria. The Debate Goes On. Obstet Gynecol Cases Rev 2:059

Received: May 06, 2015: **Accepted:** September 26, 2015: **Published:** September 28, 2015

95 mg/dl (5.3 mmol/L), with 1 and 2 hour glycemia at 117 mg/dl (6.5 mmol/L) and 97 mg/dl (5.4 mmol/L) respectively. In application of IADPSGc, her diagnosis was GDM. The patient received instruction in self monitoring of blood glucose (SMBG) in our GDM unit, was given nutritional and lifestyle recommendations, and started performing 6 point daily blood glucose profiles. A week later, fasting and pre-dinner capillary blood glucose levels were found to exceed 95 mg/dl (5.3 mmol/L) in 4 out of 5 times.

Consequently, basal insulin (insulin glargine) was initiated in her 26th week of gestation, administered at 17 h, and was titrated weekly to 6 IU at 29 gestational weeks. At 32 weeks, capillary blood glucose levels were higher than 140 mg/dl (7.8 mmol/L) 1 hour following breakfast and lunch, reaching levels up to 165 mg/dl (9.2 mmol/L), and insulin aspart was initiated before both meals. At week 34 she was receiving 6 IU of glargine insulin, 2 IU of aspart insulin before breakfast and 4 IU before lunch. These doses were maintained until week 39, when insulin doses were lowered, in 2-unit steps, whenever capillary fasting glucose levels were below < 80 mg/dl (4.4 mmol/L), and whenever post-prandial levels were inferior to 100 mg/dl (5.6 mmol/L).

At 38 weeks her BW was 75 Kg and her BMI 32 $Kg.m^{-2}$.

At week 40+3 days, following instrumental delivery, a male baby was born, with an Apgar score of 9 and 10 at 1/5 minutes, an umbilical artery pH 7.32, and a birth weight of 3,200 g. No other medical complications were recorded. Three months after delivery the patient's body weight lowered to 58 kg and presented a normal 75 g OGTT on diet alone.

Case (ii)

RRC was a 26-year- old woman from Bolivia.

She was diagnosed as having primary hypothyroidism five years before pregnancy, and was receiving 75 mcg of levothyroxine daily prior to pregnancy. The dose was increased to 112 mcg daily when pregnancy was detected. At the 1st prenatal visit, at a gestational age of 12 weeks, her early morning TSH level was 1.6 mcUI/mL with a free T4 level of 8.7 pg/mL. She was primiparous and her obstetric history was unremarkable.

Her fasting serum glucose was 94 mg/dl (5.2 mmol/L) and consequently an OGTT with 75 g of glucose was not performed, as GDM was diagnosed in application of IADPSGc. The HbA1c value was 6%. However, the patient decided to have a second opinion, and was seen by Endocrinologists at another hospital, where CCc were applied, and GDM ruled out. She received no instructions regarding lifestyle and nutrition for GDM.

The patient continued her obstetrical follow-up at our hospital. The 32 week fetal ultrasound showed a single male fetus, on head back left. Biparietal diameter was 86 mm, head circumference 308 mm, abdominal circumference 300 mm, and femur length 64 mm. Weight estimation was 2300 g (percentile 98), and he was considered large for gestational age (LGA). At week 34, ultrasound examination revealed a single fetus on cephalic right back. The biparietal diameter was 90 mm, abdominal girth 356 mm, and femoral length 71 mm. Weight estimation was 3498 g. (percentile 100). The patient was referred to our GD unit once more at 34 weeks of gestation.

Pregestational BW was 74 kg and BMI 29.6 $Kg.m^{-2}$, increasing to 89 Kg at week 34. She was instructed in SMBG, with a 6 point daily profile, and given nutritional and lifestyle recommendations. When seen three days later, her capillary blood glucose levels in fasting, pre-lunch and pre-dinner were found to exceed 105 mg/dl (5.83 mmol/l) in all 3 profiles, with normal 1 hour postprandial values. The patient was started on insulin glargine, 6 IU, at 23 h, and her capillary glucose levels met target levels 2 days later. Her capillary glucose levels remained on target and in the week 39+6 days she had a vaginal delivery with episiotomy. A male son was born, weighing 4,040 g, with apgar scores of 9/10 at 1/5 minutes, and an umbilical artery pH 7.33. There were no post-partum complications.

Discussion

We believe these two cases illustrate how the application of CCc can miss patients who can potentially benefit from treatment of GDM.

The first patient would not have been diagnosed as having GDM without the application of IADPSGc. Although young, she had various risk factors, as she was overweight, Latina, and had a history of miscarriage. Her OGTT was normal except for her basal fasting serum glucose value of 95 mg/dl (5.3 mmol/L). Yet initial capillary glucose profiles revealed marked hyperglycemia. Later in pregnancy, her profiles also revealed marked post-prandial hyperglycemia. Following therapy with basal and bolus insulin, the patient had an uncomplicated pregnancy with no negative fetal outcomes.

The second patient was also diagnosed as having GDM by IADPSGc, although not by CCc. Treated according to the latter diagnosis, she did not receive therapy for GDM, until the fetus was found on ultrasound to be Large for Gestacional Age. Although she was young, risk factors such as ethnicity and weight gain were present. Glycemic monitorization revealed high fasting and pre-dinner glycemic levels.

In both cases, the cutoff point of fasting serum glycemia was crucial for IADPSGc diagnosis of GDM, with fasting serum glycemias of 95 mg/dl (5.3 mmol/L) in the first case, and of 94 mg/dl (5.2 mmol/L) in the second. The diagnosis of GDM permitted treatment of hyperglycemia from the start in Case (i). Rejection of the use of IADPSGc delayed therapy in Case (ii), until the fetus was found to be Large for Gestational Age. The patient received intensive care during the last weeks of pregnancy, with no further complications.

The detection of GDM can also have important consequences following pregnancy. Women with a prior diagnosis of GDM are at an increased risk for the future development of diabetes, metabolic syndrome, and cardiovascular disease. Identification of these at risk women permits the implementation of lifestyle modifications and a targeted follow-up that would not be applied when GDM goes undetected. Therefore, the increase in the number of women diagnosed as having GDM using IADPSGC could be important for prevention of future metabolic disease.

The American Diabetes Association (ADA), in their latest standards of medical care, maintains an "open" position regarding the use of the newer IADPSGc versus the older CCc [6]. The anticipated increase in the incidence of GDM when using the former could have a significant impact on costs, medical infrastructure capacity, and potential for increased "medicalization" of pregnancies previously categorized as normal. Yet the use of IADPSG has been found to be cost-effective for maternal and fetal health [4], and could be cost-effective in terms of prevention of future metabolic disease.

The importance of detecting women with GDM is not under discussion. We believe these two cases illustrate how cases of GDM can go undetected when CCc are applied, permitting needed therapy to be withheld during pregnancy, and reducing the opportunity to implement strategies that can prevent future metabolic disease.

Acknowledgements

All authors have seen and agree with the content of the last version of manuscript.

Funding: This research was endorsed by grants from Fundación para Estudios Endocrinometabolicos, and IdISSC Hospital Clinico San Carlos, Madrid, and the Instituto de Salud Carlos III of Spain (PI14/01563).

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

References

1. HAPO Study Cooperative Research Group, Metzger BE, Lowe LP, Dyer AR, Trimble ER, et al. (2008) Hyperglycemia and adverse pregnancy outcomes. N Engl J Med 358: 1991-2002.

2. Noctor E, Crowe C, Carmody LA, Kirwan B, O'Dea A, et al. (2015) ATLANTIC-DIP: prevalence of metabolic syndrome and insulin resistance in women with previous gestational diabetes mellitus by International Association of Diabetes in Pregnancy Study Groups criteria. Acta Diabetol 52: 153-160.

3. International Association of Diabetes and Pregnancy Study Groups Consensus Panel, Metzger BE, Gabbe SG, Persson B, Buchanan TA, et al. (2010) International Association of Diabetes and Pregnancy Study Groups recommendations on the diagnosis and classification of hyperglycemia in pregnancy. Diabetes Care 33: 676-682.

4. Durán A, Saenz S, Torrejon MJ, Bordiu E, del Valle L, et al. (2014) Introduction of IADPSG criteria for the screening and diagnosis of gestational diabetes mellitus results in improved pregnancy outcomes at a lower cost in a large cohort of pregnant women: The St Carlos Gestational Diabetes Study. Diabetes Care 37: 2442–2450.

5. Schaefer-Graf UM, Kjos SL, Fauzan OH, Büling KJ, Siebert G, et al. (2004) A Randomized Trial Evaluating a Predominately Fetal Growth-Based Strategy to Guide Management of Gestational Diabetes in Caucasian Women. Diabetes Care 27: 297-302.

6. American Diabetes Association (2015) Classification and Diagnosis of diabetes. Diabetes Care 38: 8-16.