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Case Report Open Access

Overdiagnosis of Gestational Diabetes Mellitus in Pregnant Woman: A Case Report

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Abstract

The detection and diagnosis of Gestational Diabetes Mellitus (GDM) follow different recommendations according to the various groups, in particular for what concerns the endorsement of screening practices and diagnostic threshold recommended by the International Association of Diabetes and Pregnancy Study Groups (IADPSG). This paper draws attention to the overdiagnosis of gestational diabetes mellitus, when the doctor adheres to the criteria set out in the various international recommendations and also wants to present a case study that explains how easily a poor diagnosis can be made. Here the author describes a recent case report of a 36-year-old pregnant woman with overdiagnosis of gestational diabetes.

Keywords: Gestational diabetes mellitus; Fasting glycemia; Guidelines; Overdiagnosis

Background

The detection and diagnosis of Gestational Diabetes Mellitus (GDM) follow different recommendations according to the various groups, in particular for what concerns the endorsement of screening practices and diagnostic threshold recommended by the International Association of Diabetes and Pregnancy Study Groups (IADPSG) [1]. After the publication of the results of the 2008 HAPO study [2], IADPSG amended its recommendations for the diagnosis of GDM in 2010. In the United States it has long been common practice to diagnose GDM by using a two-step approach; step one foresees the administration of a 50-gram oral glucose solution followed by a one-hour venous glucose determination. Patients who meet or exceed the screening threshold then undergo step two, i.e. a 100-g, three-hour diagnostic OGTT, given to the patient whilst fasting. Unlike the prevailing U.S. practice, IADPSG proposes a one-step approach, according to which a dose of 75-g oral glucose load is administered and plasma glucose levels are evaluated after one and two hours. The American Association of Clinical Endocrinologists (AACE) [3] supports this procedure, with the recommendation that all pregnant women not known to have prior diabetes undergo a 75-g, two-hour OGTT at 24 to 28 weeks of gestation.

Introduction

The diagnostic thresholds developed by the IADPSG are also supported by AACE and The Endocrine Society (TES) [4]. According to such thresholds, the diagnosis of GDM is confirmed when any one of the following plasma glucose values is met or exceeded: 92 mg/dL (fasting); 180 mg/dL (one-hour value); or 153 mg/dL (two-hour value). TES accepts that its recommendation to screen for GDM adopting the protocol and threshold value established by IADPSG could be debatable. TES recognizes that the application of the IADPSG standards will generate a considerable increase in the number of pregnant women who will be diagnosed with gestational diabetes with the attendant medicalization of pregnancies and will also increase in healthcare costs both individuals and society. Nevertheless, TES resolves that, pending further evidence, the adoption of the IADPSG criteria is endorsed. In its guidelines The US Preventive Services Task Force (USPSTF) [5] refers to both the one-step and two-step screening procedures, but does not make any recommendation for a particular testing approach. Here the author describes the case report of a 36-year-old pregnant woman with overdiagnosis of gestational diabetes.

Case Report

This report describes a recent case of an otherwise healthy 36-year-old lady during her second pregnancy with normal weight and without any family history of diabetes mellitus. The gestant woman was underwent to gestational diabetes screening by the gynecologist. The One-Step" Strategy (75-g OGTT with plasma glucose (PG) measurement fasting and at 1 hr and 2 hr detected a minimum increase of fasting glucose (95 mg/dl) with other blood glucose levels at 1 hour (100 mg/dl) and two hours away (100 mg/dl) which in my opinion was absolutely normal. The diabetologist formulated the diagnosis of gestational diabetes mellitus, with great concern and emotional distress of the pregnant woman. However, in the following weeks all the glycemic monitoring by A1C (glycosylated hemoglobin), fructosamine, and seriated levels of fasting glucose were always within the normal range and under 90 mg/dl. Practically the aggressive monitoring of glucose metabolism never showed any significant alteration, therefore the overdiagnosis of gestational diabetes was certain. This pregnant woman asked the author: "is such an only value of fasting glucose in the screening test for gestational diabetes sufficient to make so alarming diagnosis?"

Discussion

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. Obviously 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 [6].

Could the identification of a greater number of women at risk of an adverse pregnancy outcome itself cause harm? It is well documented

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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? [7].

Recently new guidance on the management of diabetes and its complications in pregnancy has been issued by the National Institute for Health and Care Excellence (NICE) [8]. As well as advising on gestational diabetes, the new NICE guidelines have clarified the one major change using good evidence, i.e. the fasting [plasma] glucose criterion for diagnosing gestational diabetes mellitus, which most researchers believe to be the most controversial part of the new recommendations.

Indeed the National Institute for Health and Care Excellence (NICE) has opted for a 5.6-mmol/L (101-mg/dL) cutoff to diagnose gestational diabetes (using the one-step approach, a single fasted 75-g two-hour oral glucose tolerance test [OGTT], which is common practice in Europe), whereas the International Association of Diabetes in Pregnancy Study Groups (IADPSG) and the World Health Organization (WHO) have opted for a cutoff of 5.1 mmol/L (92 mg/dL) [8].

This case report is emblematic because it clearly describes the pitfalls of screening for gestational diabetes and its over-diagnosis, when physicians take into consideration the IADPSG criteria according to which GDM is present when any value is altered, albeit slightly, as fasting blood glucose. Therefore, there are some considerations to make on this point that deserves special attention: 1) fasting blood glucose may be altered for various reasons even in non-diabetic subjects, because of catecholamine secretion secondary to stress and anxiety prior to examination (Stress hyperglycemia); 2) the pregnant women have to rest on a couch and wait for at least 15-20 minutes before the blood sample is taken; 3) If the results show a minimum rise in fasting plasma glucose as the only altered value in the OGTT one step, it is absolutely necessary to repeat the test by taking all measures as above mentioned. Fasting is defined as no caloric intake for at least 8 h; when in case of unequivocal hyperglycemia the result should be confirmed by repeating the test.

Another important finding that merits consideration concerns the total lack of familiarity for diabetes mellitus in this pregnant woman subjected to screening of gestational diabetes. It follows that her risk of developing complications of glucose metabolism during pregnancy was quite insignificant. In this connection recent literature reports [9] an increased cardiovascular risk of individuals with a positive family history, although these entities do not have any signs of pre -diabetes or diabetes.

Conclusion

On the controversial issue of diagnosing gestational diabetes, there remains divergence of opinions among various international organizations. Assuming that the 2010 revision of the criteria defining gestational diabetes recommended a dramatic lowering of the diagnostic threshold, more than doubling the number of pregnant women classified to almost 18%, the author agrees with most critics who requested an urgent debate before the new expanded definition is more widely adopted, since it is possible that many women may be over-medicalised and overdiagnosed.

Considering that the screening test has poor reproducibility for mild cases, the evidence of benefit for the newly diagnosed pregnant women is weak, and the benefit modest at best. It is well recognized that established diabetes is an important risk factor for several serious adverse pregnancy outcomes and the risk is greater if glycemic control is poor. Consequently, screening high risk women for undiagnosed type 2 diabetes at the first prenatal visit is wise. However, pregnant woman at low risk with fasting mild glycemia may be not significant. For these reasons the IADPSG proposals seem a striking example of overdiagnosis.

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