Universal two-step screening strategy for gestational diabetes has weak relevance in French Mediterranean women: Should we simplify the screening strategy for gestational diabetes in France?

N. Chevalier, P. Fénichel, V. Giaume, S. Loizeau, A. Bongain, G. Daideri, F. Brucker-Davis, S. Hiéronimus

Service d’endocrinologie, diabète et médecine de la reproduction, hôpital de l’Archet, CHU de Nice, 151, route de Saint-Antoine-de-Ginestière, BP 3079, 06202 Nice cedex 3, France
UMR Inserm U895/UNS, centre méditerranéen de médecine moléculaire (C3M), bâtiment universitaire Archimède, 151, route de Saint-Antoine-de-Ginestière, BP 2 3194, 06204 Nice cedex 3, France
Service de gynécologie-obstétrique, médecine fœtale et reproduction, hôpital de l’Archet, CHU de Nice, 151, route de Saint-Antoine-de-Ginestière, BP 3079, 06202 Nice cedex 3, France
Département d’information médicale, hôpital de Cimiez, CHU de Nice, 2, avenue Reine-Victoria, 06000 Nice, France

Received 20 October 2010; received in revised form 20 January 2011; accepted 26 January 2011
Available online 12 April 2011

Abstract

Aim. – Currently, there is no international consensus for gestational diabetes mellitus (GDM) diagnosis. This is a report of our experience of GDM screening according to the 1996 French guidelines.

Methods. – For 5 years, all pregnant women followed at our hospital (n = 11,545) were prospectively screened for GDM between weeks 24 and 28 of pregnancy with a two-step strategy: the O’Sullivan test (OS) with a threshold at 130 mg/dL, followed by a 100-g OGTT if positive. GDM was diagnosed according to Carpenter and Coustan criteria.

Results. – Prevalence of GDM was 4.26% [344/1451 of patients with an OS of 130–199 mg/dL (12.1%); and 148 patients with an OS greater than 200 mg/dL]. The false-positive rate for the OS was 76.8%. Compared with 140 mg/dL, a threshold of 130 mg/dL caused 401 additional negative OGTTs in 90% of cases. In 80.7% GDM patients, fasting glucose was less than 95 mg/dL. The time lag between OS and OGTT was 3 weeks (1–84 days). Risk factors associated with GDM were maternal age, preconception overweight and obesity, parity, personal history of GDM or macrosomia, and familial history of obesity (P < 0.05), but not diabetes. Also, 20% of GDM patients had no risk factors, whereas they were present in 75% of patients without GDM.

Conclusion. – In our population, a two-step screening strategy for GDM was neither relevant nor efficient. It could be simplified with a single-step definitive screening strategy using a 75-g OGTT, as used in the HAPO study, and as recommended by the IADPSG and the recent French Expert Consensus. At present, there are still no evidence-based arguments to help in deciding between selective or universal screening for GDM.

© 2011 Elsevier Masson SAS. All rights reserved.

Keywords: Gestational diabetes; Screening strategy; Two-step strategy; O’Sullivan test; OGTT; Risk factor

Résumé

Le dépistage universel en deux temps du diabète gestationnel n’est pas pertinent chez les femmes françaises méditerranéennes. Ne devrions-nous pas simplifier nos pratiques en France ?

Objectif. – À ce jour, il n’existe aucun consensus international relatif à la méthode de dépistage du diabète gestationnel (DG). Nous rapportons notre expérience du dépistage du DG en France conformément aux recommandations établies en 1996.

Abbreviations: OGTT, oral glucose tolerance test; OS, O’Sullivan test; GDM, gestational diabetes mellitus; FPG, fasting plasma glucose; PLG, post-load glucose; BMI, body mass index; IADPSG, International Association of Diabetes and Pregnancy Study Groups; ALFEDIAM, Association de langue française pour l’étude du diabète et des maladies métaboliques (French Association for Study of Diabetes Mellitus and Metabolic Diseases); CNGOF, Collège national des gynécologues et obstétriciens français (National College of French Obstetricians and Gynaecologists); HAS, Haute Autorité de santé (French Authority of Health).

* Corresponding author. Tel.: +33 4 92 03 55 19; fax: +33 4 92 03 54 25.
E-mail addresses: chevalie@unice.fr, chevalier.n@chu-nice.fr (N. Chevalier).

1262-3636/S – see front matter © 2011 Elsevier Masson SAS. All rights reserved.
doi:10.1016/j.diabet.2011.01.004
Méthode. – Durant cinq années consécutives, toutes les femmes enceintes suivies dans notre hôpital (n = 11 545) ont bénéficié d’un dépistage du DG entre la 24e et la 28e semaine de grossesse à partir d’une stratégie en deux temps associant un test de O’Sullivan (OS) suivi d’une hyperglycémie provoquée par voie orale (HGPO) à 100 grammes de glucose lorsque la glycémie dépassait 130 mg/dL. Le diagnostic de DG était porté selon les critères de Carpenter et Coustan.

Résultats. – La prévalence du DG était de 4,26 % (344 patientes parmi 130 et 199 mg/dL [12,1 %]; et 148 patientes avec un OS supérieur à 200 mg/dL). Le taux de faux-positifs du OS était de 76,8 %. Par rapport au seuil de 140 mg/dL, celui de 130 mg/dL a engendré 401 HGPO supplémentaires qui se sont avérées négatives dans 90 % des cas. 80,7 % des patientes avec DG avaient une glycémie à jeun inférieure à 95 mg/dL. Le délai entre la réalisation du OS et de l’HGPO était de trois semaines (1–84 jours). Les facteurs de risque associés au DG étaient l’âge maternel, le surpoids et l’obésité pré-conceptionnels, la parité, l’histoire personnelle de DG ou de macrosomie et les antécédents familiaux d’obésité (P < 0,05) mais non de diabète. Vingt pour cent des patientes avec DG n’avaient aucun facteur de risque, tandis qu’ils étaient présents chez 75 % des patientes sans DG.

Conclusion. – Dans notre population, une stratégie de dépistage en deux temps du DG n’est ni appropriée ni pertinente. Elle pourrait être définitivement simplifiée en utilisant une seule HGPO à 75 grammes de glucose, comme réalisé dans l’étude HAPO et comme recommandé par l’IADPSG et le récent consensus d’experts français. Il n’existe en revanche pas d’arguments qui le permettent de choisir entre un dépistage ciblé ou universel. © 2011 Elsevier Masson SAS. Tous droits réservés.

1. Introduction

According to the World Health Organization (WHO), gestational diabetes mellitus (GDM) is defined as any degree of glucose intolerance at the onset or first recognition of pregnancy, regardless of whether diabetes persists after pregnancy [1,2]. The practise and methods for GDM screening vary widely around the world, and GDM prevalence ranges from 1.2 to 14.3% of the pregnant population, depending on the screening method, diagnostic criteria and populations studied [3–5]. O’Sullivan et al. [6,7] historically demonstrated that 37–50% of women with GDM may remain undiagnosed using selective screening alone and, thus, recommended routine screening. However, the concept of universal screening has been revised and is still debated by several associations [4,8]. Recent data suggest that women at low risk of GDM could be spared biochemical screening, which increases maternal anxiety and rates of caesarean section [9–11]. Yet, there has been no international consensus on a screening method until the recent proposition (2010) of the International Association of Diabetes and Pregnancy Study Groups (IADPSG) [12], which led to an increased GDM prevalence of up to 18% in the general population, using criteria from the Hyperglycemia and Adverse Perinatal Outcome (HAPO) study [13].

In France, the Association de langue française pour l’étude du diabète et des maladies métaboliques (ALFEDIAM; French Association for the Study of Diabetes and the Metabolic Diseases) and the Collège national des gynécologues et obstétriciens français (CNGOF; National College of French Obstetricians and Gynaecologists) recommended, in 1996, that a universal two-step strategy be performed between weeks 24 and 28 of pregnancy, using the O’Sullivan test (OS) with a 50-g oral glucose load, followed by a 100-g oral glucose tolerance test (OGTT) if positive, with a threshold set at 130 mg/dL (7.2 mmol/L) at 1 h [14]. In July 2005, the Haute Autorité de santé (HAS; French Health Authority) evaluated this strategy, but did not publish any new recommendations for GDM screening because of controversial data concerning screening methods and their impact on perinatal outcomes of pregnancy with GDM [15].

Since 1996, GDM has been screened at our university hospital using the two-step universal strategy according to French guidelines. For this reason, an observational 5-year prospective study was conducted to better characterize our patient population, and to evaluate GDM prevalence and the relevance of the French-recommended two-step screening strategy in this population.

2. Patients and methods

2.1. Patients

All pregnant women (n = 11,545) who gave birth at our university hospital between January 2002 and December 2006 were screened for GDM using the universal two-step strategy between weeks 24 and 28 of pregnancy, as recommended by the ALFEDIAM and CNGOF [14]—specifically, the OS, followed by a 100-g OGTT if the post-load glycaemia was above the threshold of 130 mg/dL (7.2 mmol/L). GDM was diagnosed if two glucose values were above the thresholds defined by Carpenter and Coustan [16]: fasting plasma glucose (FPG) > 95 mg/dL (5.3 mmol/L); 1-h post-load glucose (PLG) > 180 mg/dL (10.0 mmol/L); 2-h PLG > 155 mg/dL (8.6 mmol/L); and 3-h PLG > 140 mg/dL (7.8 mmol/L). The second step of screening was always performed at our hospital.

For each patient with an OS greater than 130 mg/dL (7.2 mmol/L), the following parameters were prospectively collected: age; ethnic group; pregnancy rank; delivery rank; time (week of pregnancy) when OS and OGTT were performed; body mass index (BMI) before pregnancy, according to the Quetelet formula (weight in kg/height in m²; expressed as kg/m²); weight gain; and common risk factors for GDM, such as familial history of diabetes and/or obesity and/or macrosomia, personal history of GDM, preeclampsia, preterm death in utero and macrosomia.

2.2. Monitoring and management of women with GDM

When GDM was diagnosed by obstetricians, the women were referred to a multidisciplinary team (a diabetologist, a dietician and a nurse educator). They were intensively managed
with individualized dietary advice (1600–1800 kcal/day, with 160–200 g/day of carbohydrates) and self-monitored blood glucose (six times a day, before and 2 h after each meal). They were followed up by the diabetologist every 2 weeks, and insulin therapy was started when fasting and postprandial glucose levels were greater than 95 mg/dL (5.3 mmol/L) and greater than 120 mg/dL (6.7 mmol/L), respectively, according to the French guidelines [14].

2.3. Statistical analysis

All data were analyzed using StatView® 5 (SAS Institute Inc., Cary, NC, USA) software. Data were expressed as means ± SD and as percentages. Comparisons between groups were performed using Student’s t test or one-way Anova (analysis of variance) when appropriate. Multiple comparisons of means were performed using the Bonferroni–Dunn correction. Cut-off points were determined by a Chi-squared automatic interaction detection algorithm or by Fisher’s exact test in cases of larger cross-tabulations. The significant and independent risk factors of GDM were identified by logistic regression. All probabilities were two-sided, with a P value < 0.05 considered as statistically significant.

3. Results

3.1. Prevalence of GDM

For five consecutive years, a total of 11,545 patients were screened for GDM. GDM was diagnosed at the first step of screening in 148 patients (1.28%) when glycaemia was greater than 200 mg/dL (11.1 mmol/L) following the OS. A total of 1451 patients (12.57%) with glycaemia between 130 and 199 mg/dL following OS were referred to our ward to carry out a 100-g OGTT. Of these patients, 344 were diagnosed for GDM according to the results of the OGTT, resulting in a GDM prevalence of 4.26% in our cohort.
Table 2

<table>
<thead>
<tr>
<th>Risk factors for gestational diabetes mellitus in the study population.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
</tr>
<tr>
<td>Age &gt; 25 years</td>
</tr>
<tr>
<td>Age &gt; 35 years</td>
</tr>
<tr>
<td>Body mass index &gt; 25 kg/m^2</td>
</tr>
<tr>
<td>Body mass index &gt; 27 kg/m^2</td>
</tr>
<tr>
<td>Body mass index &gt; 30 kg/m^2</td>
</tr>
<tr>
<td>Previous pregnancy with GDM</td>
</tr>
<tr>
<td>Previous pregnancy with macrosomia</td>
</tr>
<tr>
<td>Family history of diabetes</td>
</tr>
<tr>
<td>Family history of obesity</td>
</tr>
</tbody>
</table>

CI: confidence interval; NS: not significant.

^ P < 0.05 is considered statistically significant.

3.2. Patients

The characteristics of the women whose glycaemia was greater than 130 mg/dL (7.2 mmol/L) following the OS (presented in Table 1) were then compared according to their GDM status. Data were incomplete for 68 patients (4.7%; 14 with GDM and 54 without GDM). Women with GDM were older (P < 0.001) and had a higher BMI (P = 0.01). Patients who were native to North Africa were significantly more overweight or obese before pregnancy than Euro-Caucasian patients (29.4 kg/m^2 vs 27.6 kg/m^2, respectively; P < 0.01), whereas Asian patients were thinner than the Euro-Caucasians (25.8 kg/m^2 vs 27.6 kg/m^2, respectively; P < 0.01).

Overall, 96% of pregnancies were single and 96% were spontaneous, 54.0% patients had given birth before (m = 0.9 ± 1.2) and parity was higher in women with GDM than in those without GDM (1.1 ± 1.3 vs 0.9 ± 1.1, respectively; P < 0.01).

Although the ALFEDIAM and CNGOF guidelines were usually followed [14], 117 pregnant women (8.4%) were screened before week 24 of gestation because of previous GDM or a strong familial history of diabetes. However, the characteristics of these women did not significantly differ from those screened after 24 weeks of gestation (Table S1; supplementary material associated with this article online).

Insulin therapy was required in 69 patients (20.9%). The macrosomia rate in patients with GDM was 5.7%, as defined by a birth weight at term of more than 4000 g.

3.3. Risk factors for GDM

Risk factors associated with GDM (Table 2) included age more than 25 years (OR = 1.79) and particularly age more than 35 years (OR = 2.04), prepregnancy BMI greater than 27 kg/m^2 (OR = 1.36), personal history of GDM (OR = 2.45), previous pregnancy with macrosomia (OR = 1.54) and familial history of obesity (OR = 1.45), but not diabetes. In our study population, 21.2% of GDM patients had absolutely no classical risk factors associated with GDM, whereas 75.9% patients without GDM had at least one such risk factor.

3.4. OS performance

OS was performed at a mean time of 27 (9–37) weeks of amenorrhoea (WA), and the second screening step at a mean time of 30 (11–40) WA; OS before 30 WA, as generally recommended by the French guidelines, was seen in only 50.7%. Mean time lag between OS and OGTT was 22 (1–84) days, and was longer in patients from North Africa and Asia (1 WA later on average; P < 0.0001).

Of the 1451 women with glycaemia following the OS measured between 130 mg/dL (7.2 mmol/L) and 200 mg/dL (11.1 mmol/L), only 344 were diagnosed with GDM, resulting in a false-positive (OS positive without a diagnosis of GDM) rate of 76.3% (Table 3). Using a threshold of 140 mg/dL (7.8 mmol/L), OS was less sensitive, but more specific, with a lower false-positive rate of 71.4%. Compared with 140 mg/dL (7.8 mmol/L), a threshold of 130 mg/dL (7.2 mmol/L) for the OS resulted into 401 additional OGTTs; most of them (n = 357; 89%) were in fact negative and should have been spared (Table 3). With a threshold of 140 mg/dL (7.8 mmol/L), 44 GDM women would remain undiagnosed (prevalence of GDM = 3.88% instead of 4.26%), but OGTTs would have been avoided in 357 patients without GDM (25.1% of patients with an OS 130-199 mg/dL and 3.1% of the whole study population).

3.5. Relevance of each glucose threshold during the 100-g OGTT

Results of the OS were significantly higher in women with GDM (Table 4). FPG was higher in women with GDM (P < 0.001), according to the PLG for each OGTT. FPG was less than 95 mg/dL (5.3 mmol/L) in 80.7% of GDM patients and in 97.7% of those without GDM, and less than 92 mg/dL (5.1 mmol/L) in 73.6% and 95.2%, respectively, of women. FPG was not significantly different between the women screened before and those screened after 24 weeks of gestation, whereas all three PLG values were higher in women screened after 24 weeks of gestation (Table S2; supplementary material associated with this article online). No pregnant woman had an FPG greater than 126 mg/dL (7 mmol/L) in our study population.

Sensitivity, specificity and predictive values (positive and negative) for each OGTT were calculated according to thresholds defined by Carpenter and Coustan [16] (Table 5). The 2-h PLG was the most significantly relevant value for identifying women with GDM in our pregnant population, with a sensitivity of 93.1%, specificity of 91.4% and negative predictive value of 97.7%.

4. Discussion

In the present prospective study, the prevalence of GDM was 4.26%, which is within the range previously reported with a universal two-step screening strategy in European populations [5,17]. This prevalence, however, was lower than expected, considering the prevalence of common risk factors for GDM in women with a positive OS with around eight women out of 10 having at least one such risk factor. The major bias which might
giving a false-positive rate of 76.3%. A two-step screening strategy was not efficient in our population, as it led to 401 additional negative, and thus unsuitable, OGTTs (3.5%).

### Table 3

<table>
<thead>
<tr>
<th>Threshold for OS</th>
<th>130 mg/dL (7.2 mmol/L)</th>
<th>140 mg/dL (7.8 mmol/L)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral glucose tolerance test performed, n (% of whole study population)</td>
<td>1451 (12.6%)</td>
<td>1050 (9.1%)</td>
<td>−401 (−3.5%)</td>
</tr>
<tr>
<td>GDM diagnosed (n)</td>
<td>344</td>
<td>300</td>
<td>−44</td>
</tr>
<tr>
<td>GDM prevalence</td>
<td>4.26%</td>
<td>3.88%</td>
<td>−0.38%</td>
</tr>
<tr>
<td>False-positive rate of OS</td>
<td>76.3%</td>
<td>71.4%</td>
<td>−4.9%</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>100%</td>
<td>87.2%</td>
<td></td>
</tr>
<tr>
<td>Specificity</td>
<td>90.1%</td>
<td>93.1%</td>
<td></td>
</tr>
<tr>
<td>Positive predictive value (PPV)</td>
<td>23.7%</td>
<td>28.6%</td>
<td></td>
</tr>
<tr>
<td>Negative predictive value (NPV)</td>
<td>100%</td>
<td>99.6%</td>
<td></td>
</tr>
</tbody>
</table>

Prevalence of GDM was calculated by including patients with glycaemia > 200 mg/dL (11.1 mmol/L) following the OS. To evaluate OS relevance, we estimated the sensitivity (and NPV) of the 130 mg/dL (7.2 mmol/L) threshold as 100%, given that all pregnant women who delivered in our university hospital were screened for GDM and that our study was exhaustive. In the same way, we hypothesized that a 100-g oral glucose tolerance test can identify all women with GDM (100% sensitivity), using the thresholds defined by Carpenter and Coustan [16].

### Table 4

**Biological characteristics of the study population and comparison according to the presence or not of gestational diabetes mellitus (GDM).**

<table>
<thead>
<tr>
<th>Threshold for OS</th>
<th>Whole study population (n = 1383)</th>
<th>With GDM (n = 330)</th>
<th>Without GDM (n = 1053)</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral glucose tolerance test</td>
<td>mg/dL</td>
<td>mmol/L</td>
<td>mg/dL</td>
<td>mmol/L</td>
</tr>
<tr>
<td>Fasting plasma glucose</td>
<td>81 ± 9</td>
<td>4.49 ± 0.50</td>
<td>86 ± 11</td>
<td>4.77 ± 0.61</td>
</tr>
<tr>
<td>1-h post-load glucose</td>
<td>158 ± 29</td>
<td>8.77 ± 1.61</td>
<td>190 ± 23</td>
<td>10.54 ± 1.27</td>
</tr>
<tr>
<td>2-h post-load glucose</td>
<td>139 ± 30</td>
<td>7.71 ± 1.66</td>
<td>177 ± 21</td>
<td>9.82 ± 1.16</td>
</tr>
<tr>
<td>3-h post-load glucose</td>
<td>118 ± 27</td>
<td>6.55 ± 1.50</td>
<td>143 ± 28</td>
<td>7.93 ± 1.55</td>
</tr>
</tbody>
</table>

Data are presented as means ± SD.

*P < 0.05 is considered statistically significant.

explain this low prevalence is that a number of women did not undergo an OGTT because of a positive OS and so were not evaluated, as has been shown that, even in well-designed studies, 10–23% of women who screened positive on the OS did not show up for their diagnostic OGTT [18–20]. This also demonstrates the difficulty of implementing such a two-step screening strategy. In addition, it may be that some pregnant women were not screened for GDM with the OS. Furthermore, in agreement with previous studies [19,21–23], the present study found that the two-step screening strategy was not efficient in our population, giving a false-positive rate of 76.3%.

Using Carpenter and Coustan criteria [16], a threshold of 130 mg/dL (7.2 mmol/L) was inappropriate in our population, as it led to 401 additional negative, and thus unsuitable, OGTTs in 89% of cases. A threshold at 140 mg/dL (7.8 mmol/L) might have been more relevant. However, even though a linear correlation has been shown between glycaemia after OS and GDM occurrence (data not shown), a threshold that was most predictive of GDM occurrence could not be identified. The two-step screening strategy was also responsible for delaying the diagnosis of GDM, as only one out of two patients was screened before the recommended time of 30 WA. Indeed, the delay between OS and OGTT was sometimes very long, reaching as much as 3 months in some cases. These data suggest that a one-step screening strategy, such as the widely practised single 75-g OGTT [1,3,13,24–26], would have been more practical and effective in our study population.

The choice between selective or universal screening for GDM is still being debated in the literature [9,18,27], especially because of a lack of evidence of decreases in adverse fetal outcomes in women at low risk of GDM. In Europe, the most common approach is selective screening, but its performance is relatively poor, with sensitivity and specificity rates that do not exceed 60% due, in particular, to the lack of a history of occurrence.

### Table 5

**Relevance of each glucose threshold during the 100-g oral glucose tolerance test.**

<table>
<thead>
<tr>
<th>Threshold</th>
<th>PFP</th>
<th>1-h PLG</th>
<th>2-h PLG</th>
<th>3-h PLG</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 92 mg/dL (5.1 mmol/L)</td>
<td>26.4</td>
<td>19.4</td>
<td>71.2</td>
<td>93.1</td>
</tr>
<tr>
<td>&gt; 95 mg/dL (5.3 mmol/L)</td>
<td>95.2</td>
<td>97.7</td>
<td>93.4</td>
<td>91.4</td>
</tr>
<tr>
<td>&gt; 180 mg/dL (10.0 mmol/L)</td>
<td>63.5</td>
<td>72.7</td>
<td>77.1</td>
<td>77.1</td>
</tr>
<tr>
<td>&gt; 155 mg/dL (8.6 mmol/L)</td>
<td>80.5</td>
<td>79.5</td>
<td>91.2</td>
<td>97.7</td>
</tr>
<tr>
<td>&gt; 140 mg/dL (7.8 mmol/L)</td>
<td>87.2</td>
<td>93.1</td>
<td>99.6</td>
<td></td>
</tr>
</tbody>
</table>

FPG: fasting plasma glucose; PLG: post-load glucose.
obstetric risk factors to apply in cases of primiparous women [7,9].

In our present population, the risk factors for GDM were similar to those of other studies [5,17], except for a family history of diabetes. In fact, we assume that either the women did not know their family history accurately or that their parents had not yet been screened for diabetes, as patients in our study were relatively young. As expected, a high BMI was associated with a threshold of 27 kg/m² due to a higher prepregnancy BMI in our population. Also, if screening had been based on risk factors in our population, then 302 women (21.8%) would have been spared the OGTT, but 79 of them (26.1%) would have gone undiagnosed for GDM, as previously reported [28–30]. Furthermore, as 75.9% of patients with GDM in our population had at least one risk factor for GDM, our selective screening would have, in fact, become near-universal screening. Considering the high prevalence of GDM risk factors in our population, universal screening might indeed have been more relevant, but would have been justified only on considering maternal–fetal outcomes.

The major limitation of our study was the lack of obstetric data to determine the relevance of the OS threshold and the performance of GDM screening strategy according to maternal–fetal outcomes.

An alternative to GDM screening might be analysis of FPG [31,32]. In the present study, if a threshold of 95 mg/dL (5.3 mmol/L) is considered, then FPG had an excellent specificity of 97.7%, but a poor sensitivity of 19.4%. At 92 mg/dL (5.1 mmol/L), the threshold proposed in the HAPO study and IADPSG recommendations [12], FPG was rather specific (95.2%), but only slightly more sensitive (26.4%). Thus, FPG could not be used as a screening test in our population. As for OGTTs, a greater area under the curve was achieved for the 2-h PLG, with a specificity of 91.4% and a sensitivity of 93.1%, suggesting that this was the more relevant test for GDM diagnosis in our population when using Carpenter and Coustan criteria [16].

5. Conclusion

Our observational prospective study, performed in a routine medical-practice setting, suggests that a two-step screening strategy for GDM is not pertinent in our pregnant population. It could be simplified into a single-step definitive screening strategy using an OGTT with a 75-g glucose load, as was done in the HAPO study [13], and as recommended by the WHO [1], the IADPSG [12] and the recent French Expert Consensus on GDM [33], even though it may result in an increased prevalence of GDM. The question of selective or universal screening for GDM may be answered only after considering obstetric and perinatal outcomes. A study using a one-step screening strategy is currently underway in our patient population.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

Acknowledgments

Parts of this study were presented in abstract form at the ALFEDIAM Congress held in Brussels, Belgium, on March 2008.

Appendix A. Supplementary data

Supplementary material (Tables S1 and S2) associated with this article can be found at http://www.sciencedirect.com, at doi:10.1016/j.diabet.2011.01.004.

References


