Can J Diabetes xxx (2017) 1–8

Contents lists available at ScienceDirect

Canadian Journal of Diabetes

journal homepage: www.canadianjournalofdiabetes.com

Original Research

# Postpartum Diabetes Testing Rates after Gestational Diabetes Mellitus in Canadian Women: A Population-Based Study

Sonia Butalia BSc, MD, MSc [a,b,c,*], Lois Donovan MD [a], Anamaria Savu PhD [d], Jeffrey Johnson PhD [e], Alun Edwards MB [a], Padma Kaul PhD [d,e,f]

[a] Division of Endocrinology and Metabolism, Department of Medicine, University of Calgary, Calgary, Alberta, Canada
[b] O'Brien Institute for Public Health, University of Calgary, Calgary, Alberta, Canada
[c] Libin Cardiovascular Institute of Alberta, University of Calgary, Calgary, Alberta, Canada
[d] Canadian Vigour Centre, University of Alberta, Edmonton, Alberta, Canada
[e] School of Public Health, University of Alberta, Edmonton, Alberta, Canada
[f] Division of Cardiology, Department of Medicine, University of Alberta, Edmonton, Alberta, Canada

ARTICLE INFO

*Article history:*
Received 22 July 2016
Received in revised form
19 November 2016
Accepted 20 December 2016

*Keywords:*
fasting glucose levels
gestational diabetes mellitus
glycated hemoglobin levels
oral glucose tolerance test
postpartum testing

ABSTRACT

*Objectives:* We assessed the rate and type of postpartum glycemic testing in women with impaired glucose tolerance of pregnancy (IGTp) and gestational diabetes mellitus (GDM). We examined whether the likelihood of testing was modulated by patients' characteristics and pregnancy outcomes.
*Methods:* Our population-level cohort study included data from 132,905 pregnancies between October 1, 2008, and December 31, 2011, in Alberta, Canada. Laboratory data within 270 days before and 1 year after delivery were used to identify pregnancies involving IGTp/GDM and postpartum glycemic testing, respectively. Logistic regression was used to identify maternal and pregnancy factors associated with postpartum testing.
*Results:* A total of 8,703 pregnancies were affected by IGTp (n=3669) or GDM (n=5034) as defined by the prevailing *Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada*. By 1 year postpartum, 55.1% had undergone glycemic assessments. Of those, 59.7% had had 75 g oral glucose tolerance tests, 17.4% had had glycated hemoglobin tests without oral glucose tolerance tests and 22.9% had had only fasting or random glucose tests. Women with IGTp or GDM, respectively, who were younger, smokers and residing in rural areas and whose labours were not induced were less likely to be tested postpartum. Having large for gestational age infants was also associated with a lower likelihood of postpartum testing in women with GDM.
*Conclusions:* Despite a universal health-care system in Canada, many women with IGTp or GDM do not undergo postpartum glucose testing. Maternal and pregnancy characteristics influence postpartum testing and provide valuable information for creating targeted strategies to improve postpartum testing in this group of high-risk women.

© 2017 Canadian Diabetes Association.

*Mots clés :*
glycémie à jeun
diabète gestationnel
taux d'hémoglobine glyquée
épreuve d'hyperglycémie provoquée par voie orale
analyses post-partum

RÉSUMÉ

*Objectifs :* Nous avons évalué le taux et le type d'analyses glycémiques réalisées après l'accouchement chez des femmes ayant présenté une intolérance au glucose en cours de grossesse ou un diabète gestationnel. Nous avons cherché à déterminer si les caractéristiques des patientes et l'issue de la grossesse avaient une incidence sur la probabilité de réalisation de ces analyses.
*Méthodes :* Notre étude, réalisée auprès d'une cohorte de patientes faisant partie de la population générale, comprenait des données sur 132 905 grossesses survenues entre le 1er octobre 2008 et le 31 décembre 2011, en Alberta, au Canada. Des données de laboratoire recueillies dans les 270 jours précédant l'accouchement et dans l'année suivant celui-ci ont servi à repérer les grossesses dans le cadre desquelles des analyses ont été effectuées pour dépister une intolérance au glucose ou un diabète gestationnel, ou à la suite desquelles la glycémie avait été mesurée en post-partum. Un modèle de régression logistique a été utilisé pour déterminer les caractéristiques relatives à la mère et à la grossesse qui étaient associées à la réalisation d'analyses post-partum.
*Résultats :* Au total, 8703 grossesses ont été marquées par une intolérance au glucose (n=3669) ou par un diabète gestationnel (n=5034) selon les critères de *Lignes directrices de pratique clinique 2008 de l'Association*

* Address for correspondence: Sonia Butalia, BSc, MD, MSc, Division of Endocrinology and Metabolism, University of Calgary, 1820 Richmond Road SW, Calgary, Alberta T2T 5C7, Canada.
*E-mail address:* sbutalia@ucalgary.ca

1499-2671 © 2017 Canadian Diabetes Association.
The Canadian Diabetes Association is the registered owner of the name Diabetes Canada.
http://dx.doi.org/10.1016/j.jcjd.2016.12.013

*canadienne du diabète pour la prévention et la prise en charge du diabète au Canada*, qui s'appliquaient alors. Un an après leur accouchement, 55,1% des patientes avaient subi des analyses glycémiques. Parmi celles-ci, 59,7% avaient subi des épreuves d'hyperglycémie provoquée par voie orale après ingestion d'une charge de glucose de 75 g, 17,4% avaient subi des analyses de leur taux d'hémoglobine glyquée sans épreuve d'hyperglycémie provoquée par voie orale et 22,9% n'avaient subi que des analyses de leur glycémie à jeun ou de leur glycémie aléatoire. Les femmes qui présentaient une intolérance au glucose en cours de grossesse ou un diabète gestationnel, qui étaient plus jeunes, qui fumaient et qui habitaient en zone rurale et dont l'accouchement n'avait pas été provoqué étaient moins susceptibles de subir des analyses au cours de la période post-partum. Les femmes atteintes de diabète gestationnel qui ont donné naissance à un bébé de poids élevé pour l'âge gestationnel étaient également moins susceptibles de subir des analyses post-partum. *Conclusions :* Bien qu'un système de soins de santé universel soit en place au Canada, de nombreuses femmes présentant une intolérance au glucose en cours de grossesse ou un diabète gestationnel ne bénéficient pas d'analyses de leur glycémie après leur accouchement. Certaines caractéristiques relatives à la mère et à la grossesse influent sur la réalisation d'analyses post-partum; ces caractéristiques recèlent des renseignements utiles pouvant mener à l'élaboration de stratégies ciblées afin d'augmenter le taux d'analyses post-partum chez ce groupe de femmes exposées à un risque élevé.

© 2017 Canadian Diabetes Association.

## Introduction

Diabetes rates have increased significantly over the past decade, and the greatest rise has occurred in women of reproductive age (1). Gestational diabetes mellitus (GDM) is glucose intolerance first diagnosed during pregnancy and is an established risk factor for the long-term development of type 2 diabetes and other metabolic abnormalities and cardiovascular risk factors, such as high blood pressure, dyslipidemia and obesity (2–7). Because of the risk for diabetes, many organizations recommend testing for diabetes between 6 weeks and 6 months postpartum (2,3).

Although these recommendations have been in place for many years, past evidence suggests that postpartum testing in women with GDM is suboptimal (8–10). Whether postpartum testing rates have improved in recent years as a result of awareness of increasing diabetes incidence and the degree to which testing rates are affected by patients' characteristics and outcomes is unknown. Accordingly, we assessed the extent to which women with impaired glucose tolerance during pregnancy (IGTp) or GDM are tested postpartum for diabetes in a provincial population of approximately 4 million residents with universal health care. We examined testing prevalence, types of tests and whether the likelihood of postpartum testing was modulated by maternal characteristics and pregnancy outcomes. The incidence of diabetes among those tested postpartum was also examined.

## Methods

### *Data sources and linkages*

The data sources and linkages have been described previously (11). Briefly, data from the Alberta Perinatal Health Program (APHP), a provincial perinatal database, were linked by using unique personal health numbers that provided laboratory data on glucose-related testing (i.e. 50 g GDM screen, 75 g oral glucose tolerance test [OGTT], glycated hemoglobin [A1C] levels, fasting or random glucose levels) from a central repository maintained by Alberta Health Services (AHS). The APHP collects maternal details (including ages, prepregnancy weights collected as categorical variables ≤45 kg and ≥91 kg, prepregnancy medical conditions, smoking during pregnancy, gestational ages, pregnancy complications); obstetric details (including labour induction, caesarean section) and neonatal information (including birth weights, Apgar scores, stillbirths, deaths up to 28 days after birth) from the provincial delivery records of all hospital and registered midwife-attended home births in the province of Alberta, Canada (12). The 2006 census data were used to incorporate median household income information at neighbourhood levels as a measure of the socioeconomic status of the mothers in the cohort (13).

### *Study design and population*

Our retrospective population-based cohort study included deliveries between October 1, 2008, and December 31, 2011, in the province of Alberta, Canada, by women who had been screened for GDM and had had abnormal glucose test results according to the *Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada* (14). Pregnancies of women with preexisting diabetes, as identified from the APHP antepartum records, were excluded. In Alberta, it has been customary for women with IGTp to receive the same care as women with GDM. This includes referral to a diabetes clinic with multidisciplinary care as well as the recommendation for postpartum testing.

Laboratory data for 8 of the 9 health regions in the province were available for the period between January 1, 2008, and December 31, 2012. We restricted our study cohort to pregnancies that occurred after October 1, 2008, and before December 31, 2011, so as to allow for complete 9-month assessments for IGTp/GDM prior to delivery and 1-year testing for diabetes mellitus following the delivery, respectively. Screening for GDM is recommended at the time of 28 completed weeks of gestation; therefore, women who delivered prior to 29 gestational weeks were excluded. We have documented previously that more than 90% of pregnant women in Alberta undergo GDM screening (11). We included only pregnant women who had been screened for GDM according to the *Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada*, i.e. a 50 g GDM screen followed by a 75 g OGTT when indicated (i.e. screen results between 7.8 and 10.3 mmol/L) and who had elevated glucose test results. Women who had had 50 g GDM screens within 1 year after delivery were excluded because the start of another pregnancy could be possible.

### *Definition of diagnostic groups*

Laboratory data on GDM screening in the 9 months prior to delivery were used to categorize pregnancies with elevated glucose test results into 2 mutually exclusive groups: those with IGTp and those with GDM. For women who had had multiple 50 g glucose screens or/and multiple 75 g OGTTs, the highest recorded glucose intolerance level was used to classify the pregnant women.

The GDM group consisted of women with either a 50 g GDM screen valued at 10.3 mmol/L or above or a 50 g GDM screen valued between 7.8 and 10.2 mmol/L and followed by a 75 g OGTT with at least 2 abnormal values (fasting glucose ≥5.3 mmol/L, 1-hour ≥10.6 mmol/L or 2-hour ≥8.9 mmol/L).

The IGTp group consisted of women with 50 g GDM screens valued between 7.8 and 10.2 mmol/L and followed by a 75 g OGTT with exactly 1 abnormal value (fasting glucose ≥5.3 mmol/L, 1-hour ≥10.6 mmol/L or 2-hour ≥8.9 mmol/L).

Download English Version:

https://daneshyari.com/en/article/8720958

Download Persian Version:

https://daneshyari.com/article/8720958

Daneshyari.com