Twin Pregnancy With Gestational Diabetes Mellitus: A Double Whammy?

Sara Ooi[1] and Vincent W. Wong[2]

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Twin pregnancies represent 1.5% of all pregnancies in Australia, and they have an increased risk of gestational diabetes mellitus (GDM). Singleton GDM and twin pregnancies both represent high-risk pregnancies, but optimal management of twin GDM pregnancies is not clearly defined.

Between 2011 and 2015, 410 women with twin pregnancies gave birth at our institution, and 99 (24.1%) developed GDM during their pregnancy. In the same period, there were 2,639 singleton pregnancies complicated by GDM. GDM was diagnosed by the 75-g oral glucose tolerance test (OGTT) under the old Australasian Diabetes in Pregnancy Society guidelines (fasting glucose $\geq$5.5 mmol/L or 2-h glucose $\geq$8.0 mmol/L) (1).

Women with GDM twin pregnancies were older, had a higher rate of preexisting hypertension, and were more likely from non–Anglo-European backgrounds than women with non-GDM twin pregnancies (Table 1). Compared with singleton GDM pregnancies, their OGTT results were similar but a significantly lower proportion of twin pregnancies required insulin therapy.

Regarding pregnancy outcomes, GDM twin pregnancies had an increased risk of new-onset gestational hypertension/preeclampsia, and a greater proportion of their neonates required admission to neonatal intensive care unit (NICU) when compared with the other two groups. Furthermore, compared with singleton GDM pregnancies, twin GDM pregnancies had higher risks of prematurity and perinatal mortality. After excluding the very premature births ($<$34 weeks' gestation), neonates from GDM twin pregnancies still had a greater need for NICU support (64.2 vs. 2.9%, $P < 0.001$) and higher perinatal mortality (3.0 vs. 0.5, $P = 0.001$) than singleton GDM pregnancies.

In this study, we found that women with GDM twin pregnancies have different clinical characteristics and poorer pregnancy outcomes when compared with non-GDM twin pregnancies and GDM singleton pregnancies.

A number of studies have compared GDM and non-GDM twin pregnancies (2), but our study was one of the few that assessed the differences between GDM twin and GDM singleton pregnancies. Although OGTT results and glycated hemoglobin were similar in both GDM cohorts, twin pregnancies were less likely to require insulin therapy. The reasons for this are unclear. In the literature, the need to start insulin therapy among GDM twin pregnancies varied from 11–36% (3,4), but none compared this with GDM singleton pregnancies. Currently, the same glucose targets are applied to all women with GDM, but there is no evidence that the diagnostic criteria and glucose targets for singleton pregnancies are also appropriate for twin pregnancies, and the benefits of tight glycemic control for GDM twin pregnancy remain unknown. Furthermore, good glycemic control in GDM twin pregnancies was not necessarily associated with better clinical outcomes (5). The observation that women with GDM twin pregnancies were less likely to have a family history of diabetes implies that their future risk for developing diabetes may be different.

In conclusion, GDM twin pregnancies represent a high-risk group with higher rates of adverse pregnancy outcomes. Currently, there is little evidence to guide the management of GDM twin pregnancies. The optimal glucose targets, dietary requirements, and timing of delivery are uncertain, and further studies are needed to define the best management for these women.

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[1]*Women's and Child Health, Liverpool Hospital, Liverpool, New South Wales, Australia*
[2]*Liverpool Diabetes Collaborative Research Unit, Ingham Institute of Applied Medical Research, South Western Sydney Clinical School, University of New South Wales, Liverpool, New South Wales, Australia*

Corresponding author: Vincent W. Wong, vincent.wong@sswahs.nsw.gov.au.

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Table 1—Background characteristics and pregnancy outcomes of women with non-GDM twin, GDM twin, and GDM singleton pregnancies

	Non-GDM twin (311 mothers)	GDM twin* (99 mothers)	GDM singleton (2,639 mothers)
Age (years)	32.9 ± 5.9§	35.2 ± 5.7	31.4 ± 5.3§
Ethnicity			
Caucasian	50.7†	39.4	25.8§
Southeast Asians	8.4§	23.2	23.2
South Asians	6.2	10.1	20.1†
Middle Eastern	27.0	23.2	24.4
Family history of diabetes	29.5	35.4	49.0§
Prepregnancy BMI >30 kg/m^2	20.4	25.2	30.4
Smoking	7.4	3.0	6.7
Preexisting hypertension	1.6‡	7.1	5.9
Monochorionicity	35.6	37.3	—
75-g OGTT results			
Fasting glucose (mmol/L)	—	5.1 ± 0.8	5.2 ± 0.8
2-h glucose (mmol/L)	—	8.5 ± 1.6	8.4 ± 1.5
When GDM was diagnosed (weeks)	—	27 (17–28)	26 (17–29)
Glycated hemoglobin at time of diagnosis			
DCCT (%)	—	5.3 ± 0.7	5.3 ± 0.5
IFCC (mmol/mol)	—	34 ± 8	34 ± 6
Requiring insulin therapy	—	26.0	43.8‡
Pregnancy outcomes			
Premature birth (delivery <37 weeks)	59.8	63.6	8.6
Very premature birth (delivery <34 weeks)	32.8	32.3	2.5§
Median gestational age at delivery (weeks)	36 (32–37)	36 (33–37)	39 (38–40)
Mode of delivery			
Caesarean section	47.9	54.6	26.8§
Emergency Caesarean section	28.9	32.3	10.0§
Gestational hypertension/preeclampsia	5.8†	13.3	6.3‡
Apgar score at 5 min <7	10.0	7.1	2.2§
Neonatal hypoglycemia	—	28.8	31.6
Small for gestational age (<10th centile)	25.3	23.2	13.6§
Large for gestational age (>90th centile)	2.0	0.5	10.0§
Admission to NICU	53.6§	74.2	3.9§
Congenital abnormalities	3.1	6.1	7.6
Median neonatal length of stay (days)	5 (4–25)	7 (4–21)	3 (2–5)§
Perinatal death	3.7	3.0	1.2†

Data are mean ± SD, %, or median (interquartile range). DCCT, Diabetes Control and Complications Trial; IFCC, International Federation of Clinical Chemistry and Laboratory Medicine. *Using GDM twin as the reference group. †$P < 0.05$; ‡$P < 0.01$; §$P < 0.001$.

of the data and the accuracy of the data analysis.

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