



Maternal characteristics and neonatal outcomes in hypoglycemia in oral-glucose-tolerance-test in pregnancy

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Design: A retrospective cohort study

Objective: Heterogenous results were reported in the effects of hypoglycemia in pregnancy. This study evaluated pregnancy outcomes in women with hypoglycemia during the antenatal 75-gram oral glucose tolerance test (OGTT).

Methods: OGTT results of the mothers of all live-born delivered in a tertiary obstetrics centre were evaluated between Jan 2021 and June 2022. All patients had OGTT at 26-30th weeks of gestation. Hypoglycemia was defined as any low plasma glucose $\leq$ 3.5mmol/L on OGTT. Maternal and neonatal outcomes were compared among the four groups; normal results (group 1), hypoglycemia in OGTT (group 2), gestational diabetes mellitus (GDM) (group 3) and pregestational diabetes mellitus (DM) (group 4). Computerized records and case notes were reviewed, and all OGTT results were retrieved and analysed. Maternal outcomes such as mode of delivery, presence of postpartum hemorrhage, and neonatal outcomes such as APGAR scores , birth weight were reviewed.

Table 1. Maternal demographic stratified by study groups					
OGTT results	Group 1 Normal (n=3164)	Group 2 Hypoglycemia (n=65)	Group 3 Gestational Diabetes (n=464)	Group 4 DM in pregnancy (n=22)	P value
Maternal age (Years) (Mean, SD)	33.4 (4.4)	33.7 (4.6)	35. (4.0)	33.8 (6.0)	0.95
Chinese (n=2989)	2537 (84.9%)	38 (1.3%)	401 (13.4%)	13 (0.4%)	<0.01
Caucasian (n=321)	281 (87.5%)	16 (5.0%)	20 (6.3%)	4 (1.2%)	<0.01
Other ethnicity (n=405)	346 (85.5%)	11 (2.7%)	43 (10.6%)	5 (1.2%)	0.04
Singleton	2994 (94.6%)	62 (95.4%)	439 (94.6%)	18 (81.8%)	0.08
Multiple pregnancy	170 (5.4%)	3 (4.6%)	25 (5.4%)	4 (18.2%)	0.08
Nulliparity	1755 (55.5%)	36 (55.4%)	210 (45.3%)	11 (50.0%)	0.40
Multiparity	1409 (44.5%)	29 (44.6%)	254 (54.7%)	11 (50.0%)	0.40

Results: A total of 4458 patients had OGTT tests within the 18-month study period and 3715 women delivered within the study period were included in the analysis. 3164 (85.2%) had normal results. 65 (1.7%) women had hypoglycemia, 464 (12.5%) women had GDM and 22 (0.6%) women had pregestational DM. None of the hypoglycemia patients were symptomatic. Maternal demographics were comparable. Patients with hypoglycemia during OGTT were not at an increased risk of preterm delivery (1.5% vs 2.8% , p=0.86). There was no statistical difference in the incidence of Caesarean section (32.3% vs 34.4%, p=0.54), postpartum haemorrhage (10.8% vs 14.7% p=0.28). Women with hypoglycemia during OGTT were not at risk of adverse outcome in terms of neonatal intensive care unit admission (16.9% vs 8.5%, p=0.28) and Apgar score at 5th minute of life (9.8 vs 9.8, p=0.17).

Table 2. Maternal outcome stratified by study groups					
OGTT results	Group 1 Normal (n=3164)	Group 2 Hypoglycemia (n=65)	Group 3 Gestational Diabetes (n=464)	Group 4 DM in pregnancy (n=22)	P value
Induction of labour	1285 (40.6%)	30 (46.2%)	190 (40.9%)	8 (36.4%)	0.81
Gestational week at delivery	38 (2.2)	39 (1.4)	38 (1.9)	38 (0.9)	0.29
Preterm labour	90 (2.8%)	1 (1.5%)	14 (3.0%)	1 (4.5%)	0.86
Caesarean delivery	1088 (34.4%)	21 (32.3%)	185 (39.9%)	10 (45.5%)	0.65
Normal vaginal delivery	1753 (55.4%)	40 (61.5%)	248 (53.4%)	11 (50%)	0.54
Assisted vaginal delivery	323 (10.2%)	4 (6.2%)	31 (6.7%)	1 (4.5%)	0.82
Blood loss at delivery (ml) (mean, SD)	361(410)	329 (234)	377(309)	461 (395)	0.50
Postpartum hemorrhage	466 (14.7%)	7 (10.8%)	85 (18.3%)	6 (27.3%)	0.28
Postnatal anaemia	270 (8.5%)	11 (16.9%)	50 (10.8%)	3 (13.6%)	0.24

Table 3. Neonatal outcome stratified by study groups					
OGTT results	Group 1 Normal (n=3164)	Group 2 Hypoglycemia (n=65)	Group 3 Gestational Diabetes (n=464)	Group 4 DM in pregnancy (n=22)	P value
Birth weight (Grams, SD)	3045.6 (580.3)	3039.5 (459.0)	3067.3 (529.9)	3179.8 (462.3)	0.76
Birth weight <2500 g	425 (13.4%)	9 (13.8%)	59 (12.7%)	2 (9.1%)	0.86
Birth weight >4000 g	96 (3.0%)	1 (1.5%)	9 (1.9%)	0	0.91
Neonatal intensive care unit (NICU) admission	8 (0.25%)	0	4 (0.9%)	1 (4.5%)	0.28
Apgar 1-min score (Mean, SD)	8.6 (1.1)	8.7 (1.0)	8.6 (1.2)	8.9 (0.7)	0.64
Apgar 5-min score (Mean, SD)	9.8 (0.7)	9.8 (0.6)	9.8 (0.8)	9.7(0.5)	0.17

Conclusion:
Hypoglycemia in OGTT during pregnancy is not associated with adverse neonatal or maternal outcomes. Further long-term prospective studies with standardized glucose monitoring may be able to shed light on whether hypoglycemia during OGTT is associated with GDM and its complications

