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Fasting Blood Glucose as a Predictor of Medical Management in Gestational Diabetes Mellitus

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Introduction

Gestational Diabetes Mellitus (GDM) is one of the most common medical complications of pregnancy and associated with significant perinatal and long-term morbidity for the mother and child. Fasting blood glucose (FBG) and HbA1c have been used in recent COVID-19 GDM screening guidelines. However, limited information is available on FBG as a risk factor for medical management of GDM. This study aims to look at the relationship between FBG in the second trimester GDM screening and medical management of GDM.

Methods

This was a retrospective study of all patients diagnosed with GDM at an Australian secondary hospital between January 2019 and February 2020. Patients were split into 4 groups: Diet, Metformin (MF), MF+Insulin and Insulin. Data was analysed using SPSS and analysed with multinomial logistic regression.

Results

237 patients were included within the study. The mean maternal age was 31.15 years (SD 5.69), with a mean body mass index (BMI) of 35.08 (SD 6.98) (Table 1). In the multi-nominal logistical regression, the significant variable found to be a predictor of whether a woman will be on MF, Insulin or MF + Insulin was second trimester FBG, with p=0.001 for all three groups. The odds ratio for the second trimester FBG of the MF, Insulin and MF + Insulin groups was 3.20, 5.62 and 4.79, respectively.

	Mean (95% CI) (n=229)	FBG < 4.7 (95% CI) (n=58)	4.7 – 5.0 (95% CI) (n=44)	FBG ≥ 5.1 (95% CI) (n=127)	p-value
BMI† (kg/m²)	35.08 (34.16-36.00)	31.29 29.59-32.99)	35.32 (33.88-36.77)	35.72 (35.44-38.01)	<0.001
2nd Trimester HbA1c (%)	5.05 (5.00-5.11)	4.86 (4.78-4.93)	5.12 (5.01-5.23)	5.122 (5.04-5.20)	<0.001
1hr OGTT‡ Result (mmol/L)	9.59 (9.34-9.83)	9.82 (9.53-10.12)	10.18 (9.84-10.53)	9.27 (8.87-9.67)	0.012
2hr OGTT Result (mmol/L)	7.75 (7.51-7.99)	8.33 (7.94-8.71)	8.16 (7.73-8.59)	7.34 (6.98-7.70)	0.001
Birth weight (g)	3319.99 (3241.13-3398.85)	3248.22 (3087.37-3409.07)	3237.34 (3029.67-3445.01)	3380.57 (3280.40-3480.74)	0.234
Blood loss (mL)	434.90 (387.20-482.60)	493.48 (375.49-611.48)	398.60 (305.87-491.34)	420.32 (360.30-480.33)	0.347

Table 1: Characteristics of those with a fasting blood glucose (FBG) <4.7, between 4.7-5.0 and ≥5.1 mmol/L.

Discussion

In this retrospective study, elevated FBG at the 2nd trimester GDM screening was found to be a significant risk factor for patients needing medical management for GDM during the pregnancy, controlling for all other variables.