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Mean amplitude of glycemic excursions of first trimester of pregnancy in gestational diabetes and non-gestational diabetes mellitus patients

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Introduction: Diabetes is characterized by glycemic disorders such as sustained chronic hyperglycemia and acute glucose fluctuations. Maternal hyperglycemia and glycemic variability in Gestational Diabetes Mellitus (GDM) is associated with increased risks of adverse pregnancy outcomes. Glycemic variability leads to oxidative stress and potentially contributes to micro and macrovascular complications. It is beneficial to study the glucose variability in GDM patients for prevention of complications. Glucose variability can be studied by the Mean Amplitude of Glycemic Excursions (MAGE) which can be acquired from the use of Continuous Glucose Monitoring (CGM).

Method: An observational study (I-Profile) using CGM was conducted in KK Hospital, Singapore on women seeking antenatal care. Eighteen subjects were provided CGM devices during their first trimester of pregnancy (9-13 weeks gestational age). Subjects were classified as GDM (n=3) or non-GDM (n=15) cases after their oral glucose tolerance test according to the IADPSG criteria. The data from the CGM was used to calculate MAGE. MAGE was then compared during the fasting and non-fasting period of the day. Fasting is defined as the period of eight hours without food. The range of 10 pm to 6 am was considered to be fasting period and 6am-10pm to be non-fasting period.

Results: The fasting MAGE of non-GDM patients was 1.45 (SD±0.55), while GDM patients had an increased fasting MAGE of 3.3 (SD±0.92) ($p<0.001$), showing significance in glycemic variability of patients with GDM. The non-fasting MAGE for non-GDM patients is 2.15 (SD±0.71) and GDM patients is 4.22(SD±1.33) ($p=0.151$). The overall MAGE was found to be 2.15 (SD±0.71) in non-GDM patients and 4.27 (±1.22) in GDM patients ($p=0.001$).

Conclusion: The glycemic variability (MAGE) during fasting at first trimester was significantly higher in patients that were eventually diagnosed with GDM. However, the MAGE readings between the GDM and non-GDM groups at non-fasting hours were statistically insignificant.

Biography

Nurul Syaza Razali is a part of the Integrated Platform for Research in Advancing Metabolic Health Outcomes of Women and Children (IPRAMHO) study group in Singapore.

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