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Effects of Maternal Gestational Diabetes and Pre-Pregnancy Obesity on Postnatal Offspring's Growth

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INTRODUCTION

Maternal glycaemic status and pre-pregnancy BMI are linked to fetal overgrowth and childhood obesity. This study aims to find the relationship between maternal GDM and pre-gestational obesity and their offsprings' growth parameters at birth up to 24 months old.

METHODOLOGY

This is a prospective longitudinal single centre cohort study from 2015 to 2018. Pregnant women were recruited at 13-34 weeks of gestation. Maternal demographic and anthropometry data were obtained. GDM status was based on oral glucose tolerance test (OGTT). Infants' weight, length, and head, mid-arm, waist and mid-thigh circumference were measured at birth until 24 months old. Statistical analysis was performed by comparing mean or median (t-test or Man Whitney U test), chi-square test for categorical variables and repeated measures ANOVA for serial anthropometric data.

RESULTS

Five hundred and fourteen pregnant women consented during antenatal visit. At birth, 321 infants were recruited, 125 (39%) were infants of GDM mothers. Seventy four (23%) babies were infants of mothers with pre-pregnancy obesity. There was no significant difference in all anthropometry measurements at birth and at postnatal visits between infants of GDM and non-GDM mothers. However, infants of obese mothers were heavier at birth, 12 and 24 months visit. Birth weight was statistically significant at birth ($p=0.018$). These infants have greater waist circumference at 24 months ($p=0.013$). Over the 24-month period, repeated measures ANOVA was significant for weight measurements and mid-arm circumference in these infants ($p=0.013$ and $p=0.004$ respectively). HbA1c level in our GDM mothers was lower compared to non-GDM mothers (5.19 ± 0.47 versus 5.23 ± 0.35).

CONCLUSION

No relationship is found between maternal GDM status and growth parameters at birth and postnatal, likely due to strict glycaemic control. Greater weight at birth and over the 24-month period is seen in infants of pre-pregnancy obese mothers.