

**The influence of in utero exposure to metformin on body composition and cardiovascular phenotype in offspring; Metformin in Obese non diabetic Pregnant women (MOP) follow up**

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**Background/Basics:** Maternal obesity and gestational weight gain have been associated with childhood obesity and long term adverse cardiometabolic outcome. In utero exposure to metformin in the MOP trial was associated with reduced gestational weight gain but had no influence on offspring birthweight. However, it remains unknown whether in utero metformin exposure can have long term influences on body composition and cardiovascular profile in the offspring.

**Methods:** Our study population consisted of 151 children from the MOP trial. Body composition was assessed by weight, body mass index (BMI), waist circumference, skinfold thickness and bioimpedance device (BIA-Biotekna) to estimate fat mass (FM), and free fat mass (FFM). Peripheral systolic (SBP) and diastolic blood pressure (DBP) were measured. Central aortic systolic (aSBP) and diastolic blood pressures (aDBP) were measured by Vicorder device using transfer function. Pulse pressure was calculated. Aortic pulse wave velocity between carotid to femoral segments was also assessed by Vicorder.

**Results:** The mean age of children was 3.9+/-1.0 years (76males, 75 females). From this cohort, 77 children were exposed to metformin. All body composition measurements were comparable between groups apart from gluteal circumference which was lower in metformin exposed group (56.7+/-6.6 vs 58.9+/-5.6cm in metformin vs placebo group,  $p<0.05$ ). SBP and DBP were comparable between groups. Peripheral pulse pressure was marginally reduced in metformin exposed group compared to placebo (35.9+/-5.01 vs 37.5+/-5.5mmHg,  $p: 0.07$ ). Central aSBP and pulse pressure were lower in children who were exposed to metformin compared to placebo (94.1+/-6.9 vs 96.3+/-6.9mmHg,  $p<0.05$ ) respectively. Aortic pulse pressure was also lower in metformin exposed children compared to placebo (33.6+/-4.9 vs 35.5+/-5.2 mmHg,  $p<0.05$ ) respectively. Aortic pulse wave velocity was comparable between groups.

**Conclusion:** This data suggests that in utero exposure to metformin does not have a beneficial effect on body composition in childhood. Central haemodynamics (aortic SBP and pulse pressure) were lower in metformin exposed group. As increases in central blood pressure have been associated with adverse cardiovascular outcome, longitudinal follow up is needed to assess whether metformin associated changes in central haemodynamics can translate in long term cardiovascular benefit.