

## MP3-4

### Maternal obesity and Gestational Diabetes associations with offspring body composition and left ventricular diastolic function in early childhood – RADIEL study follow-up

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**Introduction:** Maternal obesity and gestational diabetes (GDM) are linked with offspring long-term cardiovascular disease. Fetal programming is hypothesized as an underlying mechanism. We aimed to investigate the influence of maternal adiposity and GDM on child body composition and left ventricular diastolic function in early childhood.

**Methods:** This observational follow-up study includes 201 mother-child pairs, a subcohort from Finnish Gestational Diabetes Prevention Study (RADIEL). GDM was diagnosed in 96 mothers, 36 of whom required metformin or insulin treatment. Follow-up assessment was performed at 6.1 (+/- 0.5) years postpartum including child echocardiography, child and maternal anthropometrics, body composition, and blood pressure.

**Results:** Maternal pre-pregnancy body mass index (BMI 30.5 +/- 5.6 kg/m<sup>2</sup>) correlated with child BMI z-score (r=0.2; p=0.006; mean z-score 0.45 +/- 0.93 kg/m<sup>2</sup>). Left atrial volume (LAV) correlated with child age, body size and composition (Table 1). In a multiple linear regression model LAV was independently associated with child lean body mass and body fat percentage (R<sup>2</sup>=0.283). Pulmonary vein flow systolic to diastolic ratio (S/D) and mitral annular velocity during atrial filling (A') were associated with child adiposity parameters (Table 1). Left ventricular diastolic parameters including LAV, LAV index z-score, mitral valve E and A waves peak velocities, E/A ratio, S/D, mitral and septal annular velocities (E' and A') were not associated with maternal pre-pregnancy BMI, I trimester glycated hemoglobin (HbA<sub>1c</sub>), or GDM exposure.

**Conclusions:** Child diastolic heart function at six years of age is associated with child adiposity. Maternal pre-gestational obesity is reflected in child body composition, increasing long-term cardiovascular risks and implicitly disturbing diastolic heart function. No evidence of fetal cardiovascular programming related to GDM was found in early childhood.

**Table 1 Associations with offspring diastolic parameters.**

	LAV		S/D		A'	
	r	p-value	r	p-value	r	p-value
<b>Age</b>	0.16	0.03				
<b>Height</b>	0.42	<0.001				
<b>Weight</b>	0.53	<0.001				
<b>BMI z-score</b>	0.43	<0.001	0.15	0.003	0.22	0.002
<b>Waist-height ratio</b>	0.16	0.02	0.19	0.006	0.27	<0.001
<b>Lean body mass</b>	0.51	<0.001				
<b>Body fat mass</b>	0.46	<0.001				
<b>Body fat percentage</b>	0.25	<0.001	0.21	0.003	0.19	0.007
<b>Maternal height</b>	0.2	0.006				
<b>Maternal lean body mass</b>	0.28	<0.001				