

# Pulmonary vein pulsatility index (PVPI) in fetuses of diabetic mothers: Relationship to intermediate and longterm diabetic control

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## ABSTRACT

### BACKGROUND

Consequences of uncontrolled diabetes during pregnancy are severe for both mothers and fetuses. Cardiovascular abnormalities (CVS) abnormalities are among the most common in infants of diabetic mothers. Fetal echocardiography has increased knowledge about CVS changes in prenatal period.

### METHODS

This cross sectional study was conducted on 42 pregnant mothers, 30 diabetics (gp1) and 12 normal gestational age matched as control (gp2) following up at obstetric clinic Ain Shams university hospital, their gestational ages ranged from 22 to 28 wks with a mean of  $24.4 \pm 1.6$  wks. Studied groups were subjected to history taking, clinical examination, laboratory investigations (CBC, HbA1C, serum fructosamine level (colorimetric assay) for long and intermediate term assessment of blood glucose control, fetal echocardiography using standard views (four chamber, five chamber, three vessels and tracheal views) (vivi7, GE, Horten, Norway), fetal TDI at basal part of interventricular septum, mitral annulus and pulsed wave Doppler at junction of upper pulmonary vein with left atrium for pulmonary vein pulsatility index (PVPI) assessment.

### RESULTS

no statistically sig difference was found between

gp1 and gp2 and between uncontrolled diabetic (gp1b (HbA1c more than 7) gp1d (serum fructosamine more than  $285 \mu\text{mol/l}$ ) as regards maternal age and number of births (0.54, 0.28, 0.27 and 0.48 respectively).

A statistically significant increase was found in PVPI in gp1 than gp2 ( $p=0.026$ ), between uncontrolled diabetic mothers {gp1b than 1a ( $p$  less than 0.01) and gp1d than gp1c ( $p$  less than 0.001)}. No significant difference was found between patients and controls ( $p=0.04$ ) between gp1b and gp1c as regards interventricular septal thickness (IVS) thickness (0.02 and 0.03 respectively, no sign diff was found between gp1 and gp2, gp1a and 1b and gp1c and gp1d as regards septal Em, Am, Em/Am. Lateral Em, Am, Em/Am ( $p=0.77, 0.62, 0.16, 0.69, 0.7, 0.10$  and 0.13). A significant positive correlation was found between IVS thickness and age in gp1 ( $p$  less than 0.01).

### CONCLUSION

Fetuses of diabetic mothers showed increased PVPI than control. This increase was significantly marked in fetuses from intermediate and long term blood glucose uncontrolled diabetic mothers than controlled ones denoting ventricular incompliance and some degree of diastolic dysfunction in those fetuses that could not be simply explained by IVS hypertrophy as this was not the case in current study and warrants further research.