Fetus as a patient
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VASCULAR PULSE TRANSIT TIME IN NORMAL PREGNANCY AND PRE-ECLAMPSIA: A NEW PARAMETER FOR MEASUREMENT OF VASCULAR TONE?

Aim: To evaluate venous and arterial pulse transit times, defined as time-interval between maternal ECG and sonographic Doppler waves (EDT) or impedance cardiogram (ICG), in normal pregnancy (NP) and pre-eclampsia (PE).

Methods: 16 women with (NP), 12 with early-onset (EPE) and 14 with late-onset (LPE) PE were analysed. At the level of renal interlobar and hepatic veins, and at the level of the uterine arteries, EDT was measured between corresponding ECG and Doppler wave characteristics. Using ICG, the pre-ejection period (PEP) was measured. EDT and PEP were corrected for gestation-induced changing heart rate (RR). Means and SD were calculated and compared statistically using t-test.

Results: In NP, EDT of the left kidney increased significantly from first trimester to term, i.e. 0.40±0.09 to 0.50±0.09 ($p<0.01$). This was also true for the right renal interlobar veins, hepatic veins, uterine arteries and for PEP. Left kidney EDT was significantly shorter in EPE and LPE compared to NP, i.e. 0.37±0.11 vs 0.52±0.07 ($p<0.001$) and 0.40±0.07.vs 0.50±0.09 ($p<0.01$), respectively. Again, results were comparable for other organs.

Discussion: Our observed increase in pulse transit times corresponds with the generalized vasorelaxation during normal pregnancy. These pulse transit times were significantly decreased in pre-eclampsia, reflecting an increase of vascular tone at arterial and venous compartments. Our study illustrates that these time-intervals may be useful as a measure for vascular tone in normal pregnancy and pre-eclampsia.