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603 Endothelial dysfunction is associated with hypertensive disorder during pregnancy

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Aims: Arterial hypertension (AH) is one of the main determinants of clinical disorders during pregnancy affecting 2% to 10% of pregnancies with a substantial public health impact. Both endothelial injury and increased vascular reactivity have been reported to be involved in the pathogenesis of pre-eclampsia syndrome. Abnormal patterns in brachial artery Doppler velocities have been shown to be predictive of pre-eclampsia in first trimester. The aim of this study is to investigate whether flow-mediated dilation (FMD) and Doppler flow derived-parameters can predict the occurrence of AH.

Methods and results: The study population consisted of pregnant women (mean age 32 years) who had been referred to the IRCCS Fondazione Ca' Granda Policlinico of Milan. None of them had any medical issues and was taking any medications at the time of pregnancy. FMD was performed on left brachial artery according to expert recommendation. Measurements of brachial artery diameter and flow have been collected at rest, shortly before cuff release and then 5-, 15-, 30-, 60-, and 90-s during hyperaemia phase. Among Doppler measurements, systolic and diastolic velocity (V_s and V_d , respectively) as well as mean velocity (mean V) were considered. In addition, the pulsatility index (PI) and resistance index (RI) were calculated. A 3-months follow-up was planned in order to detect the presence of AH. All data were expressed as the median. *U*-test (Mann-Whitney analysis) was performed to test difference among hypertensives and non-hypertensives. We recruited 48 women (median age 32 years) whose 4 (8.5%) developed AH during pregnancy. These latter had statistically significant higher systolic velocity measured at 5 s after the release of distal occlusion (126 cm/s vs. 173 cm/s; $P < 0.05$). No other velocity Doppler data [diastolic velocity (V_d), mean velocity (mean V), PI, RI, TAMAX, and TAMEAN] showed a statistical significant association with AH development.

Conclusions: The present study suggests that the vascular assessment through Doppler during FMD procedure may foresee the development of hypertensive disorder in pregnancy. Our result provides the first evidence that the peak systolic velocity of brachial artery may represent a marker of early endothelial activation or damage, that can be directly involved in the pathophysiological mechanisms of the hypertensive disorders in pregnancy.