

Central Blood Pressure, Wave Reflection and Subendocardial Viability Ratio in Women with a History of Hypertensive Pregnancy

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Objective: History of hypertensive pregnancy (HTNP) is considered a risk factor for future cardiovascular disease. However, only some women with a history of HTNP become hypertensive later in life. Higher augmentation index (AIx) is associated with increased cardiovascular risk; additionally, lower (below 50%) subendocardial viability ratio (SEVR) represents subendocardial ischemia and serves as an index of myocardial oxygen supply and demand. Hence, the aim of the study was to determine underlying phenotypes that might differentiate these women.

Methods: Pulse wave analysis using applanation tonometry was performed at rest in postmenopausal women (58±1 years) with a history of HTNP. Generalized transfer function was used to determine central aortic pressures and central arterial pressure waveform characteristics.

Results: Aortic systolic pressure, aortic mean arterial pressure and augmentation index did not differ between women with a history of HTNP currently using anti-hypertensive medications (n=18) and non-medicated (n=15) HTNP women groups (p>0.05). However, medicated women compared to non-medicated women had a significantly higher aortic diastolic blood pressure (81±2 versus 74±2 mmHg, respectively; p=0.04) and significantly higher systolic pressure-time integral and lower subendocardial viability ratio (2551 ± 106 and 129 ± 6 versus 2179 ± 84 mmHg*s and 154 ± 6 %, respectively; p=0.01 and p=0.03).

Conclusions: These results identify differences in central blood pressure, systolic pressure-time integral and subendocardial viability ratio, an index of myocardial oxygen supply/demand in women with a history of HTNP that are currently hypertensive versus normotensive. These data suggest the presence of distinct phenotypes in women with a history of HTNP, which may be identified non-invasively using arterial pressure waveforms. Further investigation is needed to evaluate if these changes can be primarily attributed to a history of HTN pregnancy and how this affects overall cardiovascular risk.

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