P8.2: ARTERIAL WAVE REFLECTIONS: LOOKING BEYOND THE FIRST HARMONIC AND PRESSURE INFLECTION POINTS TO ASSESS LATE-SYSTOLIC VENTRICULAR LOADING

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ARTERIAL WAVE REFLECTIONS: LOOKING BEYOND THE FIRST HARMONIC AND PRESSURE INFLATION POINTS TO ASSESS LATE-SYSTOLIC VENTRICULAR LOADING

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Background: Late-systolic ventricular loading is associated with impaired relaxation and adverse remodeling. Standard indices of relative wave reflections such as augmentation index (Alx) and reflection magnitude (RM) from wave separation analysis blend different times within the cardiac cycle and are unspecific to their loading in late-systole. We introduce an index of late-systolic load (QfQrep), derived from wave transmission theory that integrates increased and earlier reflections specifically during late-systole while inherently normalized to the associated flow.

Methods: Central pressure and flow were measured in 226 subjects using carotid tonometry and phase-contrast MRI, respectively. Alx and RM were determined using standard methods. Reflected wave transit time (RWTT TUBE) was determined using tube-load modeling.

Results: Decreased RWTT TUBE (standardized $\beta=-0.525$; $P<0.001$) and increased RM ($\beta=0.629$; $P<0.001$) were significantly associated with QfQrep ($R^2=0.791$).

Conclusion: QfQrep is strongly predicted by wave reflection timing and two standard wave reflection indices. RM is defined by the amplitude of the composite backward wave normalized by that of the composite forward wave, both of which occur at different times. Alx, also blending two different times, combines an early-systolic inflection point with a generally late-systolic tonus peak. The advantage of QfQrep is that it focuses on the reduced-ejection period to integrate effects of increased and earlier effects of reflections in late-systole. QfQrep can be obtained readily from standard wave separation analysis.

RELATIONSHIP BETWEEN PULSE WAVE VELOCITY AND BIOPSY PROVEN RENAL MICROVASCULAR LESIONS

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Aortic stiffness is associated with chronic kidney disease. Although it is well established that patients with chronic kidney disease have classical and non classical risk factors correlated to a high pulse wave velocity, there is no established that patients with chronic kidney disease have classical and non classical risk factors correlated to a high pulse wave velocity.

Methods: Patients with never treated hypertension (age 40.4±11.5 years, 35 men) and 50 normotensive subjects (age 38.3±12.0 years, 35 men) were included into the study. Applanation tonometry of the radial artery and "n-point forward moving average" method have been used to derive 24-h CSP (BPpro, HeatStats). The sleep-through MS was calculated as the difference between the morning pressure (the average BP during the 2 hours after awakening) and the lowest nighttime BP (the average of the lowest pressure and the 2 readings immediately preceding and after the lowest value). To assess the independent variables related to MCBPS multiple regression was used.

Results: Mean MCBPS was 17.3±7.8 mmHg in whole group, 18.6±7.3 mmHg in hypertensives, and 16.0±8.2 mmHg in normotensives (p=NS). Sex, smoking, BMI, 24-h heart rate, glucose level, and kidney function were not related to MCBPS. Independent variables correlated with MCBPS are presented in the table.

Conclusion: Morning central blood pressure surge may be related to age in normotensive, but not in hypertensive subjects. beta coefficient standard error p whole group age -0.33 0.10 0.001
24-h mean central BP 0.24 0.09 0.013 Normotensives Age -0.43 0.13 0.001

PULSATILE COMPONENT OF CENTRAL BLOOD PRESSURE AND THE RISK OF STROKE IN CORONARY PATIENTS. RESULTS FROM THE AORTIC BLOOD PRESSURE AND SURVIVAL STUDY

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Background: There is ongoing debate concerning the best blood pressure (BP) parameter predicting cardiovascular risk. The aim of the analysis was to investigate the relationship between central BP and stroke in patients undergoing coronary angiography.

Methods: The study group consisted of 954 patients (631 men and 263 women; mean age: 57.3±10.0 years) undergoing coronary angiography with left ventricular EF ≥40%. A vast majority of participants was prescribed BP-lowering drugs. Invasive ascending aortic BP during catheterization was taken at baseline. The duration of follow-up was 33.4±18.8 months. We defined pulsatility as the ratio of pulse pressure to mean BP. The Cox proportional hazard regression analysis was used to assess the relation between BP-derived indices and the risk of stroke.

Results: During the follow-up 19 (2.0%) patients suffered from stroke and 57 (6.0%) from stroke or CV death. The multivariate hazard ratios related to BP-derived indices according to the presence of HT are given in the table.

Conclusion: Pulsatile, but not steady component of central blood pressure predicts the risk of stroke in coronary patients.