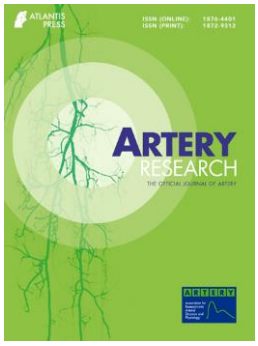

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P8.2: ARTERIAL WAVE REFLECTIONS: LOOKING BEYOND THE FIRST HARMONIC AND PRESSURE INFLECTION POINTS TO ASSESS LATE-SYSTOLIC VENTRICULAR LOADING

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P8.2
ARTERIAL WAVE REFLECTIONS: LOOKING BEYOND THE FIRST HARMONIC AND PRESSURE INFLECTION 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 (AIx) 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 (QfQ_{rep}), derived from wave transmission theory that integrates increased and earlier reflections specifically during late-systole while inherently normalized to the associated flow wave.
Methods: Central pressure and flow were measured in 226 subjects using carotid tonometry and phase-contrast MRI, respectively. AIx 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 QfQ_{rep} ($R^2=0.791$).
Conclusion: QfQ_{rep} 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. AIx, also blending two different times, combines an early-systolic inflection point with a generally late-systolic pressure peak. The advantage of QfQ_{rep} is that it focuses on the reduced-ejection period to integrate effects of increased and earlier effects of reflections in late-systole. QfQ_{rep} can be obtained readily from standard wave separation analysis.

P8.3
RELATIONSHIP BETWEEN PULSE WAVE VELOCITY AND BIOPSY PROVEN RENAL MICROVASCULAR LESIONS

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Aortic stiffness is associated to 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 data on the deleterious effect of high pulse wave velocity on intra renal microvasculature.
The aim of this study was to explore the relationship between arterial stiffness, assessed by cfPWV and renal microvascular lesions assessed by renal biopsy.
In 25 patients who went through a renal biopsy we analysed renal vascular lesions, and obtained cfPWV using a Complior device.
cfPWV and age were positively correlated to the severity of vascular lesions. These results support the hypoyhesis that an elevated pulsatility in target organ microcirculation such as kidneys leads to vessel damage and contributes to worsen glomerular filtration rate.

P8.5
MORNING CENTRAL BLOOD PRESSURE SURGE IS RELATED TO AGE

Agnieszka Bednarek [1,*], Piotr Jankowski [1], Agnieszka Olszanecka [1], Adam Windak [2], Kalina Kawecka-Jaszcz [1], Danuta Czarnecka [1]
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Objective: Morning surge of peripheral blood pressure (BP) is considered to be an independent risk factor for cardiovascular diseases. However, morning central blood pressure surge (MCBPS) has not been analyzed so far. Therefore, the aim of study was to evaluate the variables independently associated with MCBPS.
Methods: Fifty 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 (BPro, HealtStats). 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

P8.6
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 (691 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 53.4±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.

BP — related variables	Stroke	CV death or stroke
Systolic blood pressure per SD	1.32(0.85-2.04)	1.05(0.79-1.38)
Diastolic blood pressure per SD	0.88(0.57-1.36)	0.80(0.61-1.05)
Mean blood pressure per SD	1.08(0.71-1.64)	0.91(0.70-1.19)
Pulse pressure per SD	1.65(1.03-2.66)	1.25(0.93-1.67)
Pulsatility per SD	2.07(1.25-3.42)	1.50(1.11-2.03)

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

P8.7
VASCULAR ENDOTHELIAL SENESCENCE AND METABOLIC SYNDROME

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Objectives: Vascular aging and metabolic syndrome (MS) are both independent predictors of cardiovascular events. We examined whether MS accelerates the progression of vascular aging.
Methods: 142 subjects (mean age 51.9±10.8 years, 94 men) with no established cardiovascular disease were investigated in 2 examinations over a 2-year period (mean follow-up visit 1.84 years). MS was defined by the ATP III criteria. Subjects had at the beginning and end of the study