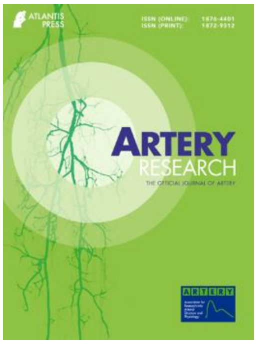

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P7.01: AORTIC PULSE WAVE VELOCITY, ESTIMATED WITH A SIMPLIFIED METHOD BASED ON RADIAL WAVEFORMS AND BODY HEIGHT, PREDICTS CARDIOVASCULAR EVENTS

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Conclusions: In CHP, both gender and the arterial territory in which the VA is performed determined differences in arterial stiffness. BM between VS and NV determines different prostheses alternatives in the VA construction.

P6.21

THE STIMULATION OF THE VISUAL CORTEX RESULTED IN THE BLOOD FLOW INCREASE IN THE ENTIRE POSTERIOR CIRCULATION TERRITORY

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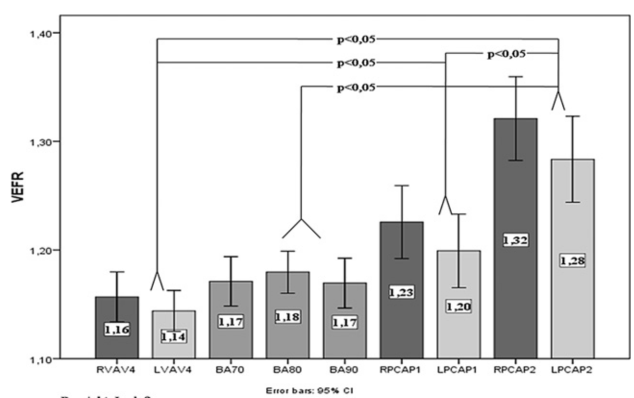
We hypothesized that visual stimulation results in blood flow increase in all main arteries of the posterior circulation territory (PCT). In an attempt to establish relation between visual stimulation and blood flow, we assessed visually evoked cerebral blood flow response (VEFR) in vertebral (VA), basilar (BA) and posterior cerebral arteries (PCA).
Methods: The study population consisted of 65 healthy volunteers (aged 21—57, median-35) subjected to elementary photostimulation (opening and closing of the eyes). We measured velocity and resistivity index (RI) using transcranial Doppler in VA (V4 segments), BA (in three different depths: 70mm, 80mm and 90mm), and PCA (P1 and P2 segments).
Results: Following photostimulation, we observed a significant increase in velocity and a decrease in RI in all arteries, in comparison with baseline values. The maximum VEFR was observed in PCA(P2) (Fig.1). The significant differences were detected between VEFR in VA and PCA (all segments), between VEFR in PCA(P2) and BA (all depths), PCA(P2) and PCA(P1). VEFR in BA was the same on different depths. VEFR was higher in right PCA and VA, although the difference was not statistically significant. Correlation analysis revealed significant relations between VEFR in left and right VA ($r=0.59$), PCA(P1) ($r=0.35$), PCA(P2) ($r=0.41$) and between VEFR in BA in different depths ($r=0.64-0.75$). No significant correlations were observed for VEFR in different arteries.
Conclusions: VEFR is detected in all main arteries of the PCT. VEFR gradually increases as one goes from proximal segments to distal ones. The maximum VEFR is observed in PCA(P2).



P6.22

USE OF THE RIGHT VERSUS THE LEFT CAROTID ARTERY: IS THERE ANY DIFFERENCE WHEN MEASURING AORTIC PULSE WAVE VELOCITY?

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Background and aim: Aortic pulse wave velocity (aPWV) derived by use of applanation tonometry is a non-invasive method for assessment of arterial stiffness. Current methodology in aPWV assessment dictates ipsilateral measurements. However, the carotid arteries (CA) branch slightly differently from the aorta towards the right and left side of the neck. Theoretically, using right or left CA could influence aPWV results.
We aim to elucidate if use of the right or the left CA affects aPWV and to determine intra- and inter-observer reproducibility of aPWV in healthy subjects.
Methods: 50 healthy individuals without known cardio-vascular disease, aged 23-66 years, were examined twice by two different observers in a random order. The measurements were performed with the SphygmoCor© equipment using both the right and the left CA. In each subject, the same femoral artery was used in all measurements.
Results: with intra-class correlation coefficients (ICC) are shown in Table 1 and 2. Use of the right CA gave significantly higher aPWV values than the left CA (both observers and pooled data). When comparing the two observers, we found a significant difference (0.3 ± 0.8 m/s, $p=0.02$) in right CA derived aPWV values. There was no inter-observer difference in left CA derived aPWV values.
Conclusion: Using right or left CA affects aPWV. We strongly suggest using the same CA and the same femoral artery in repeated measurements. Inter-observer differences are important to consider when using aPWV and could be minimized by training and if possible by using the same observer.

Table 1		Observer 1			Observer 2			Inter-observer
		Mean ±SD (m/s)	*p value (ICC)*	*Mean 1st, 2nd ±SD (m/s)*	*Mean ±SD (m/s)*	*p value (ICC)*	*Mean 1st, 2nd ±SD (m/s)*	*p value (ICC)*
Right carotid aPWV	1.	6.4 ±1.3	0.47 (0.86)	6.4 ±1.2	6.7 ±1.2	0.95 (0.87)	6.7 ±1.3	0.02 (0.79)
	2.	6.4 ±1.3			6.7 ±1.4			
Left carotid aPWV	1.	6.3 ±1.2	0.75 (0.76)	6.3 ±1.1	6.5 ±1.3	0.49 (0.84)	6.4 ±1.2	0.13 (0.77)
	2.	6.3 ±1.1			6.4 ±1.2			

Table 2	Right versus left carotid artery			
	Right carotid aPWV (m/s)	Left carotid aPWV (m/s)	Difference right-left (m/s)	*p value (ICC)*
Observer 1 *(mean 1st, 2nd ±SD)*	6.4 ±1.2	6.3 ±1.1	0.1 ±0.4	0.04 (0.93)
Observer 2 *(mean 1st, 2nd ±SD)*	6.7 ±1.3	6.4 ±1.2	0.2 ±0.6	0.007 (0.87)
Pooled data *(mean Obs1, Obs2 ±SD)*	6.5 ±1.2	6.4 ±1.1	0.2 ±0.4	0.002 (0.93)

P7 — Population Studies 2

P7.01

AORTIC PULSE WAVE VELOCITY, ESTIMATED WITH A SIMPLIFIED METHOD BASED ON RADIAL WAVEFORMS AND BODY HEIGHT, PREDICTS CARDIOVASCULAR EVENTS

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Background: The prognostic role of aortic pulse wave velocity (aPWV) is well known. Its non-invasive determination (carotid-femoral PWV) is inconvenient, and easier yet accurate methods could be of value to facilitate the adoption by clinicians.
Methods: We recently developed the ARCSolver method to estimate aortic flow from pressure waveforms. Characteristic impedance is derived from this, and finally aPWV, using Waterhammer equation. Travel distance is estimated from body height, using a previously developed formula. In this study, we tested the prognostic value of the estimated aPWV, in comparison with invasively measured aPWV, in 620 patients (mean age 63 years, 43% women, 19% diabetes, 41% coronary artery disease) undergoing coronary angiography.
Results: Both methods for assessing aPWV showed moderate agreement ($R^2 = 0.51$, $p<0.0001$). After a follow-up of 3 years, 90 patients suffered from cardiovascular events (death, myocardial infarction, stroke, coronary and peripheral revascularizations). In univariate analysis, an increase in aPWV of one standard deviation was associated with a 42.1 (CI 15.7 — 74.6) % (estimated aPWV) and 36.2 (CI 17.8 — 57.5) % (measured aPWV) increased risk for cardiovascular events. In stepwise logistic regression models, including age, gender, presence of smoking, hypertension and diabetes, extent of coronary artery disease, systolic function, systolic and diastolic blood pressure, heart rate, and aPWV, both estimated (HR 1.48 per SD, $p=0.001$) and measured (HR 1.32 per SD, $p=0.002$) aPWV showed a statistically significant association with cardiovascular events.
Conclusion: Our results indicate that a simplified method to estimate aPWV can predict cardiovascular events in high-risk patients.