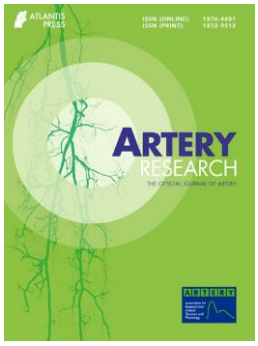

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# P25: VASCULAR AGING IS ASSOCIATED WITH THE SEVERITY OF CEREBRAL WHITE MATTER LESION LOAD

Lisanne Tap, Annegreet van Opbroek, Wiro Niessen, Marion Smits, Francesco Mattace- Raso

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## P23
## PREDICTION OF TOTAL AND CAUSE-SPECIFIC MORTALITY INCIDENCE AS WELL AS CARDIOVASCULAR MORBIDITY BY USE OF NON-INVASIVE MEASUREMENT OF CAROTID- FEMORAL PULSE WAVE VELOCITY AS A MEASURE OF ARTERIAL STIFFNESS

Peter Nilsson, Mikael Gottsäter, Abd al-Hakim Fatehali
*Dept. Internal Medicine, Skane University Hospital, Malmo, Sweden*

**Objective:** Arterial stiffness (AS) increases with age and predicts total mortality and total cardiovascular (CV) events. It has also been shown that positive family history (FH+) of cardiometabolic disease influences AS. We aimed to: 1) examine if AS predicts total mortality among elderly subjects, as well as total, fatal, and non-fatal CV events; and 2) to assess if FH+ influences the prediction of AS.
**Methods:** Participants from the Malmö Diet Cancer CV cohort (MDC-CV; n = 3,056, mean age 71 years, 40% men) in Sweden were examined during 2007–2012. AS was measured with carotid-femoral pulse wave velocity (c-f PWV; Sphygmocor®). Follow-up started from date of measurement and ended at death, emigration or on 31st December 2014. Hazard ratios (HRs) with 95% confidence intervals were computed using multivariable Cox and competing risks regression (sub-hazard ratio, SHR) adjusting for age, sex, cardiovascular risk factors, prevalent cardiometabolic diseases and FH+.
**Results:** c-f PWV (per log-unit) significantly predicted total mortality, HR 2.57 (95%CI: 1.28–5.16, p = 0.008), after full adjustment for risk factors, and HR 3.01 (95%CI: 1.41–6.42) after adding FH. The prediction of CV events was of borderline significance, HR 1.85 (95%CI: 0.91–3.78, p = 0.09). FH+ contribution to c-f PWV prediction of non-CV mortality was of borderline significance SHR 2.30 (95%CI: 0.89–5.95, p = 0.085).
**Conclusion:** Arterial stiffness (c-f PWV) predicts total mortality, even adjusted for family history. Thus c-f PWV is a promising risk marker for total mortality, beyond the prediction offered by conventional risk factors.

## P24
## SEX-SPECIFIC PULSE WAVE VELOCITY CUT-OFFS IMPROVE SURVIVAL ANALYSIS IN PATIENTS WITH SUSPECTED CORONARY ARTERY DISEASE

Christopher C. Mayer [1], Bernhard Hametner [1], Katy Whitelegg [1], Thomas Weber [2], Siegfried Wassertheurer [1]
[1]*Center for Health & Bioresources, AIT Austrian Institute of Technology, Vienna, Austria*
[2]*Cardiology Department, Klinikum Wels-Grieskirchen, Wels, Austria*

**Objectives:** There is evidence for sex and age influences on pulse wave velocity (PWV). Guidelines suggest a sex-independent cut-off for PWV. It is not obvious that an age- and blood-pressure-independent cut-off is suitable in different populations [1, 2].
Thus, the aim is to investigate the suitability of sex-independent cut-offs for risk prediction in a high-risk cohort.
**Methods:** PWV was measured invasively (invPWV; catheter pullback) and non-invasively (non- invPWV; ARCSolver PWV) for patients with suspected CAD at the hospital in Wels- Grieskirchen (Austria). Patients were grouped in four subgroups based on sex and PWV cut-offs (guidelines and sex-specific ones). A combination of myocardial infarction, death, stroke and cardiovascular revascularization served as primary endpoint. Kaplan-Meier curves, logrank test and hazard-ratios were used for survival analysis and receiver-operating-characteristics (ROC) to determine sex-specific cut-offs.
**Results:** 604 male (61 (11 SD) years) and 324 female (65 (11 SD) years) with a median follow-up of 1576 days and 215 events were included. Logrank test revealed significant differences between Kaplan-Meier curves ($p < 0.001$), but dichotomized PWV remained just discriminative in women, but not men, for invasive and non- invasive recordings. ROC analysis revealed sex-specific cut-offs of 8.5 m/s (men) or 9.6 m/s (women) for invasive and 8.9 m/s (men) or 10.0 m/s (women) for non- invasive recordings. When using these cut-offs, PWV turned out to be discriminative in both sexes (Table).

**Table.** Results of survival and ROC analysis for invasive and non-invasive PWV for male and female. Hazard-ratios (HR) are presented with their 95% confidence intervals.

| | HR (≤10m/s vs. >10m/s) | Sex-specific cut-off | HR (≤ sex-specific cut-off vs. > sex-specific cut-off) |
|---|---|---|---|
| invPWV | | | |
| Male | 1.41 [0.94; 2.11] | 8.5 m/s | 1.64 [1.15; 2.34] |
| Female | 2.46 [1.58; 3.84] | 9.6 m/s | 3.28 [2.14; 5.03] |
| non-invPWV | | | |
| Male | 1.46 [0.99; 2.16] | 8.9 m/s | 1.73 [1.22; 2.46] |
| Female | 3.20 [2.11; 4.85] | 10.0 m/s | 3.20 [2.11; 4.85] |

**Conclusion:** Sex-specific PWV cut-offs improve survival analysis in patients with suspected CAD. Cut-offs seem to be directly dependent on the prevalence of CAD and thus need further investigation.

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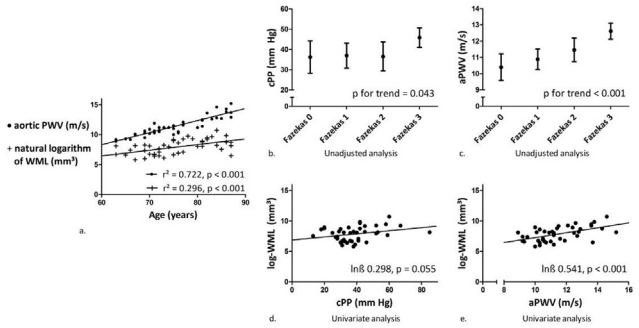
## P25
## VASCULAR AGING IS ASSOCIATED WITH THE SEVERITY OF CEREBRAL WHITE MATTER LESION LOAD

Lisanne Tap [1], Annegreet van Opbroek [2], Wiro Niessen [2,3], Marion Smits [4], Francesco Mattace- Raso [1]
[1]*Section of Geriatric Medicine, Department of Internal Medicine, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands*
[2]*Biomedical Imaging Group Rotterdam, Departments of Medical Informatics and Radiology & Nuclear Medicine, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands*
[3]*Imaging Physics, Applied Sciences, Delft University of Technology, Delft, The Netherlands*
[4]*Departments of Radiology & Nuclear Medicine, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands*

**Background:** Blood pressure (BP) levels and aortic stiffness are associated with the presence of cerebal small vessel disease, whereas little is known on the possible association of BP levels, aortic stiffness and the severity of cerebral small vessel disease. In a pilot study we investigated whether hemodynamic measures are associated with the presence and severity of cerebral white matter lesion load (WML).
**Methods:** Fazekas score was used to analyse WML on neuroimaging of 84 persons visiting the Outpatient Geriatric Clinic; an automatic white matter hyperintensity segmentation method was used in a subgroup of 44 MRI-scans to determine the exact volume of WML. Aortic stiffness, measured as aortic pulse wave velocity (aPWV), and BP levels were non-invasively measured by Mobil-o-Graph.
**Results:** Mean age was 76.6 years. Age was correlated with aPWV ($r^2 = 0.722$, $p < 0.001$) and volume of WML ($r^2 = 0.296$, $p < 0.001$). aPWV and central pulse pressure levels (cPP) increased with increasing Fazekas score (p for trend <0.001 and 0.043, respectively). After adjustment, higher aPWV was observed in the highest Fazekas category compared to the lowest, although not statically significant (p for trend = 0.151). Both cPP and aPWV were associated with WML volumes in univariate analyses ($ln\beta$ 0.298, p = 0.055 and $ln\beta$ 0.541, $p < 0.001$, respectively); in multivariate analyses, estimates were less consistent.




**Conclusion:** Increased pulse pressure and increased aortic stiffness were associated with the severity of WML, assessed with both Fazekas score and a quantative hyperintenstity segmentation method. Age is highly associated with aortic stiffness and cerebral small vessel disease.

## P27
## REPLACED RIGHT HEPATIC ARTERY AND INTERLOBAR BRIDGE OF LIVER WITH UNUSUAL ARTERIAL SUPPLY OF IVTH SEGMENT

Mehtap Yuksel [1], Turan Koc [2], Sezgin Ilgi [1]
[1]*Near East University, Faculty of Medicine, Department of Anatomy, Nicosia, Cyprus*
[2]*Mersin University, Faculty of Medicine, Department of Anatomy, Mersin, Turkey*

A replaced right hepatic artery (rRHA) arising from the superior mesenteric artery and an interlobar parenchymal bridge over the sagittal fissure of liver have been observed on a 64 year old formalin-fixed male cadaver in the anatomy laboratory.
As we followed a detailed segmental anatomy, encountered an arterial distribution on the segment IV featuring a different pattern from the literature so far. According to our observations, the segment I is supplied by both left (LHA) and middle (MHA) hepatic arteries; the segments II and III are supplied by the LHA while the segment IV is supplied by both the MHA and rRHA.
The segments V-VIII are supplied only by the rRHA. Our case emphasizes the importance of arterial variations of liver once again in terms of the surgical procedures during the liver transplantation, hepatic tumors, and etc.
Our discussion particularly focuses to the arterial supply of the segment IV and possible complications it may cause during/after the liver operations.

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## P28
## DETERMINANTS OF ARTERIAL STIFFNESS AS MARKER OF EARLY VASCULAR AGING IN PHYSICIANS POPULATION

Elena Shavarova [1], Eldar Kazahmedov [1], Artemiy Orlov [2], Zhanna Kobalava [1]
[1]*RUDN University, Russia*
[2]*Petr Telegin Company, Russia*

**Objective:** To analyze determinants of arterial stiffness in physician's population.
**Methods:** Observational multicenter study of doctor's vascular health conducted in 12 Russian cities (VICTORIA study). Demographics; smoking status; anamnesis of arterial hypertension (AH) with/without therapy, medications, established CV, renal diseases, diabetes mellitus; cholesterol and glucose level were registered. Arterial stiffness and vascular age was assessed using BPLab® device with Vasotens® technology (Petr Telegin Company, Nizhny Novgorod, Russia). Arterial stiffness was defined as an elevation of pulse pressure (PP) $>$ 60 mmHg, PWV $>$ 10 m/s.
**Results:** 464 individuals were included (247 normotensives (mean age 44 yrs) and 237 with AH (mean age 58 yrs)). Mean PP was $46.0 \pm 9.8$ mm Hg in normotensive group and $58.6 \pm 17.4$ mm Hg in group with AH ($p < 0.001$). Mean PWVao was $10.9 \pm 2.0$ m/s and $12.5 \pm 2.5$ m/s in groups without and with AH, respectively ($p < 0.001$). PP $>$ 60 mm Hg had 11% subjects without AH and 43% with elevated blood pressure (BP) ($p < 0.001$). PWVao $>$10 m/s had 68% of normotensive subjects and 92% of hypertensive patients ($p < 0.001$). PWVao correlated with brachial systolic ($r = 0,42$, $p < 0.05$) and diastolic BP ($r = 0,38$; $p < 0.05$), central systolic ($r = 0,45$, $p < 0.05$) and diastolic BP ($r = 0,41$; $p < 0.05$), age ($r = 0,37$, $p < 0.05$), heart rate ($r = 0,41$, $p < 0.05$). There was association between elevated PWVao and body mass index ($r = 0,39$, $p < 0.05$). In a multiple linear regression model, independent determinants of PWV were systolic BP ($\beta = 0,29$, $p < 0.001$), body mass index ($\beta = 0,19$, $p < 0.001$).
**Conclusions:** High PWVao measured by BPLab® device with Vasotens® technology is characterized physician's population with and without AH. The main determinants of PWVao are systolic BP and body mass index.

## P29
## TOTAL LONGITUDINAL DISPLACEMENT (TLOD) OF THE COMMON CAROTID ARTERY (CCA) DOES NOT DIFFER BETWEEN PATIENTS WITH MODERATE OR HIGH CARDIOVASCULAR RISK (CV) AND PATIENTS AFTER ACUTE MYOCARDIAL INFARCTION (AMI)

Urtė Gargalskaitė [1,2], Pranas Šerpytis [1,2], Karolis Azukaitis [1,2], Rokas Navickas [2], Vilma Dzenkeviciute [1,2], Jolita Badariene [2], Zaneta Petrulioniene [1,2], Kristijonas Česas [1]
[1]*Faculty of Medicine, Vilnius University, Lithuania*
[2]*Vilnius University Hospital Santaros Klinikos, Lithuania*

**Background:** Total longitudinal displacement (tLoD) of the common carotid artery (CCA) wall is a novel ultrasound marker of vascular function that can be evaluated using modified speckle tracking techniques. Decreased CCA tLoD has already been shown to be associated with diabetes and was shown to predict one year cardiovascular outcome in patients with suspected coronary artery disease (CAD). The aim of our study was to evaluate if CCA tLoD differ between patients with moderate or high cardiovascular (CV) risk and patients after recent acute myocardial infarction (AMI).
**Methods:** 49 patients ($54 \pm 6$ years) with moderate or high CV risk and 42 patients ($58 \pm 7$ years) after recent AMI were included. All patients were non-diabetic. CCA tLoD was evaluated using GE EchoPAC speckle tracking software and expressed as mean of both sides. Data on systolic blood pressure, total and high density lipoprotein (HDL) cholesterol levels, high sensitivity C-reactive protein (hsCRP) level, smoking status and family history of early CV events was evaluated and assessed for association with CCA tLoD.
**Results:** tLoD of CCA did not differ between patients with moderate or high CV risk and patients with very high CV risk after MI ($0.265 \pm 0.128$ mm vs. $0.237 \pm 0.103$ mm, $p > 0.05$). Lower tLoD was associated with lower HDL cholesterol levels ($r = 0.211$, $p = 0.04$) and male gender ($0.228 \pm 0.1$ vs. $0.297 \pm 0.134$, $p = 0.01$).
**Conclusions:** tLoD of CCA did not differ between patients with moderate or high CV risk and patients with very high CV risk after AMI. However, lower CCA tLoD was significantly associated with low HDL cholesterol levels and male gender.

## P30
## THE ROLE OF NOVEL BIOMARKERS IN ARTERIAL STIFFNESS, AND IN PREDICTING FURTHER VASCULAR EVENTS AFTER TIA AND LACUNAR STROKE

Esme Girdwood [1], Manuela Mengozzi [1], Eva Bunting [2], Jean Timeyin [2], Pietro Ghezzi [1], Chakravarthi Rajkumar [2,1]
[1]*Brighton and Sussex Medical School, University of Sussex, UK*
[2]*Brighton and Sussex University Hospitals NHS Trust, UK*

**Objective:** To explore the role of biomarkers (hsCRP, sRANKL, PRDX1 and EPO) in arterial stiffness and in predicting further vascular events.
**Methods:** Patients from the ongoing ASIST study each attended a laboratory visit within fourteen days of their diagnosed TIA or lacunar stroke. Arterial stiffness was calculated using cfPWV (carotid-femoral pulse wave velocity) measured with Complior ®Artech, France, and with the CAVI ®Fukuda,