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Final issue of artery research

Dear readers, authors and reviewers, as those of you who attended ARTERY 18 will already know, this is unfortunately the final issue of Artery Research that will be supported by Elsevier. I would therefore like to take this opportunity to thank all at Elsevier for their support over the years which has led to Artery Research gaining, a long overdue, impact factor and establishing itself as a 'natural home' for papers relating to arterial structure and physiology.

On a personal level I would also like to thank all of you who have reviewed for Artery Research, giving of your valuable time to ensure that published papers were making important contributions to the literature relating to this increasingly important field. In addition, the Editorial Board who have given me unwavering support and advice also deserve my warmest thanks. Finally, thanks to those of you who have over the years submitted papers that have been the life blood of the Journal. Without your papers there would have been no Journal to publish as a flagship for our society ARTERY.

Hopefully this is not the end for Artery Research but merely a period of transition and myself and the Editorial Board are already seeking opportunities to re-establish the publication of Artery Research with new publishers as soon as possible. In the interim period we are intending to ensure that all the abstracts from meetings of ARTERY, previously published in the Journal, will be available on line via Research Gate.

It has been a privilege to serve as your Editor and I thank all members of ARTERY for your support and encouragement over the years. However, despite these difficult times, it is important to remember that our society ARTERY has never been stronger, and that you will continue to attend and support it. So that going forward, it continues to be the preeminent society in the field of arterial structure and physiology.

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Background: Chronic obstructive pulmonary disease (COPD) is an inflammatory condition associated with increased cardiovascular risk. COPD patients have increased aortic stiffness and increased risk of stroke. In addition, increased mid cerebral artery pulsatility index (MCAPI) is associated with increased arterial stiffness and risk of stroke in patients with Diabetes. However, the mechanisms relating to the increased risk of stroke in COPD remain unclear. Therefore, this study aims to investigate the relationship between aortic pulse wave velocity (aPWV) and the MCAPI in COPD patients.
Methods: This Cross-sectional evaluation included 20 COPD patients (mean ±SD, age 69.0 ± 6.3 years) from the ACRADE study. aPWV was measured using the SphygmoCor system and MCAPI using transcranial Doppler ultrasound. In addition, forced expiratory volume in the first second/ forced vital capacity (FEV1/FVC) was measured using spirometry and quality of life was assessed using the St George's Respiratory Questionnaire (SGRQ). Measures of frailty were assessed using Time-Up-and-Go test (TUG) and the Comprehensive Geriatric Assessment (CGA).
Results: MCAPI was significantly associated with aPWV (r = 0.518, P = 0.033). aPWV was significantly associated with SGRQ disease impact (r = 0.604, P = 0.010) and also associated with TUG (r=0.561, P=0.019) and CGA (r = 0.639, P = 0.006).
Conclusions: These pilot data highlight the association between increased aortic stiffness and increased pulsatile flow velocity transmitted to the cerebral circulation of COPD patients. In addition, COPD symptoms, impact and frailty are both associated with increased aortic stiffness. However, more research is needed to investigate cause and effect between COPD symptoms, impact and its relationship between aPWV and cerebral flow pulsatility.

P94
EVALUATING CENTRAL PRESSURE IN PATIENTS WITH ACUTE ISCHEMIC STROKE IN ACUTE PHASE: PROGNOSIS AND OUTCOME

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Acute ischemic stroke (AIS) is defined as sudden onset of a neurologic deficit. It's the cause of about 85% of all strokes and the deficits last for more than 24 h. (1) Blood pressure (BP) is elevated in 75% or more of patients with acute stroke and different levels of peripheral BP at onset are associated with poor outcomes. In patients with AIS, management of blood pressure is still a matter of debate. Brachial pressure is a poor surrogate for aortic pressure and recent evidence suggests that central pressure is more strongly related to future cardiovascular events. In this pilot study we aimed to evaluate central pressure (CBP) in patients admitted with AIS in the acute phase (first 24 h). We evaluated 34 patients with a man age of 72,7 years. Patients presented a mean NIHSS score 5,4 at admission (0-18) and NIHSS of 4 at discharge. Pre-AIS Rankin mean was 1 and at discharge was 2,1. Brachial systolic and diastolic blood pressures varied between 108 — 250 and 42—131 mmHg accordingly, with mean values of 147,48/78,21. Central BP varied from 102,5 — 215 mmHg systolic and 44—128,5 mmHg diastolic with mean value of 136,65/80,56 mmHg.In this sample, low values of both central and peripheric BP were associated with poor outcome (Rankin scale).This is an ongoing study aiming to evaluate central hemodynamic parameters in acute phase os AIS and at long term. The main gold is to enlarge our sample so we can be able to extract more and stronger data.

Poster Session II — Epidemiology

P95
BLOOD PRESSURE VARIABILITY, ARTERIAL STIFFNESS AND ARTERIAL REMODELING — THE MAASTRICHT STUDY

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Greater very short- to mid-term blood pressure variability (BPV) has been associated with an increased CVD risk, especially stroke. However, this link remains incompletely understood. We hypothesized that increased arterial stiffness and maladaptive carotid arterial remodeling may underlie this association. We therefore investigated the association between very short- to mid-term systolic BPV, aortic and carotid stiffness and carotid arterial remodeling using cross-sectional data from The Maastricht Study (aged 60 ± 8 years; 53% men). Aortic (carotid-femoral pulse wave velocity, n = 1671) and carotid stiffness (ultrasonography, n = 1690) were assessed. A composite index of systolic BPV was derived by standardizing and averaging systolic within-visit, 24-hour, and 7-day BPV. We performed linear regression analyses with adjustment for age, sex, glucose metabolism status, mean arterial pressure and cardiovascular risk factors. A 1-SD greater systolic BPV was statistically significantly associated with 0.10 m/s (95%CI: 0.01 — 0.20) greater cfPWV, but not with carotid distensibility (-0.033·10-3/kPa [-0.255 — 0.190]). In addition, a 1-SD greater systolic BPV was statistically significantly associated with greater carotid circumferential wall tension (0.84 dyne/cm [0.51 — 1.17]), circumferential wall stress (0.79 kPa [0.031 — 1.27]) and intima-media thickness (8.6 μm [1.0 — 16.3]). These results are indicative of maladaptive carotid remodeling, as circumferential wall tension and stress were not normalized despite greater intima-media thickness. In conclusion, greater very short- to mid-term BPV is associated with greater aortic stiffness and maladaptive carotid arterial remodeling, but not with carotid stiffness. These findings may explain, at least partially, the increased BPV-associated CVD risk, in particular stroke.

P96
ASSOCIATION OF METABOLIC SYNDROME AND ITS COMPONENTS WITH ARTERIAL STIFFNESS IN GENERAL POPULATION OF THE EVA STUDY

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Objective: The aim of this study is to investigate the relationship of Metabolic Syndrome (MetS) and its components with arterial stiffness in general population without cardiovascular diseases.
Design and method: Cross-sectional study of general population without cardiovascular diseases. There were included 500 subjects between 35—75 years old, selected by random sampling with replacement, stratified by age and gender groups using the Sanitary Card base of 5 urban health centers.
Measurements: Pulse wave velocity femoral carotid (cfPWV) was determined using the SphygmoCor System, Cardio Ankle Vascular Index (CAVI) using the VaSera. MetS was defined based on the Joint Scientific Statement National Cholesterol Education Program III.
Results: Mean age was 55.9 ± 14.2years, mean cfPWV was 6.5 ± 2.0 m/sec and mean CAVI was:8.0 ± 1.4. MetS was found in 14% of the subjects. cfPWV and CAVI were higher in subjects with MetS. All MetS components, except reduced HDL-cholesterol, were correlated with cfPWV and CAVI. With

correlation coefficient between r = 0.450 (cfPWV and diastolic blood pressure) and r = 0.128 (between CAVI and triglycerides). After adjustment for age and sex the correlation remains the same with the cfPWV. However, it is only maintained with the CAVI only with blood pressure. Subjects with MetS have odds ratio (OR) for both cfPWV $\geq$ 10 m/sec (OR = 1.884, 95 % CI 0.996—3.486) and CAVI $\geq$ 9 (OR = 1.810, 95 % CI 0.749—4.372).
Conclusions: The cfPWV showed the positive correlation, after adjusting it for age and sex with all the components of the MetS, however the CAVI showed the positive correlation with the arterial pressure.

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FAMILY PATTERNS OF CENTRAL HAEMODYNAMICS ACROSS THREE GENERATIONS IN THE MALMÖ OFFSPRING STUDY

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Background: Markers of central haemodynamics have in recent years emerged as promising predictors of cardiovascular disease (CVD). Central haemodynamics are affected early in the development of vascular aging and affect organs directly attached to large arteries. Carotid-Femoral pulse wave velocity (c-f PWV), Augmentation index (Aix), and central systolic blood pressure (cSBP) are variables from indirect measurements that reflect central haemodynamic and arterial stiffness. Family patterns exist [1].
Aim: To investigate if a relationship exists for patterns of central haemodynamics across three related generations, especially c-f PWV.
Methods: In all, 1131 participants from Malmö Diet Cancer Study (MDCS) and Malmö Offspring Study (MOS) were included in this study. c-f PWV was measured in grandparents and in all offspring. Correlation analyses of c-f PWV between offspring and c-f PWV in parents and grandparents were conducted. Parents and grandparents were divided in quartiles by c-f PWV and offspring c-f PWV, and cSBP means were compared with one-way ANOVA analyses. Multiple regression analyses were conducted to adjust for age, sex, BMI, SBP and fasting glucose.
Results: c-f PWV in grandchildren was positively correlated with c-f PWV in parents (r = 0.26, p < 0.001) and in grandparents (r = 0.29, p < 0.001). Offspring c-f PWV correlated significantly with parental Aix and cSBP. Parents with high c-f PWV had offspring with statistically significant higher means of c-f PWV and cSBP than parents with low c-f PWV.
Conclusion: Measures of central haemodynamic are positively correlated across three generations in a population-based study.

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P98
AGE AND GENDER DIFFERENCES IN VARIABILITY OF WAVE REFLECTIONS OVER 24 HOURS: THE INTERNATIONAL 24-HOUR AMBULATORY AORTIC BLOOD PRESSURE CONSORTIUM (I24ABC)

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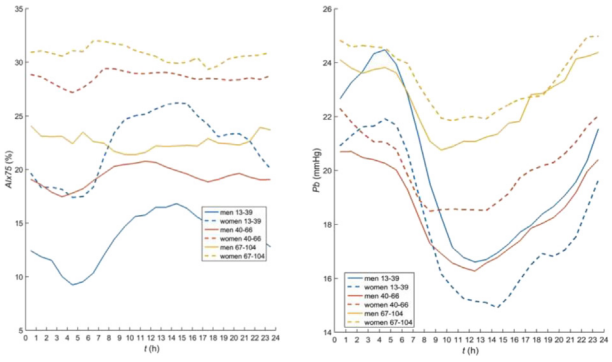
Background: Wave reflection parameters predict cardiovascular events, but 24-hour profiles in large samples of healthy adults are unknown.
Methods: In 1645 individuals free from antihypertensive drugs from 11 centers in Europe and Asia, 24-hour blood pressure monitoring with a validated oscillometric brachial cuff (Mobilograph, I.E.M., Stolberg; Germany) was performed. Brachial waveforms were acquired and processed with ARCSolver algorithms to derive information relating to wave reflections using pulse waveform analysis (heart-rate corrected augmentation index-AIx75, augmentation pressure-AP) and wave separation analysis (backward wave amplitude-Pb, reflection magnitude-RM). Nighttime/daytime difference (N/D) was nighttime (01.00—06.00) minus daytime (09.00—21.00) values/daytime values. Participants were categorized as young (13—39 years; male/female: 219/112), middle-aged (40—66 years; male/female: 545/553), and old (67—104 years; male/female: 86/130).
Results: 24-hour measures of wave reflections increased with increasing age and were significantly lower in men compared to women (AIx75: 18.3 vs 28.0 %, AP: 10.1 vs 14.9 mm Hg, Pb: 18.9 vs 20.0 mm Hg, RM: 63.0 vs 66.2). AIx75 was higher during daytime compared to nighttime (23.3 vs 21.3%), but only in young and middle-aged participants. For all participants, AP (11.6 vs 14.5 mm Hg), Pb (18.5 vs 21.7 mm Hg), and RM (62.9 vs 68.8) were higher during nighttime compared to daytime. N/D varied with age and was more pronounced in younger individuals.
Conclusion: 24-hour variability of wave reflection parameters differs according to age and gender. In future, this information could be useful for tailoring individual cardiovascular risk management.



P99
STUDY ON THE PREVALENCE AND DETERMINANTS OF EARLY VASCULAR AGEING IN A COMMUNITY PHARMACY SETTING — PRELIMINARY RESULTS: FROM THE ASINPHAR@2ACTION (ARTERIAL STIFFNESS IN THE PHARMACIES TO (2) ACTION) PROJECT

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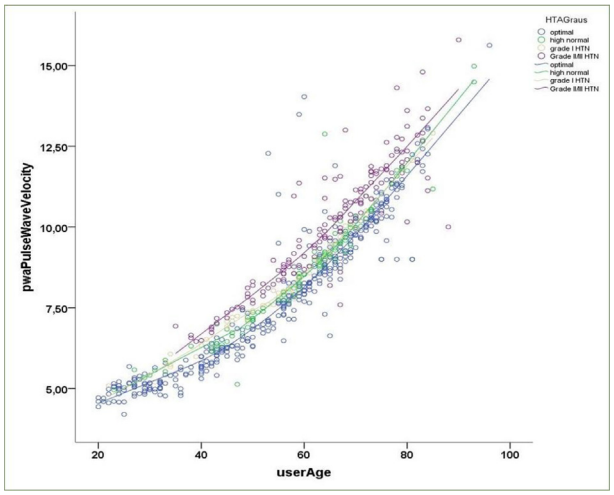
Objective: The ASINPHAR@2action programme aims at raising awareness to early vascular ageing (EVA) through a community-based intervention. This preliminary analysis is focused on the analysis of the proportion of participants with abnormal arterial stiffness (AS) and the definition of its main determinants.
Design and method: This preliminary analysis is a cross-sectional, observational, descriptive, non-interventional study of participants enrolled in 11 communal pharmacies in Portugal (HOLON pharmacies), between April and November 2017. Blood pressure (BP) and arterial function parameters were measured with a non-invasive validated device (MOBIL-O-GRAPH, IEM®). Clinical and demographic information was gathered.

Results: Participants recruited for the project account for 658, 65.7% women, with a mean age of 57.34 ± 16.26 years (range: 20–96 years). Brachial BP was 126.60 ± 16.43 mmHg and 79.89 ± 11.54 mmHg, and central BP was 115.80 ± 15.35 mmHg and 81.18 ± 11.60 mmHg, respectively for systolic and diastolic BP. Mean pulse wave velocity (PWV) was 8.45 ± 2.28 m/s. The proportion of participants with increased PWV was 19,9%. Participants with increased PWV were significantly older and had higher brachial and central BP and BMI. Multivariate linear regression indicated age, Gender, BP and abdominal fat as independent determinants of PWV. AS trajectories were significantly different as a function of arterial hypertension and cardiovascular risk classification (figure 1).
Conclusions: The preliminary results of this pioneering large scale study measuring arterial function in communal pharmacies provides the grounds for the operationalization of subclinical target organ damage screening in pharmacies, as a strategy to improve cardiovascular risk monitoring and to promote adherence to treatment.



P100
THE ASSOCIATION BETWEEN DAIRY PRODUCTS CONSUMPTION AND ARTERIAL STIFFNESS: A META-ANALYSIS

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Background: Dairy products consumption has been related to some metabolic risk parameters. Specifically, some studies have associated higher intake of dairy products with lower pulse wave velocity (PWv) values, although discrepancies persist in this relationship.
Objective: To determine the association between dairy products consumption and PWv.
Methods: A search strategy was conducted in Medline, SCOPUS and WOS, from their inception to June 2018, for observational studies addressing the association between dairy products and PWv. Effect sizes (ES) were estimated by using random-effects meta-analysis models based on Der Simonian and Laird method. Subgroup analyses were conducted based on dairy products type (i.e., milk, cheese, and yogurt).
Results: Six studies were included in this systematic review and meta-analysis. The ES for the association between total dairy products and PWv was −0.01 (95% CI: −0.08; 0.05) (Figure 1). Subgroup analysis could be only performed based on milk consumption ES: 0.00 (95% CI: −0.07, 0.08; I2: 0.0; p = 0.865). Systematic review showed similar results for cheese, and yoghurt. Conversely, low fat dairy products were associated with lower PWv values.
Conclusion: There was no association between total dairy products, milk, cheese and yoghurt consumption and PWv. Low fat dairy products consumption has been related to lower levels of PWv. These findings add further evidence supporting that dairy products consumption does not pose any additional cardiovascular risk factor. Further research is needed to elucidate the role of each dairy product type on cardiovascular disease risk factors.

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REFERENCE VALUES OF DIFFERENT PARAMETERS OF VASCULAR FUNCTION IN CAUCASIAN POPULATION WITHOUT CARDIOVASCULAR DISEASES. EVA STUDY

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Objective: To describe the mean values of different parameters of vascular function, evolution with age and differences by gender in the general population without cardiovascular diseases.
Design and method: An observational, descriptive, cross-sectional study. Study population: From the population assigned to the participating healthcare centres, a cluster random sampling stratified by age and gender was performed to obtain 501 participants aged between 35 and 75, 100 per decade, (50% women) without cardio or cerebrovascular disease. Measurements: pulse wave velocity femoral carotid (cfPWV) was determined using the SphygmoCor System, Cardio Anckle Vascular Index (CAVI) and the pulse wave velocity ankle arm (aaPWV) using the VaSera.
Results: Mean values: age 55.9 ± 14.2 years (Males = 65.9 ± 14.3y, Females = 55.8 ± 14.2y, p = 0.935); CAVI: 8.0 ± 1.4 (Males = 8.1 ± 1.5, Females = 7.9 ± 1.4, p = 0.043); aaPWV = 12.9 ± 2.7 m/seg (males = 13.2 ± 2.5 m/seg and women = 12.7 ± 2.9 m/seg, p = 0.064) and cfPWV: 6.5 ± 2.0 m/sec (Males = 6.8 ± 2.2 m/sec, Females = 6.2± 1.8 m/sec, p < 0.001). For each year that the age increases, an increase of the CAVI of 0.073 (y=3.919 + (0.073*age)), in males 0.075 (y=3.943 + (0.075*age)) and in women 0.071 (y=3.900 + (0.071*age)). An increase in aaPWV of 0.137 m/sec (y=5.276 m/sec + (0.137 m/sec * age)) , in males 0.118 (y=6.554 m/sec + (0.118 mm*age)) and in women 0.156 (y=3,978 m/sec + (0,156 m/sec*age)) and an increase in cfPWV of 0.092 m/sec (y=1.417 m/sec + (0.092 m/sec*age)), in males 0.104 (y=1.075 m/sec + (0.104 m/sec*age)) and in women 0.080 (y=1.748 m/sec + (0.080 m/sec*age)).
Conclusions: The mean values of CAVI and cfPWV as well as the annual increase are greater in males than in females. However, there are no differences in the mean values of the aaPWV and the annual increase is greater in females.

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REFERENCE VALUES IN A REPRESENTATIVE SAMPLE FOR A CERTAIN COUNTRY

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