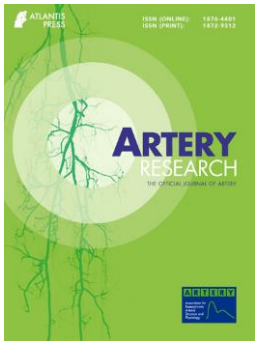

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P3.30: DIFFERENCE IN THE PREVALENCE OF HYPERTENSION USING STANDARD BLOOD PRESSURE MEASUREMENT COMPARED TO AMBULATORY BLOOD PRESSURE MONITORING IN KILIFI, KENYA

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Magnetic Separation Module I according to manufacturer's protocol. DNA samples were then amplified by real time polymerase chain reaction (real-time PCR), followed by High Resolution Melting Analysis (HRMA) on RotorGene 6000. Hardy-Weinberg equilibrium expectation was tested by using a chi-square ($\chi 2$) goodness-of-fit test. Non-adjusted analysis of the association between *ApoE* genotypes and alleles with essential hypertension was based on Fisher Exact Probability Test by using the Vassarstat calculator.
As found in most European populations, the $\varepsilon 3\varepsilon 3$ genotype was the most common (72.04%), followed by $\varepsilon 3\varepsilon 4$ (14.69%), $\varepsilon 2\varepsilon 3$ (9.80%), $\varepsilon 2\varepsilon 4$ (2.24%), $\varepsilon 2\varepsilon 2$ (0.82%), and $\varepsilon 4\varepsilon 4$ (0.41%) in control group. The genotype frequencies in hypertensive patients were: $\varepsilon 3\varepsilon 3$ (72.99%), $\varepsilon 3\varepsilon 4$ (16.11%), $\varepsilon 2\varepsilon 3$ (7.11%), $\varepsilon 2\varepsilon 4$ (2.37%), $\varepsilon 4\varepsilon 4$ (1.42%), $\varepsilon 2\varepsilon 2$ (0.00%). Allele frequencies were within the Hardy-Weinberg equilibrium expectations ($P > 0.05$) in both patients and controls. Neither the $\varepsilon 2$ nor the $\varepsilon 4$ carrier status was associated with hypertension (OR = 0.68, 95%CI = 0.41-1.13, p=0.14 and 1.23, 0.84-1.79, p=0.29 respectively).
This study provides epidemiologic evidence that the ApoE genotype is not associated with EH in Bulgarian population.

P3.28
CENTRAL VS. PERIPHERAL AND STEADY VS. PULSATILE BLOOD PRESSURE COMPONENTS AS DETERMINANTS OF RETINAL MICRO-VESSEL DIAMETERS

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Objective: We assessed association of retinal micro-vessel diameter with central and peripheral BP.
Methods: We post-processed retinal photographs taken in 514 subjects randomly selected from a Flemish population (mean age, 50.6 years; 50.8% women), using IVAN software to generate retinal arteriolar (CRAE) and venular (CRVE) equivalents. We measured peripheral and central BP by mercury sphygmomanometry and tonometry at the carotid artery (SphygmoCor software), respectively. We applied stepwise regression, considering as covariables in addition to BP sex, age, body mass index, smoking, drinking, antihypertensive drug treatment, and serum cholesterol.
Results: CRAE and CRVE averaged 153μm and 219μm. Effect sizes (ìm) for CRAE for 1−SD increase in peripheral vs. central BP were −3.77 vs. −3.52 systolic, −3.16 vs. −3.13 diastolic, −3.84 vs. −3.64 for mean BP, and −2.07 vs. −1.83 for pulse pressure ($P \leq 0.006$). Models that included two BP components demonstrated that CRAE decreased ($P \leq 0.035$) with systolic (peripheral vs. central, −2.87 vs. −2.40) and diastolic (−1.58 vs. −1.80) BP. CRAE decreased with mean BP (−3.53 vs. −3.53; $P < 0.0001$), but not with pulse pressure ($P \geq 0.19$). CRVE was not related to any peripheral or central BP component ($P \geq 0.062$). The variance inflation factor in these models was <2.0. The multivariable-adjusted slopes of CRAE on BP components were similar for centrally and peripherally measured BP ($p \geq 0.28$).
Conclusion: Higher systolic and mean BP is associated with smaller CRAE, irrespective of whether BP is measured centrally or peripherally. Central BP does not refine the inverse association of CRAE and CRVE with peripheral BP.

P3.29
ASSESSMENT OF THE DETERMINANTS OF LOCAL CAROTID STIFFNESS IN A GENERAL POPULATION IN NORTHERN ITALY

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Background: The determinants of aortic stiffness have been elucidated in several studies, while few data are available for carotid stiffness. Aim of the study was to identify the main determinants of carotid arterial stiffness parameters in a general population in Northern-Italy(Vobarno Study).
Methods:183subjects(61% female, mean age 55± 4,53% hypertensives,59% treated) underwent laboratory examinations and both clinic and 24 hours BP measurement (Spacelabs 90207). A non-invasive echotracking system was used to measure intima-media thickness, diameter, distension, distensibility (Dist), distensibility coefficient (CDist), compliance coefficient (CC) and elastic modulus (Einc) on 4-cm long common carotid artery segment.
Results: correlation coefficient of Dist, CDist and Einc are shown in Table 1.

	Dist		CDist		Einc	
	R	*p*	r	*p*	r	*p*
Age (years)	−0.240*	0.001	-0.241*	0.001	0.210*	0.005
BMI (Kg/m2)	−0.192*	0.01	-0.192*	0.010	0.169*	0.024
Clinic SBP (mmHg)	−0.501*	0.001	-0.477*	0.000	0.511*	0.000
Clinic DBP (mmHg)	−0.181*	0.015	-0.184*	0.014	0.262*	0.000
Clinic MBP (mmHg)	−0.374*	0.001	-0.362*	0.000	0.422*	0.000
24 hours SBP (mmHg)	−0.207*	0.006	-0.198*	0.009	0.222*	0.003
24 hours DBP (mmHg)	−0.183*	0.016	-0.191*	0.012	0.207*	0.006
24 hours MBP(mmHg)	−0.13	0.094	-0.125	0.099	0.166*	0.029

At multivariate analysis the independent predictor of Dist,CDist and Einc were age (β=-0.22, β=-0.22 and β=0.18, respectively, all $p<0.01$), BMI (β=-0.18, β=-0.18 and β=0.14, respectively, all $p<0.05$),MBP (β=-0.34, β=-0.33 and β=0.40, respectively, all $p<0.001$)and female gender(β=0.19,β=0.18 and β=-0.15,respectively,all $p<0.05$).When carotid arterial stiffness parameters were compared in males and females,a significantly lower values of Dist and CC were observed in females (365±97 vs 427±124 μm,$p<0.001$ and 0.63±0.24 vs 0.83±0.29 mm^2/kPa^{-1},$p<0.001$, respectively).After adjusting for possible confounders in a multivariate model distension(345 vs 456 μm, $p<0.001$),CDist (23.4 vs 30.3 $kPa^{-1}\cdot 10^{-3}$, $p<0.001$) and CC (0.61 vs 0.87 mm^2/kPa^{-1}, $p<0.001$)were significantly lower in females while Einc was significantly higher in females(0.45 vs 0.34 $kPa\cdot 10^3$,p=0.007).Conclusion: in a general population sample age, female gender, BMI and clinic and 24 hours BP values are associated to an increase local carotid stiffness.

P3.30
DIFFERENCE IN THE PREVALENCE OF HYPERTENSION USING STANDARD BLOOD PRESSURE MEASUREMENT COMPARED TO AMBULATORY BLOOD PRESSURE MONITORING IN KILIFI, KENYA

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Background: As sub Saharan Africa (sSA) goes through demographic and epidemiological transition, accurate data on disease prevalence are required to guide allocation of scarce health resources between declining but still important infectious disease and emerging chronic conditions such as hypertension. We conducted a study to determine the difference in the prevalence of hypertension as diagnosed using standard blood pressure measurement (SBP) compared to 24-hour ambulatory monitoring (ABPM).
Methods: We randomly selected an age-stratified sample of 700 adults (18-90 years) living within the Kilifi Health and Demographic Surveillance System (KHDSS) in Kenya (adult population ~125,000). All participants underwent SBP by WHO recommended methods (mean of last 2 from 3 sequential readings); those with an average SBP ≥140/90 mmHg underwent ABPM.

Prevalence was calculated by applying age specific rates of hypertension to the KHDSS population to determine the total number each method would have detected.
Results: SBP was performed on 671 individuals and ABPM on 138 (21%). Mean±SD age was 52 ±18.5 years, 62% women. Of those who underwent ABPM, 49% were confirmed to have 'hypertension'. The age-standardized hypertension prevalence in KHDSS was 24.6% (95%CI 24.1-25.1) using SBP and 3.9 (95%CI 3.7-4.1) % using ABPM. Use of SBP would lead to an additional 22,323 adults being referred for treatment in the KHDSS.
Conclusion: Use of ABPM drastically reduced the number of individuals potentially requiring treatment. However, because no randomized intervention trials have yet been done in sSA, whether ABPM or repeated SBP are more appropriate targets of treatment requires more data.

P3.31
CORRELATION OF CENTRAL HAEMODYNAMICS WITH HEALTH-RELATED QUALITY OF LIFE

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Objectives: High blood pressure (BP) levels have been reported to have an inverse association with the health-related quality of life (HRQOL). Moreover, the value of central beyond peripheral haemodynamics has been illustrated by a series of studies. We sought to investigate potential correlations between central haemodynamics and HRQOL.
Methods: Brachial BP was evaluated with an automatic, oscillometric device (WatchBP, Microlife). Central haemodynamics (aortic BP, augmentation index (AIx), augmentation pressure (AP)) were assessed using applanation tonometry (SphygmoCor, AtCor). For HRQOL assessment the EQ5D instrument was utilized. EQ5D estimates five dimensions (mobility; self-care; usual activities; pain/discomfort; anxiety/depression) which are subdivided in three severity levels. These dimensions are transformed in an overall index, MVH-York-A1-tariff (0=worst, 1=best). Additionally, EQ5D involves a visual analogue scale (VAS) in which respondents self-rate their health state (0=worst, 100=best).
Results: A hundred and fifty consecutive subjects (80 males; 55±15 years old; BMI: 27.3±4.4 kg/m^2, 49% hypertensives, 10% diabetics) were included in the study. Average brachial/ aortic SBP was 131±16/ 121±17 mmHg, DBP was 78±9/ 79±9 mmHg. Average AIx/ AIx75bpm was 28.8±14.6/ 23.3±14.3, AP/ AP@75bpm 13.2±8.1/ 9.8±6.7 mmHg. Mean MVH-York-A1-tariff was 0.85±0.18, while VAS was 78.3±13.6. Peripheral haemodynamics were correlated neither with MVH-York-A1-tariff nor with VAS. However, a negative correlation between aortic SBP, AIx, AIx@75, AP, AP@75 and HRQOL indices was observed (Table).
Conclusions: In the present study, aortic SBP, AIx and AP were found to negatively correlate with HRQOL.

HRQOL indices & haemodynamics

	MVH York A1 tariff		VAS	
	C.C.	*p*	*C.C.*	*p*
Brachial SBP, mmHg	0,008	0,928	-0,099	0,238
Brachial DBP, mmHg	0,074	0,377	-0,103	0,218
Aortic SBP, mmHg	-0,061	0,469	-0,193*	**0,020**
Aortic DBP, mmHg	0,078	0,348	-0,102	0,221
AIx	-0,246**	**0,003**	-0,297**	**<0,001**
AIx @75bpm	-0,240**	**0,004**	-0,298**	**<0,001**
AP, mmHg	-0,218**	**0,008**	-0,299**	**<0,001**
AP @75bpm, mmHg	-0,199*	**0,016**	-0,298**	**<0,001**

AIx: Augmentation Index; AP: Augmentation Pressure; CC: Correlation Coefficient; DBP: Diastolic Blood Pressure; MBP: Mean Blood Pressure; PWV: Pulse Wave Velocity; SBP: Systolic Blood Pressure level of significance: *0.05, **0.01

P3.32
THE NUMBER OF METABOLIC SYNDROME RISK FACTORS CORRELATES WITH AORTIC STIFFNESS

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Objectives: Metabolic syndrome (MS) is a cluster of ≥3 risk factors (RF). The presence of subclinical organ damage increases the risk of cardiovascular disease in patients with MS. Arterial stiffness and wave reflections are independent predictors of cardiovascular disease. The aim of our study was to compare pulse wave velocity (PWV) and parameters of wave reflections in subjects with different number of MS risk factors (definition of MS according to Czech guidelines: arterial hypertension or antihypertensive drug treatment, waist circumference, serum triglycerides or lipid-lowering drug treatment, HDL cholesterol, type 2 diabetes mellitus or impaired glucose tolerance).
Methods: We examined 936 respondents from the Czech general population (post-MONICA study). We measured aortic PWV, augmentation index (AIx) and central augmentation pressure (cAP) using SphygmoCor device. We divided subjects into 5 groups according to number of RF (0,1,2,3, ≥4). We used multivariate linear regression analysis to assess association between the number of RF and PWV, AIx and cAP after adjustment for age, gender, heart rate and MAP.
Results: 334 respondents (35.7 %) had MS. Subjects with MS were older (60.4±9.8 years vs. 51.0±13.6 years, p<0.0001) and had higher PWV than subjects without MS (9.0±2.3 m/s vs. 7.3±2.1 m/s, p<0.0001). After adjustment for covariates, the PWV ($p_{for\ trend}$ <0.0001), and cAP (p=0.025) were higher with increasing number of RF, while AIx was lower (p=0.020).
Conclusions: With growing number of metabolic syndrome risk factors, the aortic PWV and central augmentation pressure increase, while opposite is true for central augmentation index.

P4 Clinical and Basic Science

P4.01
PLASMA FIBULIN-1 IS INCREASED IN PATIENTS WITH ABDOMINAL AORTIC ANEURYSM BUT NOT PERIPHERAL ATHEROSCLEROTIC DISEASE

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Objectives: Fibulin-1 is an extracellular matrix protein that is increased in the arterial wall in diabetes. It is also present in plasma, where it is positively related to blood pressure and predicts mortality. In addition, plasma levels are associated with heart stiffness indices. The aim of this study was to evaluate the relation between plasma fibulin-1 and vascular diseases such as aortic abdominal aneurysm (AAA) and peripheral atherosclerotic disease (PAD).
Methods: Plasma levels of fibulin-1 were measured by ELISA in patients from an ongoing population-based screening trial for AAA, PAD and hypertension in men aged 65-74 years. Samples were obtained consecutively from 477 patients with AAA, 120 patients with PAD and AAA and 197 age-matched controls. AAA is defined as having a maximal aortic diameter > 30 mm and PAD as an ankle-brachial index (ABI) < 0.90.
Results: Plasma fibulin-1 in patients with AAA (86.2 μg/ml ± 1.01 μg/ml, mean±SEM) and controls (81.6 μg/ml. SEM ± 1.01 μg/ml) were significantly different (p=0.004), OR of 5.62 (95% C.I.: 2.29-13.79, p<0.000). In patients with additional PAD no differences in relation to controls was recognized. Fibulin-1 correlated positively to infra renal aortic size (R=0.125, p=0.001), age (R=0.174, p=0.000) and body mass index (R=0.132, p=0.001) but not to low ABI, blood pressure or AAA growth-rate. There was no difference in age between groups.
Conclusion: Plasma fibulin-1 was significantly higher in patients with AAA, but not in patients with additional PAD, which may be explained by an increase in extracellular matrix turnover related to AAA.