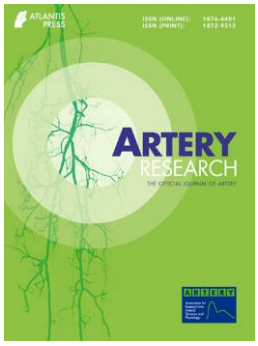

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P7.04: AORTIC STIFFNESS IS ASSOCIATED WITH ALBUMINURIA IN THE GENERAL POPULATION

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P7.02

RELATION OF MEAN AND PULSATILE BLOOD PRESSURE COMPONENTS TO ATHEROSCLEROSIS AND ARTERIOSCLEROSIS: A 10-YEAR FOLLOW-UP STUDY

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Background: Blood pressure (BP) can be separated into mean arterial pressure (MAP) and pulsatile (pulse pressure, PP) components which may relate differently to atherosclerosis and arteriosclerosis. The aim of the study was to examine the association between longitudinal measures of MAP and PP (central and peripheral) with measures of atherosclerosis and arterial stiffness.
Methods: Subjects comprised 411 apparently healthy female twins, which had measures of central and brachial BP made between 1996-2001 (aged 24-72 years) and second between 2006-2010, as part of the TwinsUK programme of research. Central BP was estimated using the SphygmoCor system from transformed radial waveforms. Carotid-femoral pulse wave velocity (cfPWV) and presence of carotid/femoral plaque was determined at follow-up. Associations of cfPWV and plaque to BP components at baseline and the progression of these over the 10 year follow-up period were examined using linear and logistic regression analysis.
Results: Baseline predictors of cfPWV at follow-up were age and MAP (standardized beta coefficients, $\beta=0.42$, and 0.12, respectively). When progression of BP components was included in the model, cfPWV correlated positively with progression of central PP, HR and MAP ($\beta=0.33$, 0.33, 0.16, respectively). Using logistic regression analysis, the only baseline predictor of plaque was MAP ($\beta=0.03$, $P<0.05$), progression of BP components was not significantly correlated with presence of plaque.
Conclusion: MAP is an independent predictor of both plaque and increased arterial stiffness at 10 year follow-up, whereas PP progression correlates with cfPWV but not plaque. These findings suggest a differential association between atherosclerosis and arteriosclerosis to BP components.

P7.03

SUBCLINICAL MEASURES OF ATHEROSCLEROSIS ASSOCIATE DIFFERENTLY WITH PREVALENT CORONARY HEART DISEASE IN INDIAN ASIANS AND EUROPEANS

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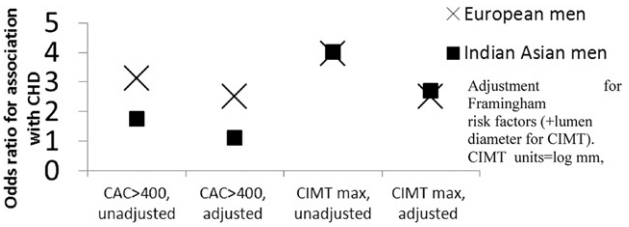
Background: Globally Indian Asians have increased risk of coronary heart disease (CHD). Subclinical markers of atherosclerosis, such as carotid intima media thickness (CIMT) and coronary artery calcification scores (CACS), play an increasingly important role in risk prediction, but need to be validated in different ethnic groups.
Method: We studied 415 Indian Asian men and 485 European men in a population-based study in London. Prevalent CHD was identified from primary care medical records. CIMT (maximum) was measured in the far wall of the left common carotid artery using B mode ultrasound. CACS were measured using computed tomography.
Results: Participants were aged 70±6 years. Indian Asians had more CHD (38% vs 20%, $p<0.001$), diabetes (42% vs 17%, $p<0.001$) and hypertension (80% vs 62%, $p<0.001$). Despite this, there were no ethnic differences in CIMT and CAC scores. Geometric means (95%CI) for CIMT in Indian Asians and Europeans were 0.96 (0.94, 0.98) and 0.95(0.93, 0.97), $p=0.56$. Median CACS scores were 127 (IQR:17, 468) and 150 (30, 475) In Indian Asians and Europeans respectively($p=0.42$). Associations between CIMT/CAC and CHD risk factors were similar in the two ethnic groups. CAC score >400AU was strongly associated with CHD in Europeans, but there was no association in IA (fully adjusted odds ratios: E: 2.21, $p=0.026$, IA: 1.12, $p=0.75$). CIMT was strongly and significantly associated with CHD in both ethnic groups(Figure).
Conclusion: CACS are a valid indicator of CHD in European but not in Indian Asian men. In contrast, CIMT is a valid surrogate in both ethnic groups.



P7.04

AORTIC STIFFNESS IS ASSOCIATED WITH ALBUMINURIA IN THE GENERAL POPULATION

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Background: Albuminuria has been associated with increased cardiovascular risk. We hypothesised that this may be mediated through increased central arterial stiffness and subsequent transmission of pulsatile strain to the renal microvasculature.
Methods: In a prospective community cohort of 850 caucasians, albumin: creatinine ratio (ACR) was measured from random urine samples. Routine bloods were checked for biochemistry. Arterial stiffness was measured through aortic pulse wave velocity (aPWV) and wave reflections through augmentation index (AIx; SphygmoCor, Sydney). Albuminuria was classified by normal (1=<3.4 mg/mmol), mild (2=3.4–5.6 mg/mmol) and significant (3=6.8-166.7 mg/mmol).
Findings: (See table) A stepwise increase in aPWV with ACR category was seen in men but not women. This association not evident with AIx. Among Caucasian men, in multivariate analysis, eGFR and brachial pulse pressure were independently associated with albuminuria ($R^2 = 0.31$, $p < 0.001$). Age, smoking, AIx and aPWV were not retained in the model.
Conclusions: In this cross-sectional study, a stepwise increase in PWV was seen with ACR. This relationship was not independent of confounding factors. Further studies are required to assess the influence of increased pulsatility in the renal microvasculature.

	Men (n=389)				Women (n=461)			
	ACR 1	ACR 2	ACR3	P value	ACR 1	ACR2	ACR 3	P value
Age	43 ± 23	53 ± 23	60 ± 21	< 0.001	44 ± 21	38 ± 23	42 ± 22	0.22
eGFR	94 ± 28	81 ± 20	73 ± 27	< 0.001	90 ± 21	90.8 ± 21.7	80.2 ± 21.7	0.12
Chol	4.4 ± 0.9	4.1 ± 0.9	4.1 ± 0.9	0.65	4.8 ± 1.1	4.8 ± 1.1	4.4 ± 1.3	0.17
Diabetes	5.2%	4.8%	9.1%	0.84	3.5%	4.8%	0%	0.52
Smoker	7.7%	4.8%	9.1%	0.03	8.3%	4.8%	9.5%	0.44
SBP	134 ± 17	144 ± 22	147 ± 20	<0.001	126 ± 20	125 ± 20	124 ± 24	0.73
DBP	79 ± 10	80 ± 12	81 ± 10	0.26	75 ± 10	78 ± 10	73 ± 11	0.97
AIx	0.06 ± 0.2	0.08 ± 0.1	0.14 ± 0.1	0.03	0.13 ± 0.2	0.07 ± 0.1	0.15 ± 0.2	0.40
aPWV	7.8 ± 2.7	9.0 ± 3.1	9.4 ± 3.0	0.002	7.3 ± 2.5	7.2 ± 2.7	7.5 ± 3.1	0.93

P7.05
DETERMINATION OF THE BEST ANKLE BRACHIAL INDEX THRESHOLD VALUES FOR THE ROUTINE DETECTION OF A SIGNIFICANT LOWER LIMB ARTERIAL STENOSIS USING AN AUTOMATED DEVICE

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Objectives: To assess the prevalence of significant lower limb arterial stenosis in a population of patients with an increased cardiovascular risk and to determine the best ankle brachial index (ABI) threshold value for its detection.
Methods: In patients with treated hypertension and/or another cardiovascular risk factor (dyslipidemia, current smoking, diabetes), ABI was measured using an automated oscillometric device with 2 synchronized cuffs (SCVL®, Genov, Paris). The presence of atherosclerotic plaques was assessed independently by a Doppler/ultrasound exam.
Results: We included 201 patients. Fifty two percent were men, of 58 ±13.4 years old. Fifty 6 percent were treated for hypertension, 23% for diabetes and 72% had dyslipidemia. There was 21 % of current smokers and 33% of previous smokers. A clinical peripheral arterial disease (PAD) was noted in 7 % of the patients and the presence of a femoral stenosis > 50% in 7.7%. The prevalence of an ABI < 0.9 was 19.7% and 16.6% for an ABI <0.85. The ABI performance to detect a significant femoral plaque or a clinical PAD is detailed in the table. The best predictors of the presence a PAD or a significant plaque are one of the 3 following ABI values : <0.85 or >1.30 or missing signal. **Conclusion:** In our population, the prevalence of a significant inferior limb stenosis was 7.7%. The ABI was easily and quickly measured by the automated device. Our study attests the feasibility of this approach to detect PAD and arterial stenosis in daily practice in this population.

	Sensibility (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
ABI < 0.9	83.3	84.5	26.3	98.7
ABI <0.9 or >1.3 or missing signal	93.3	83.4	31.8	99.3
ABI <0.85	83.3	87.8	31.3	98.8
ABI <0.85 or >1.35 or missing signal	93.3	87.3	37.8	99.4

P7.06
GENDER DIFFERENCE IN CARDIOVASCULAR RISK: ROLE OF BLOOD PRESSURE AMPLIFICATION

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Carotid (C) pulse pressure (PP) is constantly lower than brachial (B) PP, but is a more powerful predictor of CV risk than B-PP. The C/B-PP ratio is marker of PP amplification. The objective was to explore whether the role of C/B-PP ratio for all-cause and CV mortality is different between men and women.
Population was composed of 72,437 men (41.0±11.1 years) and 52,714 women (39.5±11.6 years) with similar mean arterial pressure. C-PP was calculated in both genders from a validated equation. The hazard ratios (HR, 95% CI) associated with C/B ratio for all-cause and cardiovascular (CV) mortality were calculated with Cox regression models according to age and gender. The age threshold of 55 years was chosen to study the role of menopause. During a 12-year follow-up, 3028 men and 969 women died.
The adjusted risk (HR) associated with C/B ratio for all-cause mortality was 1.51 (1.47-1.56) in men and 2.46 (2.27-2.67) ($p<0.0001$) in women; for CV mortality it was 1.81 (1.70-1.93) and 4.46 (3.66-5.45) ($p<0.0001$), respectively. The difference between genders for CV mortality increased after 55 years of age, from 1.44 (1.31-1.58) for men vs 3.19 (2.08-4.89) for women <55 years, to 1.65 (1.48-1.84) for men vs 5.60 (4.17-7.50) for women ≥55 years. Over 55 years, impact of C/B ratio was highly significant in men and women ($p<0.0001$).
C/B-PP amplification is highly predictive of differences in CV risk between men and women. Among women, after menopause, the attenuation of amplification associated with aortic stiffness strongly contributes to increasing cardiovascular risk.

P7.07
BLOOD PRESSURE CONTROL AND EARLY COGNITIVE IMPAIRMENT SCREENING

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Purpose: The purpose of this study is to find whether achieving optimal blood pressure (BP) control could prevent mild cognitive impairment (MCI), and whether we should conduct MCI screening routinely in patients (Pts) with hypertension (HT).
Methods: 51(34.5%) males and 97(65.5%) females - a total of 148 Pts with mean age 64.16±11.18 years and mean HT history 13.1±11.05 years were examined. Neuropsychological profile was assessed with Mini-Mental State Examination (MMSE) and Montreal Cognitive assessment (MoCA). Ambulatory blood pressure monitoring (ABPM) and Self measured blood pressure (SMBP) were conducted according to the ESC/ESH recommendations.
Results: 76(51.35%) Pts with HT treatment were with suboptimal BP control during the day and 83(55.4%) - during the night. Mann-Whitney test was used to find: significant ($p<0.05$) difference in the mean values of MMSE and MoCA between the groups with optimal and suboptimal SMBP; some of the ABPM values between Pts with MCI and without. Regression analysis showed that there is significant ($p<0.05$) correlation between neuropsychological tests' results and some BP variables: MMSE - night systolic ($r=0.274$), mean ($r=0.193$) and pulse pressure (PP) ($r=0.281$); day systolic ($r=0.179$) and PP ($r=0.313$); systolic ($r=0.209$) and PP SMBP ($r=0.212$). MoCA with night systolic ($r=0.168$) and PP ($r=0.210$); systolic ($r=0.238$) and PP SMBP ($r=0.217$).
Conclusions: Despite treatment opportunities and early detection of HT a significant percent of Pts with HT have poor BP control (assessed by SMBP or ABPM). They remain at risk for MCI. Screening neuropsychological tests should be performed in all Pts with HT and suboptimal BP control.

P7.08
PRECLINICAL MARKERS OF CAROTID ATHEROSCLEROSIS AND CARDIOVASCULAR RISK ASSESSED BY THE ESH/ESC SCALE (2003, 2007)

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Objective: The SCORE scale is applied to assess the total cardiovascular risk. Risk stratification system of Recommendations (ESH)/(ESC) (2003, 2007) unlike the SCORE scale allows to give a more accurate assessment of the risk range with using results of tool methods of investigation.
Aim: To assess the degree of cardiovascular (CV) risk adjustment in patients with low and moderate risk by the SCORE scale, who were further examined in accordance with the ESH/ESC scale (2003,2007), and also underwent carotid duplex ultrasound studies.
Material and methods: 600 patients with low and moderate cardiovascular risk by the "SCORE" scale were selected: 445 women and 155 men in the age 30-65y. We used duplex ultrasound imaging of carotid arteries.
Results: Risk stratification has been accomplished according to the scale of ESH/ESC (2003, 2007) Recommendations and applying the data of the carotid duplex ultrasound imaging. Among 600 patients only 35% patients were remained in the low risk group, 33% patients in the moderate risk group and 31% patients were converted into the high risk group. The reason for