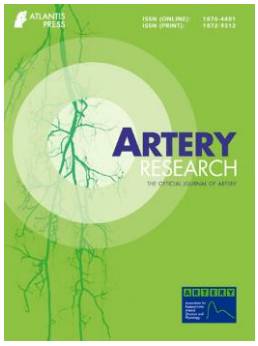

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P11.06: COUPLING OF LEFT VENTRICULAR TWIST MECHANICS AND CENTRAL AUGMENTATION INDEX IN HEALTHY INDIVIDUALS

E.J. Stöhr, B.J. McDonnell, J. Thompson, K. Stone, J.R. Cockcroft, R. Shave

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Children for whom primary care consultation for allergic disease had been sought, had a 14.9 μm (95%CI: 5.3 − 24.4) higher CIMT compared to children without allergies (adjusted for age, gender, parental smoking, gestational age, infant feeding and infections). Lifetime anti-histamine prescription was associated with a 11.7 MPa^{-1} (95%CI: -20.9 - -2.5) lower distensibility and a 23.4 kPa (95% CI: 6.9 − 39.9) higher EM. Recent anti-histamine prescription was associated with a 30.2 μm (95%CI: 10.2 − 50.2) higher CIMT. A positive parental allergy history was associated with a 8.4 μm (95%CI: 1.3 − 15.6) higher CIMT per allergic parent.
Conclusion: Allergies are associated with pre-atherosclerotic vascular changes in healthy young children.

P11.03
AORTIC STIFFNESS INDICES IN FIRST-EVER AND RECURRENT ISCHEMIC STROKE − A PRELIMINARY REPORT

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Background: Patients with acute ischemic stroke have higher aortic stiffness estimated by carotid-femoral pulse wave velocity (CF-PWV) and central augmentation index (cAIx) than control hypertensives. Whether CF-PWV and cAIx may distinguish patients with first-ever (FES) from those with recurrent ischemic stroke (RS) is unknown.
The aim of the study was to evaluate CF-PWV and cAIx in patients with the FES and RS as compared to control hypertensives, and to evaluate the relationship between these indexes and other clinical variables.
Methods: We studied 113 patients (82 males, 62.9±12.7yrs) with acute ischemic stroke, including 17 subjects with RS (13 males, 67.6±10.8yrs) and 71 controls (52 males, age 62.7±12.6yrs).CF-PWV, and cAIx were measured (SphygmoCor®) one week after stroke onset. Data were analysed with multivariate analysis.
Results: The mean CF-PWV was significantly higher in both RS and FES than in controls (12.5±3.5 vs. 8.6±1.3m/s, $P<0.00001$, and 10.2±2.8 vs. 8.6±1.3m/s, $P=0.004$ respectively). Moreover, the mean CF-PWV was significantly higher in RS compared to FES (12.5±3.5 vs. 10.0±2.8m/s, $P=0.01$). cAIx in RS (32.3±14.3mmHg) was similar to that in FES (28.5±11.7mmHg, $P=0.49$), but it was significantly higher compared to controls (25.2±10.3mmHg, $P=0.02$). In multivariate logistic regression analysis, higher CF-PWV remained significant after adjustment for age, SBP or HR, separately (Table).

Model	OR	95% CI	P value
Model 1 ($R^2=0.02$)			
Age	1.01	0.96 − 1.07	0.65
CF-PWV	1.23	1.01 − 1.50	0.04
Model 2 ($R^2=0.12$)			
SBP	0.97	0.93 − 1.01	0.1
CF-PWV	1.45	1.12 − 1.89	0.005
Model 3 ($R^2=0.08$)			
HR	1.01	0.96 − 1.06	0.75
CF-PWV	1.24	1.04 − 1.47	0.02

Conclusion: CF-PWV is higher in patients with recurrent stroke than in those with first-ever event independently of age and BP levels. These findings suggest that aortic stiffness might be implicated in progression of cerebrovascular disease in post-stroke patients.

P11.04
AORTIC AND VISCERAL FAT INFLAMMATION DETECTED BY POSITRON EMISSION TOMOGRAPHY/COMPUTED TOMOGRAPHY (PET/CT) DOES NOT CORRELATE WITH ARTERIAL STIFFNESS IN PATIENTS WITH A HISTORY OF CARDIOVASCULAR DISEASE

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Background: Arterial and systemic inflammation are associated with increased arterial stiffness in several patient groups. Visceral fat has been shown to contain inflammatory cells and is associated with increased cardiovascular risk. In this study we sought to investigate whether the degree of arterial and visceral fat inflammation correlated with arterial stiffness.
Methods: 46 patients with a history of atherosclerotic disease were imaged using fluoro-deoxyglucose positron emission tomography (FDG-PET) with CT co-registration. Uptake of FDG, directly reflects metabolic activity and is shown to correlate with macrophage activity. Tracer uptake was analysed in various arterial segments and visceral fat by measuring maximum standard uptake values (SUV). Arterial stiffness was determined by pulse wave velocity (PWV) using the Sphygmacor™ system. Pulse wave analysis was used to determine central blood pressure.
Results: There was no correlation between aortic PWV and ascending aortic SUV ($r=0.003$, $p=0.99$). Aortic PWV also did not correlate with visceral fat SUV ($r=0.09$, $p=0.57$) or abdominal aortic SUV ($r=0.058$, $p=0.844$). These values remained unchanged with arterial SUV blood correction. There was also no correlation between central blood pressure and aortic inflammation ($r=0.07$, $p=0.64$).
Conclusions: There was no relationship between FDG uptake, a surrogate of inflammation, in the aorta and within visceral fat, and aortic pulse wave velocity in patients with known cardiovascular disease.

P11.05
ABDOMINAL AORTIC ANEURYSMS EXHIBIT GREATER METABOLIC ACTIVITY DETECTED BY POSITRON EMISSION TOMOGRAPHY/COMPUTED TOMOGRAPHY (PET/CT) COMPARED TO MATCHED CONTROLS

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Background: Chronic inflammation is a hallmark characteristic in the pathophysiology of abdominal aortic aneurysms (AAA) and atherosclerosis. These two conditions also share a number of risk factors; however it is thought that their pathophysiologies are different. In this study we sought to prospectively investigate whether there was a greater degree of inflammation in the aortas of AAA patients compared to matched controls with atherosclerosis.
Methods: The aortas of 20 patients with infra-renal AAA and 20 age, sex and risk factor-matched controls with atherosclerotic disease were imaged using fluoro-deoxyglucose positron emission tomography (FDG-PET) with CT co-registration. Uptake of tracer directly reflects metabolic activity and has been shown to correlate with macrophage activity. Tracer uptake was analysed in various arterial segments by measuring maximum standard uptake values (SUV). Inflammatory biomarkers, including hsCRP, were also measured.
Results: The mean aneurysm diameter was 44mm (SD+/-9mm). Patients with AAA had higher uptake of FDG in the abdominal aorta compared with controls (SUV 2.19 vs. 1.99, $p=0.02$). The greatest uptake was seen in the aneurysmal sac (mean SUV 2.28 +/-0.55). AAA patients also had a higher level of serum inflammatory markers (hsCRP 2.76 vs. 1.74mg/L, $p=0.03$).
Conclusions: This study demonstrates there is greater in-vivo metabolic activity in patients with AAA. This suggests there is higher inflammatory cell load within the aortic wall in patients with AAA as reflected by higher levels of FDG uptake. This highlights the importance of targeting inflammation as a therapeutic strategy.

P11.06
COUPLING OF LEFT VENTRICULAR TWIST MECHANICS AND CENTRAL AUGMENTATION INDEX IN HEALTHY INDIVIDUALS

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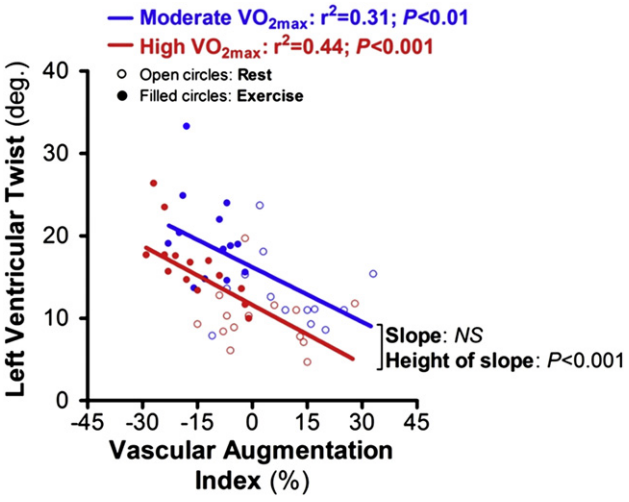
Objectives: To explore the influence of aerobic fitness ($VO_{2\ max}$) on the relationship between left ventricular (LV) twist and vascular augmentation index (AIx) in young healthy individuals.
Background: Systolic LV twist and central vascular wave reflection (AIx) likely interact, however, the relationship between LV twist and AIx is not known. We hypothesised that the lower LV twist previously shown in endurance athletes with high $VO_{2\ max}$ would be associated with a lower AIx.
Methods: 28 healthy males (21±2 yrs) were split into a moderate and high aerobic fitness group ($VO_{2\ max}$: 49.0±4.9 and 62.7±6.8 ml/kg/min, respectively, $p<0.0001$). Heart rate, blood pressure, LV twist and AIx were assessed at rest and during exercise (40% of peak power). Differences in dependent

variables between both groups were determined with two-way ANOVA. Relationships between LV twist and AIx were identified using Pearson's product moment correlation.
Results: Heart rate and blood pressure did not differ between the two groups at rest or during exercise ($p>0.05$). While LV twist and AIx were significantly related in both the moderate and high fitness group (r^2: 0.31 and 0.44, respectively, $p<0.01$), the high $VO_{2\ max}$ group had a significantly lower LV twist for the same AIx ($p<0.001$, see figure).
Conclusions: In young healthy individuals, LV twist and AIx are significantly related. However, the lower LV twist in individuals with high aerobic fitness cannot be explained by AIx, heart rate or blood pressure and, therefore, may indicate a previously unknown component of LV adaptation related to aerobic fitness.



P11.07
24 HOUR AMBULATORY CENTRAL BP MEASUREMENT REVEALS SIGNIFICANT VARIATION IN PULSE PRESSURE AMPLIFICATION BETWEEN DAY AND NIGHT

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Introduction: Brachial ambulatory blood pressure monitoring (ABPM) provides greater predictive value for cardiovascular events than clinic blood pressure (BP) readings. However, systolic BP varies throughout the arterial tree, such that brachial BP readings do not reliably indicate central (aortic) pressure. As yet, 24 hour ambulatory central BP, and central to peripheral pressure amplification have not been described.
Methods: 24 hour ambulatory brachial and central BP monitoring was undertaken in 122 healthy, treatment-naive individuals (71 females), using the mobilograph device (IEM, Germany). The mean age was 48±20 years (range 18-80 years). Ambulatory measurements were made every 30 minutes during the day and every 60 minutes overnight. Clinic (seated) BP was also assessed, prior to undertaking ambulatory measurements.
Results: Mean clinic (seated) BP was 130±21/79±11mmHg. During the daytime, mean ambulatory BP was 125±14/80±12mmHg (brachial) and 115±14/82±12mmHg (central). During the nighttime, both brachial (115±16/70±12mmHg) and central (107±15/71±11mmHg) ambulatory BP fell significantly ($P<0.001$ for all comparisons, Figure 1). However, the ratio between brachial and central pulse pressures (pulse pressure amplification) was significantly higher during the daytime (1.38±0.15) compared with nighttime (1.23±0.11, $P=0.002$).
Conclusions: Monitoring of ambulatory central BP reveals significant variation in pulse pressure amplification over a 24 hour period. These data indicate that ambulatory central and brachial BP are differentially affected by the activities of daily living. Further studies are required to investigate whether the prognostic value of ambulatory central BP is superior to ambulatory brachial BP.

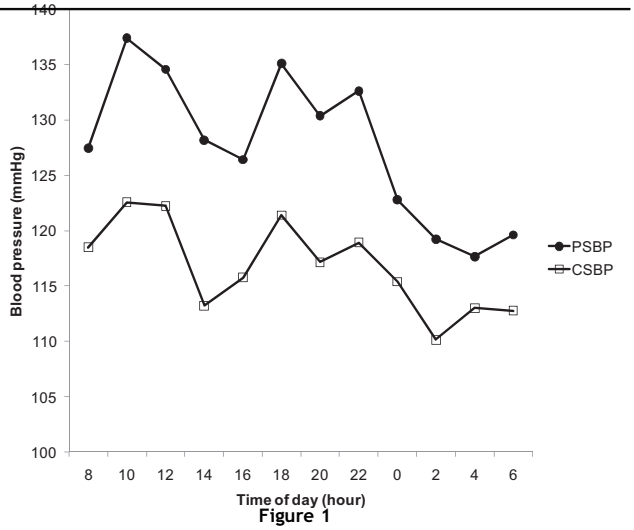

Figure 1

P11.08
THE COMPARISON OF ENOS MUTATION 894G>T AND ITS RELATIONSHIP WITH ARTERIAL STIFFNESS

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Acknowledgement: Grant ID 2246/2009
Background: Pulse wave velocity is a strong predictor of cardiovascular events and mortality. It is known that NO can influence arterial stiffness through vascular tone regulation. The presence of eNOS mutations can influence arterial stiffness. Purpose of the study was to investigate the relation between 894G>T mutation and arterial stiffness.
Material and method: The study included 70 subjects (63.4% women), in whom the 894G>T polymorphism (the PCR method) and arterial stiffness (using the TensioMedTMArteriograph) were determined. The mean age of the subjects was 59.81± 11.01 years, without significant sex differences.
Results: The distribution depending on the presence of genotypes was for the 894GT mutation as follows: 42.3% of the subjects were negative (GG), 40.8% heterozygous (GT) and 16.9% homozygous (TT). No significant differences were found between sexes (women vs men) regarding the presence of genotypes: GG 44.4% vs 38.5%, GT 44.4% vs 34.6%, TT 11.1 vs 26.9%, p=NS. Globally, there was no significant difference of the PWVAo values between homozygous and heterozygous or negative patients: 9.6±1.53m/sec in TT patients vs 10.36 ±1.79m/sec in GT patients vs 10.10±1.98 m/sec in GG patients(p=NS). There were no significant differences between the values of Aixb, AixAo, PP according to GG vs GT vs TT genotype (generally or per sexes), but homozygous patients (TT) had higher Aixb, PP values, respectively.
Conclusion: In the present study, the presence of the TT homozygote state was not associated with the increase of PWVAo, but seems to determine Aixb and PP increases.

		Mean	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
PWVAo	GG	10.10	1.98	9.32	10.87
	GT	10.36	1.79	9.67	11.04
	TT	9.60	1.53	8.56	10.63
Aixb	GG	-1.80	30.34	-13.13	9.52
	GT	3.65	29.79	-7.67	14.98
	TT	8.80	33.67	-13.81	31.43
AixAo	GG	34.22	17.95	27.51	40.92
	GT	40.52	16.26	34.33	46.70
	TT	35.72	18.66	23.86	47.58
PP	GG	52.20	12.71	47.45	56.94
	GT	54.82	15.38	48.97	60.68
	TT	56.25	14.09	47.29	65.20