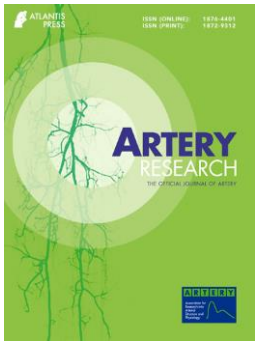

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P182: ARTERIES IN PATIENTS WITH HUNTINGTON'S DISEASE

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correlated with FMD ($r = 0.828$; $p = 0.011$; rspearman $= 0.738$; $p = 0.037$). No indices of BP variability correlated with cIMT or cDC.
Conclusions: BP variability, in particular ARV, shows a correlation with systemic but not local vascular stiffness in a sample of obese children, suggesting a relation between daily BP variability and arterial elastic properties. Further studies, especially perspective ones, are needed to clarify the pathophysiological significance of these relations.

P159
ASSOCIATION BETWEEN PULSE WAVE VELOCITY AND APNEA-HYOPPNEA INDEX IN PATIENTS WITH TYPE 2 DIABETES AND OBSTRUCTIVE SLEEP APNEA

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Introduction: Obstructive sleep apnea (OSA) is associated with increased cardiovascular (CV) risk. OSA is highly prevalent among patients with type-2 diabetes (T2D).
Patients with T2D have increased risk of cardiovascular events, and have an increased aortic stiffness.
Continuous Positive Airway Pressure (CPAP) treatment reduces severity of OSA, but whether it reduces CV risk remains unclear. One randomized trial with CPAP intervention and pulse wave velocity (PWV) as endpoint has shown a significant reduction in PWV after four months, in non-diabetic patients. The effect on patients with diabetes remains unknown.
Aim: Investigate the effects of CPAP treatment on PWV in patients with T2D and newly diagnosed OSA. Furthermore, investigate the relationship between PWV and severity of OSA.
Method: A randomized, controlled, multicenter study. 70 patients with T2D and newly diagnosed OSA randomized to: CPAP treatment or a control group. Data will be collected at baseline, 4 and 12 weeks. PWV was measured using SphygmoCor (AtCor Medical, Sydney, Australia) and AHI measured using ApneaLink (ResMed, Poway, CA, USA). Relationship between PWV and AHI was evaluated at baseline.
Results: Baseline data from the first 21 patients showed mean age 63 years ($\pm$8.1), mean systolic blood pressure (BP) was 134 ($\pm$12.5) mmHg, mean AHI was 30.2 ($\pm$12.4) and mean PWV was 11.6 ($\pm$1.9) m/s.
AHI was associated with PWV in multivariate analysis with adjustment for age and systolic BP, beta-coefficient 0.08, $p = 0.029$.
Conclusion: At baseline PWV and AHI were correlated. Progression of the study will reveal if CPAP treatment can lower PWV in this cohort.

P160
VASCULAR ABNORMALITIES AND HAEMODYNAMIC PATTERN IN OBESE YOUNG ADULTS

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Background: Obesity is linked to a higher prevalence of risk factors, metabolic and inflammatory pathways conducting to increased vascular disease and CV risk.
Objective: To assess vascular disarrangements and haemodynamic patterns in obese young subjects (O) compared with matched lean (L) controls, using non invasive methods.
Methods: From the database of our Non Invasive Vascular Lab with 3964 first evaluated patients, we performed a case control study with 363 sujects, 268 obese and 95 lean, age and sex matched controls. We measured IMT, Plaque analysis, PWV, Endothelial Function (EF) and arterial stiffness (CAP and Aix) (AS) using an oscillometric device (Arteriograph, Tensiomed. Hungary®) and non invasive haemodynamic evaluation using impedance cardiography (Z Logic Exxer®).
Results: Age (O 42.5 + 5; L 43.5 + 11) and sex % (O 80.6%; L 78%) were matched. BMI (O 33.5 + 3.3 L 25 + 1.1Kg/m^2), waist (O110.4 + 7.5; L 91.2 + 6.1cm) and BP (SBP O 139.8 + 16.8; L119 + 8.8 and DBP O 89 + 3.9; L 74.3 + 8 mmHg) were higher in O ($p < 0.001$).CV Risk Factors in O: HTN 68% DLP 59.7% SMKG 24.2% DBT2 7.8% SED 72.4%.The % of abnormalities in IMT (O/L : 65.8/25.3%), Plaques (75.6/38.9%), EF (57.5/33.7%) and PWV (41.4/17.9%) were higher in O ($p < 0.001$). Central and Peripheral PP were higher in O but not Aix. CI was significantly lower and PVRI and Thoracic Fluid content higher in O.
Conclusion: Young obese patients present a higher prevalence of vascular disarrangements either structural and functional and a haemodynamic pattern of high peripheral resistance with volume expansion that may explain the role of this condition as a CV risk factor.

P161
ROLES OF ANGIOPOIETINS 1 AND 2 ON ARTERIAL FUNCTION DURING A TREATMENT TRIAL IN PEOPLE WITH OR AT RISK OF DIABETES

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Background/ Objective: Vascular growth factors angiopoietin-1 (Ang1) and -2 (Ang2) regulate vascular permeability and inflammation, Ang2 likely as Ang1's selective antagonist. Their role before or in type 2 diabetes (pre-&T2D) is unknown. We hypothesised that higher circulating Ang1 and lower Ang2 (=lower Ang2/1 ratios) would be linked to increased arterial stiffness *and its change* over the trial, independent of blood pressure (BP).
Methods: ELISA assays were performed from 60 participants with all time-points of plasma samples from 'VaSera', a trial of single-centre, double-blind, parallel, randomised, controlled, 2x2 factorial design. Interventions were spironolactone and beetroot juice, a NO^{3-} donor, with doxazosin and placebo juice respectively to control for BP change (Δ) over the trial. Vascular measurements were aortic pulse wave velocity (aPWV), cardiac-ankle pulse wave velocity (CAVI), analysed by multiple regression adjusted for baseline BP and ΔBP over 6 months.
Results: Baseline Ang1 was positively while higher baseline Ang2 was negatively associated with baseline aoPWV at ($ß = 0.37$, $p = 0.01$; $ß = -0.27$, $p = 0.047$, respectively), independent of BP, BMI and DM status, so baseline $r = -0.45$ for the Ang2:1 ratio with aPWV, and $r = 0.39$ for ΔaPWV over the trial. Higher baseline Ang1 independently predicted decreased aoPWV over 6 months ($ß = -0.44$m/sec per ng/ml, $p = 0.006$). Angiopoietin concentrations were not associated with CAVI or BP.
Conclusions: Angiopoietins were related to baseline aPWV, independently of BP, and to ΔaPWV over the trial, also independent of BP change, but were unrelated to CAVI or BP. Monitoring and manipulating Angiopoietins may help arterial health in pre-&T2DM.

Poster Session II — Special Populations
P182
ARTERIES IN PATIENTS WITH HUNTINGTON'S DISEASE

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Background: Huntington's disease (HD) is a neurodegenerative disorder leading to the progressive death of neurons in various brain regions. Although it is a disease of the central nervous system (CNS), mortality surveys indicate that heart disease is one of the mayor causes of death in HD patients. The mechanisms of cardiac pathophysiology of the disease remain unknown. It might be a consequence of altered activity of autonomic nervous system as part of the CNS.

Methods: Our study evaluated global risk factors for coronary heart disease (CHD), structure and function of precerebral arteries in 41 HD subjects and 41 matched controls. HD subjects were divided into groups by the United Huntington disease rating scale (presymptomatic-PHD, early-EHD, mid-stage-MHD and late-LHD). CHD risk factors assessment and Doppler examination of precerebral arteries were performed, including measurements of the carotid artery intima-media thickness (IMT), and parameters indicating local carotid artery distensibility (stiffness index β, pulse wave velocity, pressure strain elasticity module and carotid artery compliance).
Results: In the HD and controls we identified a comparable number of non-obstructive plaques (<50% lumen narrowing). No obstructive plaques (>50% lumen narrowing) were found in patients or controls. There was significantly increased IMT in MHD patients. In PHD and EHD the parameters of arterial stiffness were significantly higher and the carotid artery compliance was significantly lower.
Conclusions: Our results reveal functional vascular pathology in PHD, EHD, and MHD. Precerebral arteries dysfunction in HD therefore appears to be mostly functional and in agreement with autonomic nervous system dysfunction in HD.

P183
INCREASED ARTERIAL STIFFNESS IS ASSOCIATED WITH POORER LEFT VENTRICULAR STRUCTURE AND FUNCTION IN ADOLESCENCE

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Introduction: Increased arterial stiffness (AS) in adults causes increased left ventricular (LV) afterload, putting additional strain on the heart. Long-term, this can lead to an adverse cardiovascular phenotype and AS has been found to be a determinant of CVD, independent of traditional cardiovascular risk factors. However, limited evidence exists for this association in children and adolescents.
Methods: 1625 young adults (age 17y; 46% male) from the Avon Longitudinal Study of Parents and Children (ALSPAC), a UK based birth cohort, underwent echocardiography and carotid-to-femoral pulse wave velocity (PWV) measures. Linear regression was used to investigate associations between PWV and LV structure and function, including LV mass, relative wall thickness (RWT), left atrial diameter (LAD), mitral inflow (E:A), midwall fractional shortening (MFS) and tissue Doppler peak systolic velocity (s').
Results: Elevated PWV was associated with increased LV mass and RWT and inversely associated with E:A and MFS (Table 1). Adjustment for age and sex attenuated the association with LV mass. Further adjustment for body mass index (BMI), systolic blood pressure (SBP), alcohol, smoking and socioeconomic status (SES) attenuated the association with RWT, whilst the associations with E:A and MFS remained.

Table 1.

	Unadjusted		Age and sex adjusted		Age, sex, BMI, SBP, alcohol, smoking, SES adjusted	
	Coefficient ± SE	P value	Coefficient ± SE	P value	Coefficient ± SE	P value
LV mass$^{2.7}$ (g/m$^{2.7}$)	0.55 ± 0.21	0.009	−0.066 ± 0.225	0.768	−0.123 ± 0.225	0.584
RWT	0.007 ± 0.002	<0.001	0.008 ± 0.002	<0.001	0.005 ± 0.00	0.069
LAD (cm)	−0.004 ± 0.015	0.784	−0.017 ± 0.015	0.268	−0.010 ± 0.016	0.516
E:A	−0.054 ± 0.014	<0.001	−0.073 ± 0.015	<0.001	−0.067 ± 0.019	<0.001
MFS (%)	−0.40 ± 0.079	<0.001	−0.246 ± 0.085	0.004	−0.232 ± 0.1	0.022
s' (cm/s)	0.078 ± 0.05	0.138	0.004 ± 0.057	0.937	−0.038 ± 0.067	0.567

Conclusion: Increased AS is already associated with poorer measures of LV structure and function in adolescence. Adjustment for potential confounders did not substantially attenuate these associations with LV function.

P184
INCREASED ARTERIAL STIFFNESS IS ASSOCIATED WITH HIGH INFLAMMATORY ACTIVITY IN RHEUMATOID ARTHRITIS

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Background: Patients with rheumatoid arthritis (RA) have a high cardiovascular (CV) risk. Relationships between inflammation and arterial stiffness (AS) in patients with RA are not well understood.
Aim: To evaluate parameters of AS and their associations with inflammation in patients with RA.
Methods: 62 patients with RA without known CVD were examined (73%females, age 58,5 ± 15,4 years, 13% smokers, 61% with AH). Median duration of RA was 8 years (IQR 3—17).
Median hsCRP 12,1 mg/dl (IQR 2,2; 23,4), median rheumatoid factor (RF) 32,5 IU/ml (IQR 8,3; 173 IU/ml). All patients received disease-modifying antirheumatic drugs.
Median duration of AH 6,1 years (IQR 0—10 years). Parameters of AS were assessed by applanation tonometry. Cardio-ankle vascular index (CAVI) and vascular age were measured by VaSera 1500. PWV > 10,0 m/s and CAVI > 9,0 were considered as AS increase. $p < 0.05$ was considered significant.
Results: Mean PWV was 9,3 ± 3,2 m/s. PWV > 10m/s was observed in 32,3% patients, CAVI > 9,0 in 25,8%. Patients with PWV > 10m/s were older (69,8 ± 8,5 vs 53,2 ± 15,1 years), had higher BMI (29,3 ± 6,5 vs 24,7 ± 4,8 kg/m^2), duration of AH (median 11,5 [IQR 5,5; 17] vs 0 [IQR 0; 5] years), higher SBP levels (144 ± 20 vs 123 ± 14 mmHg), higher levels of hs-CRP (median 22 [IQR 13,3; 60] vs 6,7 [IQR 1,6; 17,2]mg/dl), higher CAVI (9,5 ± 1,1 vs 7,6 ± 1,4), vascular age (71 ± 8,4 vs 53,4 ± 17,5 years). There were positive correlations between PWV and age (r = 0,7), BMI (r = 0,4), SBP (r = 0,6), hs- CRP (r = 0,3), vascular age (r = 0,6). Multiple regression analysis confirmed that AH duration (β = 0,2, p = 0.03), SBP (β = 0,6, p < 0.0001) and hs-CRP (β = 0,3, p = 0.000009) were independent predictors of AS increase.
Conclusion: Elevation of hsCRP as well as other traditional risk factors is an independent predictor of PWV increase in patients with RA.

P185
CARDIO-ANKLE VASCULAR INDEX AND PLASMA LEVELS OF LEPTIN AND ADIPONECTIN IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

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Objective: Systemic lupus erythematosus (SLE) is a chronic inflammatory disease associated with vascular derangement [1]. Leptin and adiponectin are adipokines with immunomodulatory and vascular functions [2]. We studied the association between arterial stiffness and plasma leptin and adiponectin levels in SLE patients in Ghana.
Methods: In a case control design involving 80 SLE patients and 90 non-SLE controls, arterial stiffness was assessed by cardio-ankle vascular index