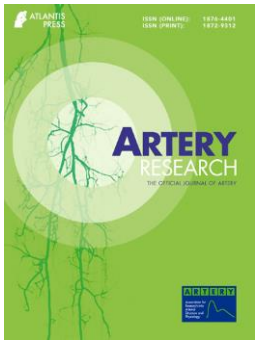

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P160: ASSESSMENT OF CAROTID PULSE WAVE VELOCITY (CARPWV) IN PATIENTS WITH ANKYLOSING SPONDYLITIS

Guillermo Alanis-Sánchez, Carlos Ramos-Becerra, David Cardona-Müller, Patricia Quezada-Fernández, Sara Pascoe-González, César Murguia-Soto, Ernesto Cardona-Muñoz

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Purpose/Background/Objectives: Aortic calcifications and inflammation are independent predictors of adverse cardiovascular events. We sought to investigate the association of aortic calcifications and inflammation with in-hospital morbidity and mortality of patients with acute coronary syndrome (ACS).
Methods: Two hundred patients (mean age 66 ± 15 years, 150 males) admitted to our Hospital with ACS from 2016-2017 were included in the study. The extent of aortic arch calcification (AAC) on a postero-anterior plain chest X-ray was divided into four grades (0 to 3). Grades 0 to 1 and grades 2 to 3 were categorized as lower and higher AAC grade respectively. High-sensitivity C-reactive protein (hsCRP) was also assessed. In-hospital complications that included reinfarction, arrhythmias, heart failure, stroke, mechanical complications, renal failure, surgery and death were assessed in all patients.
Results: The majority of patients (n = 132, 66%) presented with non-ST elevation ACS, whereas 68 patients as ST-elevation myocardial infarction (STEMI) (n = 68, 34%). Seventy-seven (38.5%) patients presented with one or more in-hospital complications (6 of them died). Higher AAC grade was visible in 44 patients (22%). Patients with higher AAC had increased risk (Odds ratio [OR] = 2.29, 95% Confidence intervals [CI] 1.03 to 5.12, p = 0.043) for in hospital complications after adjusting for age, gender, STEMI/NSTE-ACS diagnosis (OR = 4.10, 95% CI 2.08 to 8.05 for STEMI diagnosis, $p < 0.001$) and hsCRP (OR = 1.80, 95% CI 1.10 to 2.93, p = 0.02).
Conclusions: Our study shows that simple tools can be used to assess the in-hospital risk of ACS patients. It also highlights the prognostic role of arterial stiffness and low-grade inflammation in ACS.

P158
ARTERIAL STIFFNESS IN THE VERY OLD: THE AGA@4LIFE RESEARCH PROJECT

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Objective: To study the determinants of Arterial Stiffness (AS) in the elderly.
Design and method: Cross-sectional, observational study of elderly participants. Blood Pressure (BP) and arterial function parameters were measured with a validated device. Clinical and demographic information was gathered, as well as the estimation of global cardiovascular risk, health related quality of life, dietary profile and cognition. Cholesterol and glycaemia were measured.
Results: 54 Participants recruited for the project, with a mean age of 73.0 ± 6.0 years (range: 65—94 years). Central BP was 119.4 ± 16.2 mmHg and 38.3 ± 11.6 mmHg, respectively for aortic systolic and pulse pressures. Mean pulse wave velocity (PWV) was 10.6 ± 1.36 m/s and the augmentation index was 27.0 ± 17.6%. Significant differences were depicted as a function of gender, with males presenting higher BP and PWV. The proportion of participants with increased PWV, according to the available reference values, was 31.6%. Participants with increased PWV had higher brachial and central BP, higher BMI and higher abdominal fat. Functionality was worst in high PWV participants, as well as cognitive function. Multivariate linear regression indicated age ($\beta = 0.172$; CI: 0.158;0.185; $p < 0.001$), and aortic systolic BP ($\beta = 0.033$; CI: 0.028;0.038; $p < 0.001$) as independent determinants of PWV. Also Hypertension (OR = 15.83; IC:8.16—30.7) and Diabetes (OR=2.34;IC: 0.99-5.50) were independently associated with AS.
Conclusions: Accelerated AS is a common finding in the elderly and is highly associated with hypertension and diabetes. A strong association of AS with central BP and reflected waves is also of notice in this particular population.

P159
CORRELATION BETWEEN INFLAMMATORY STATE AND ARTERIAL STIFFNESS

Daniele Brustolim [1], Lucelia Magalhaes [2], Diorlene Silva [2], Rodrigo Sant'Ana de Lima [2], Vinicius Louzada Castro [3], Daniel Malta Ribeiro [4], Caroline Rodrigues Fidelman [4], Natalia Damasceno [4], Larissa Vasconcelos [4], Caroline Ventura [2], Vascor Group [2]
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Pulse wave velocity (PWV) is gold standard for assessing arterial stiffness. Studies have shown that people with metabolic syndrome have insulin resistance and that after the onset of diabetes, cardiovascular risk is intensely increased, high-sensitive C-reactive protein (hsCRP) (1). Relate influence of changes in pulse wave velocity in the severity of the inflammatory state (2).
Methods: A population-based cross-sectional study representative of a neighborhood of Salvador-BA, Brazil. The overall sample is randomized in adults from the assigned area, from December 2016 to May 2018 comprise 64 people. PWV was the measuring velocity between the carotid and right femoral wave. The flattening tonometer SphygmoCor® apparatus (XCEL, AtCor Medical, Australia). Blood samples were collected to biochemistry analysis, ADVIA1800® (SiemensHealthcare Japan/Canada). The committee for research FTC protocol (No1827621). Spearman's linear correlation coefficient between the laboratory tests and adjusted PWV were stratified according to the increased risk level of adjusted PWV. STATA v.12 for data analysis. The level of statistical significance was set at 5%.
Results: Table 1 (image 1), predominance of women (72.3%), (n = 64). When compared to the group with normal pulse wave velocity, there was an increase in the parameters of the laboratory tests in the group with an increased risk of arterial stiffness (adjusted PWV ≥ 10), the correlations in this group and the PWV were positive and weak, except for the glycemia was negative, but they were not statistically significant. Already in the group with normal PWV, the correlations were positive and weak, only triglycerides presented.
Conclusion: New molecular markers is necessary for correlate low intensity inflammation and arterial stiffness.

Table 1. Percentage of altered parameters in exams, Pearson correlation coefficient between examinations and adjusted PWV, mean and standard deviation and respective confidence intervals of the exams (n = 64).

Laboratory tests	Changed Parameters n (%)	(r; p-value)	Mean ± standard deviation	IC95%
	Pulse wave velocity set ≥ 10 (n=17)			
Homa	3 (17,7)	(r=0,0479;0,8553)	3,0 ± 0,52	1,9 – 4,1
hs-CRP	6 (35,3)	(r=0,2611;0,3115)	0,4 ± 0,1	0,2 – 0,6
Triglycerides	2 (11,8)	(r=0,1272;0,6225)	149,2 ± 32,7	79,9 – 218,4
Cholesterol	6 (35,3)	(r=-0,0663;0,800)	218,5 ± 12,1	192,9 – 244,1
HDL	14 (82,4)	(r=0,3434;0,1772)	52,3 ± 2,6	46,8 – 57,8
LDL	7 (46,7)	(r=0,1243;0,6589)	148,6 ± 10,5	126,2 – 171,0
Insulin	1 (5,9)	(r=0,0657;0,8022)	11,2 ± 1,8	7,2 – 15,1
Blood glucose	8 (50,0)	(r=-0,0415;0,8787	112,9 ± 8,9	94,0 – 131,8
	Pulse wave velocity set < 10 (n=47)			
Homa	7 (14,9)	(r=0,1253;0,4012)	2,6±0,3	2,0 - 3,3
hs-CRP	10 (21,3)	(r=0,1311;0,3799)	0,3±0,1	0,2 - 0,5
Triglycerides	5 (10,6)	**(r=0,3144;0,0314)**	110,5±9,9	90,6 - 130,4
Cholesterol	8 (17,0)	(r=0,2766;0,0599)	199,1±5,9	187,2 - 211,0
HDL	40 (85,1)	(r=0,1559;0,2952)	52,8±2,2	48,5 - 57,2
LDL	10 (21,3)	(r=0,1478;0,3216)	125,7±5,1	115,5 - 135,9
Insulin	3 (6,4)	(r=0,0528;0,7245)	10,4±1,2	8,1 - 12,7
Blood glucose	15 (31,9)	(r=0,2024;0,1725)	99,3±3,6	92,0 - 06,7

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P160
ASSESSMENT OF CAROTID PULSE WAVE VELOCITY (CARPWV) IN PATIENTS WITH ANKYLOSING SPONDYLITIS

Guillermo Alanis-Sánchez [1], Carlos Ramos-Becerra [2], David Cardona-Müller [3], Patricia Quezada-Fernández [3], Sara Pascoe-González [3], César Murguia-Soto [3], Ernesto Cardona-Muñoz [3]
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Introduction: Ankylosing spondylitis (AS) is an inflammatory rheumatic disease associated with accelerated atherosclerosis and increased cardiovascular morbidity and mortality.
Objectives: To assess the local arterial stiffness in carotid artery in subjects with AS compared with controls evaluated by carotid artery pulse wave velocity (carPWV).
Methods: Ultrasound examinations were conducted with a Mylab One color Doppler ultrasound diagnostic system (Esaote, Firenze, Italy), the right common carotid artery (RCCA) was scanned, using a 5-12 MHz vascular probe with built-in quality arterial stiffness (QAS) which calculate carPWV.
Results: Forty-seven male subjects (20 with Ankylosing Spondylitis and 27 controls) aged between 20 and 75 (mean age 41.17 $\pm$ 11) were evaluated. AS patients have not Hypertension, history of cardiovascular risk factors or smoking). Higher carPWV was observed in patients with AS (6.27 $\pm$ 0.72 vs 5.56 $\pm$ 1.02 m/s; p = 0.0123) compared with controls, respectively.
Conclusions: AS subjects showed higher carPWV compared with controls, this novel assessment for local arterial stiffness could be useful in the future to calculate cardiovascular risk, more studies should be developed with this method in this pathology in our population.

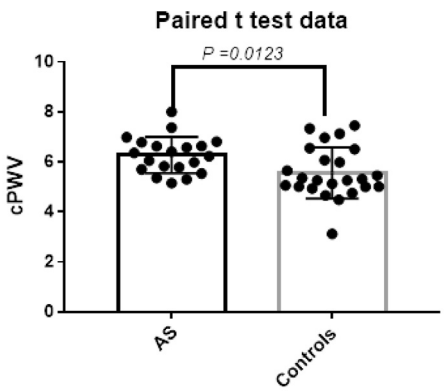

Figure 1. AS, ankylosing spondylitis; cPWV, carotid artery pulse wavevelocity; SD: standard deviation. Continuous variables are shown as median with analysis by t-test.

Poster Session II — Other

P161

RELATIONSHIP OF FIBRINOGEN WITH ARTERIAL STIFFNESS IS DIFFERENT ACCORDING TO GENDER. EVA STUDY

Leticia Gomez-Sanchez [1], Marta Gomez-Sanchez [1], Natalia Sanchez-Aguadero [2], Cristina Lugones-Sanchez [2], Maria C. Patino-Alonso [1], Sara Mora-Simon [1], Jose A. Maderuelo-Fernandez [2], Emiliano Rodriguez-Sanchez [2]
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Objectives: To analyze the association of arterial stiffness with the fibrinogen in general population without previous cardiovascular diseases. Differences by gender.
Methods: A 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 and Cardio Anckle Vascular Index (CAVI) using the VaSera. Plasma fibrinogen was measured in blood.
Results: Mean values: age 55.9 $\pm$ 14.2 years (Males = 65.9 $\pm$ 14.3 years, Females = 55.8 $\pm$ 14.2 years, p = 0.935); CAVI:8.0 $\pm$ 1.4 (Males = 8.1 $\pm$ 1.5, Females = 7.9 $\pm$ 1.4, p = 0.043); cfPWV: 6.5 $\pm$ 2.0 m/sec (Males=6.8 $\pm$ 2.2 m/sec, Females=6.2 $\pm$ 1.8m/sec, p $<$ 0.001) and fibrinogen: 314 $\pm$ 70 mg/Dl (Males = 198 $\pm$ 65 mg/Dl, Females = 330 $\pm$ 71 mg/Dl, p $<$ 0.001). CAVI and CfPWV showed positive correlation with fibrinogen (r = 0.248 and r = 0.147 in males p $<$ 005 in both cases), but not in the females (r = 0.126 and r = 0.101 p $>$ 0.05 in both cases). In the multiple regression analysis after adjusting for age, cardiovascular risk factors, drugs and lifestyles, the association of CAVI with fibrinogen was β = 0.249 (95% CI 0.033to0.464) p = 0.024, and of the cfPWV with fibrinogen was β = 0.01 (95% CI -0.031 to 0.042) p = 0.684 in males, without finding association between CAVI, cfPWV with fibrinogen in the case of females (p = 0.144 and p = 0.825 respectively).
Conclusions:CAVI and cfPWV showed a positive correlation to fibrinogen in males in general population without previous cardiovascular diseases, but not in females. However, after adjusting for confounding factors, the association only remains with CAVI in males.

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P162

ARTERIAL STIFFNESS AND BODY COMPOSITION IN CHILDREN AND ADOLESCENTS

Tommy Cai [1,2], Alice Meroni [1], Hasthi Dissanayake [1], Melinda Phang [1], Ahmad Qasem [3], Julian Ayer [1,4], Mark Butlin [3], Alberto Avolio [3], David Celermajer [1,5], Michael Skilton [1]
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Objectives: Carotid-femoral pulse wave velocity (cfPWV) is a validated non-invasive measure of aortic stiffness. Risk factors for cfPWV are well described in adulthood, and furthermore cfPWV is associated with incident cardiovascular disease in adults (1). However, risk factors for arterial stiffness in childhood are poorly described (2). Accordingly, we sought to determine the risk factors for cfPWV in childhood and adolescence and hypothesized that cfPWV would be higher amongst those with greater adiposity.
Methods: We prospectively recruited 88 healthy children (mean age = 11.0 $\pm$ 5.3 years old). Age, weight, height, and blood pressure were measured. cfPWV was assessed using a semi-automated cuff-based device (Sphygmocor XCEL; AtCor Medical, Australia), and body composition using air displacement plethysmography (BOD POD; Cosmed, Italy) (3). Associations with cfPWV were determined by multivariable linear regression, with subsequent mediation analyses to inform likely causal pathways.
Results: After adjusting for age and sex, cfPWV was significantly associated with weight, body mass index (BMI), systolic blood pressure, mean blood pressure, heart rate, and lean body mass (LBM), while LBM was significantly associated with height, weight, BMI and fat mass (Table 1). After further adjusting for weight, mean blood pressure and heart rate, LBM remained significantly associated with cfPWV (ß = 0.68; p = 0.007). Mediation analyses indicate that weight mediates the association between age and cfPWV (PM = 76%), and that LBM mediates the relationship between weight and cfPWV (Figure 1).
Conclusion: Higher cfPWV in healthy children and adolescents is a function of growth, and this association may be in turn mediated by higher LBM rather than adiposity.

P163

REGIONAL DIFFERENCES IN GEOMETRICAL FEATURES AND LAYER-SPECIFIC RESIDUAL STRESSES IN THE BOVINE DESCENDING THORACIC AORTA

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Background: The Opening Angle (OA) is widely used as an index of the residual stresses and strains present in the arterial wall not subjected to internal