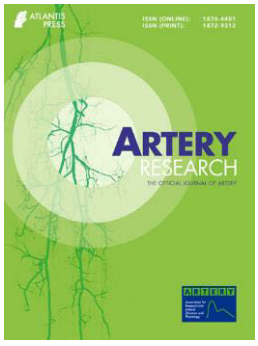

Artery Research

ISSN (Online): 1876-4401 ISSN (Print): 1872-9312
Journal Home Page: https://www.atlantis-press.com/journals/artres

P157: AORTIC CALCIFICATIONS AND INFLAMMATION ARE ASSOCIATED WITH IN-HOSPITAL COMPLICATIONS IN ACUTE CORONARY SYNDROME

Konstantia-Paraskevi Gkini, Dimitrios Terentes-Printzios, Charalambos Vlachopoulos, Iosif Koutagiar, Angeliki Rigatou, Stavroula Pantou, Christos Georgakopoulos, Dimitrios Tousoulis

To cite this article: Konstantia-Paraskevi Gkini, Dimitrios Terentes-Printzios, Charalambos Vlachopoulos, Iosif Koutagiar, Angeliki Rigatou, Stavroula Pantou, Christos Georgakopoulos, Dimitrios Tousoulis (2018) P157: AORTIC CALCIFICATIONS AND INFLAMMATION ARE ASSOCIATED WITH IN-HOSPITAL COMPLICATIONS IN ACUTE CORONARY SYNDROME, Artery Research 24:C, 125–126, DOI: https://doi.org/10.1016/j.artres.2018.10.210

To link to this article: https://doi.org/10.1016/j.artres.2018.10.210

Published online: 7 December 2019

[10]*Research Center in Sports Sciences, Health and Human Development, CIDESD, University Institute of Maia, Maia, Portugal*
[11]*School of Health Sciences and Institute of Biomedicine — iBiMED, University of Aveiro, Aveiro, Portugal*

Objective: Carotid-femoral Pulse Wave velocity (cfPWV), the gold standard for measuring stiffness, is a marker of organ damage (OLD). Even though cfPWV correlates with casual (BPc), central (CBP) and ambulatory (ABPM) blood pressure (BP), evidence is limited for resistant hypertension (RH).
Method: Thirty-three patients (age, 56.1 ± 8.2 years; weight, 78.0 ± 12.4 kg; height, 1.62 ± 0.08 m) with RH participated in a cross-sectional study. Outcomes included clinical data, BPc, ABPM, and carotid-femoral, cfPWV. Correlation analysis was conducted to assess the association between variables; independent t-tests were conducted to compare variables between those participants with cfPWV $<$ and $\geq$ 10 m/s.
Results: Patients (20 women and 13 men) presented a peripheral systolic and diastolic BPc of 144.0 ± 3.8 mmHg and 82.0 ± 1.9 mmHg, respectively. The cfPWV correlated with age ($r = 0.356$, $p = 0.045$), 24 h systolic BP (24 h SBP) nightime pulse pressure (night PP), 24 h pulse pressure (24hPP), casual systolic (SBPc) and diastolic BP (DBPc), central systolic (CSBP), diastolic (CDBP) and central pulse pressure (CPP); controlled for age the correlation remained significant for 24h SBP ($r=0.446$, $p=0.009$) 24hPP ($r=0.464$, $p=0.007$), nightPP ($r=0.365$, $p=0.036$), SBPc ($r=0.620$, $p<0.001$), DBPc ($r=0.488$, $p=0.004$), PPc ($r=0.592$, $p<0.001$), central SBP ($r=0.587$, $p<0.001$), central DBP ($r=0.487$, $p=0.001$) and central PP ($r=0.506$, $p=0.003$). Patients with lower values of cfPWV ($n=26$) showed lower SBPc (142.8 ± 15.9 vs. 162.6 ± 30.9 mmHg, $p=0.025$), central SBP (136.0 ± 15.7 vs. 154.1 ± 31.8 mmHg, $p=0.041$) and PP (49.6 ± 9.5 vs. 60.9 ± 20.8 mmHg, $p=0.043$) than patients with cfPWV$\geq$10 m/s ($n=7$).
Conclusion: Our data shows that cfPWV correlates with SBPc, 24hSBP, 24hPP and CSBP, after controlled for age, in patients with RH.
Acknowledgments: This work is financed by FEDER Funds through the Operational Competitiveness Factors Program - COMPETE and by National Funds through FCT - Foundation for Science and Technology within the project "PTDC/DTP-DES/1725/2014".

P155
DETERMINANTS OF PULSE WAVE VELOCITY IN CHILDREN

Cristina Silva [1], Mariana Formigo [1], Nuno Formigo [2,3], Sara Freitas [1], Cristina Cunha [1], Margarida Rocha [1], Clarisse Neves [1], Laura Castro [1], Filipe Gonçalves [1], Maria J. Cotter [4], Pedro G. Cunha [1,5,6], Jorge Cotter [1,5,6]
[1]*Center for the Research and Treatment of Arterial Hypertension and Cardiovascular Risk, Hospital Senhora da Oliveira, Guimarães, Portugal*
[2]*Department of Biology, Faculty of Sciences of University of Porto, Portugal*
[3]*CIIMAR - Interdisciplinary Centre of Marine and Environmental Research, University of Porto, Portugal*
[4]*Department of Natural Sciences, Escola E.B. 2,3 João de Meira, Guimarães, Portugal*
[5]*Life and Health Sciences Research Institute, School of Medicine, University of Minho, Braga, Portugal*
[6]*ICVS/3B's - PT Government Associate Laboratory, Braga/Guimarães, Portugal*

Background: Arterial stiffening measured by Pulse Wave Velocity (PWV) predicts cardiovascular events and mortality in adults. It advances with age and seems accelerated in children with certain disease conditions such as chronic kidney disease or diabetes. The aim of this study was to determine factors that influence PWV in children.
Methods: PWV was captured in 285 children aged 10-14 years attending a Portuguese school. The effects of sex, age, height, weight, body mass index, waist circumference, blood pressure, heart rate and sodium excretion in 24-h urinary samples in PWV were tested.
Results: PWV correlated positively with age, height, systolic blood pressure, diastolic blood pressure and heart rate in males and females ($p < 0.05$) and with weight in males ($p < 0.05$). Major predictors for PWV in a multivariate regression analysis were gender, height, weight, diastolic blood pressure, heart rate and body mass index.
Conclusion: Our study found several determinants of PWV in children, some of them modifiable and interfering with cardiovascular outcomes. Future research may provide clarity to the association between PWV in children and cardiovascular events in adulthood.

P156
CARDIO ANKLE VASCULAR INDEX (CAVI) AS ARTERIAL STIFFNESS MARKER IN SUBJECTS WITH ANKYLOSING SPONDYLITIS

Guillermo Alanis-Sánchez [1], Ernesto Cardona-Muñoz [2], David Cardona-Müller [3], Sylvia Totsuka-Sutto [3], Oscar Mares-Flores [2], César Murguia-Soto [2], Diego Castañeda-Zaragoza [4], David Montes-Martínez [5], Carlos Ramos-Becerra [6]
[1]*MSc Student, West Lab ICORD, University of British Columbia, USA*
[2]*Arterial Stiffness Laboratory, Department of Physiology, University of Guadalajara, USA*
[3]*Arterial Stiffness Laboratory, Department of Physiology, University of Guadalajara, Mexico, USA*
[4]*Arterial Stiffness Laboratory, University of Guadalajara, Mexicio, USA*
[5]*Arterial Stiffness Laboratory, Department of Physiology, University of Guadalajara, Mexico, USA*
[6]*University of Guadalajara, Department of Physiology, Arterial Stiffness, USA*

Background: Ankylosing spondylitis (AS) is a chronic, inflammatory disease of the axial spine that can manifest with various clinical signs and symptoms[1].Cardio-ankle vascular index (CAVI), which is calculated based on the stiffness parameter thus obtained, is theoretically independent of changes in blood pressure. With this distinct advantage, CAVI has been widely applied clinically to assess arterial stiffness in subjects with or without known cardiovascular diseases[2].
Objectives: The aim of this study was to evaluate the Cardio Ankle Vascular Index (CAVI) in subjects with ankylosing spondylitis pared with controls free of morbidities.
Methods: We enrolled 41 participants in this study. Eighteen patients with diagnosed AS and 23 controls free of comorbidities. CAVI was measured by VaSera VS-1000 (Fukuda- Denshi Company, Ltd, Tokyo, Japan).
Results: The results are expressed as mean ± standard deviation for continuous variables. The data were analyzed using SPSS v. 24 (SPSS Inc., Chicago, IL). The normality of the data was evaluated with Shapiro-Wilk test. A two-tailed $p < 0.05$ was considered statistically significant. Individuals with AS exhibited greater pSBP ($p < 0.01$), DBP ($p < 0.05$), and MBP ($p < 0.01$) compared to controls. Moreover, in the AS group we observed a higher CAVI with a mean difference of 1.14 ($p < 0.01$, 95% CI of .41 to 1.8) (Figure 1).
Conclusion: AS is a chronic inflammatory disease that primarily affects the articular joints of the spine. Individuals with ankylosing spondylitis showed increased CAVI, this contributes to explain the higher risk of cardiovascular disease in this pathological condition.

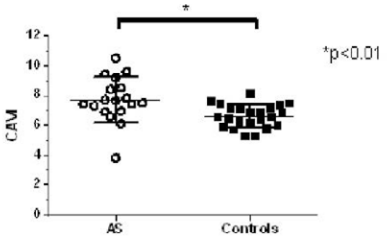

Figure 1. Cardio-ankle vascular index (CAVI) in patients with ankylosing spondylitis (AS) compared to controls

References
1. Van der Heijde D, Ramiro S, Landewé R et al.: 2016 update of the ASAS-EULAR management recommendations for axial spondyloarthritis. Ann Rheum Dis 2017; 76: 978-91.
2. Shirai K, Utino J, Otsuka K, Takata M. A novel blood pressure-independent arterial wall stiffness parameter; cardio-ankle vascular index (CAVI). J Atheroscler Thromb. 2006;13(2):101—107

P157
AORTIC CALCIFICATIONS AND INFLAMMATION ARE ASSOCIATED WITH IN-HOSPITAL COMPLICATIONS IN ACUTE CORONARY SYNDROME

Konstantia-Paraskevi Gkini, Dimitrios Terentes-Printzios, Charalambos Vlachopoulos, Iosif Koutagiar, Angeliki Rigatou,

Stavroula Pantou, Christos Georgakopoulos, Dimitrios Tousoulis
Hypertension and Cardiometabolic Syndrome Unit, 1st Department of Cardiology, Medical School, National and Kapodistrian University of Athens, Hippokration Hospital, Athens, Greece

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

Telmo Pereira
Polytechnic Institute, Coimbra Health School, Portugal

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 (β = 0.172; CI: 0.158;0.185; p < 0.001), and aortic systolic BP (β = 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]
[1]*FTC medicina, Brazil*
[2]*Medical School, University Center of Science andTecnology (FTC), Salvador, Brazil*
[3]*Federal Univerty of Bahia (UFBA), Salvador, Brazil*
[4]*School of Medicine and Health Bahiana, Salvador, Brazil*

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

References
1. Mozos, Ioana et al. Inflammatory Markers for Arterial Stiffness in Cardiovascular Diseases. Frontiers in Immunology (2017) 8: 1058.
2. Bozkurt, B; Mann, D; Deswal, A. Biomarkers of inflammation in heart failure. Heart Fail Rev (2010) 15:331—341.

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]
[1]*West Lab ICORD, University of British Columbia, Canada*
[2]*University of Guadalajara, Department of Physiology, Arterial Stiffness, Canada*