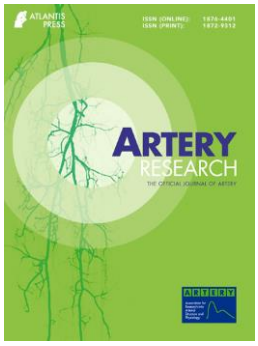

Artery Research

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

12.11: SARCOPENIA AND VASCULAR RISK IN A HEALTHY ELDERLY UK POPULATION (BRAVES STUDY)

A. Nagy, I. Ramsay, J. Wright, C. Morrison, C. Bulpitt, F. Fantin, M. Zamboni, C. Rajkumar

To cite this article: A. Nagy, I. Ramsay, J. Wright, C. Morrison, C. Bulpitt, F. Fantin, M. Zamboni, C. Rajkumar (2016) 12.11: SARCOPENIA AND VASCULAR RISK IN A HEALTHY ELDERLY UK POPULATION (BRAVES STUDY), Artery Research 16:C, 79–79, DOI: https://doi.org/10.1016/j.artres.2016.10.109

To link to this article: https://doi.org/10.1016/j.artres.2016.10.109

Published online: 7 December 2019

change. In patients with VAC in optimal range in 4 weeks Ees decreased from 2.3±0.3 to 2.1±0.4 mmHg/ml/m^2 ($p<0.001$), Ea (from 1.87±0.29 to 1.64±0.17 mmHg/ml/m^2, $p<0.001$) and VAC (from 0.82±0.12 to 0.81±0.19, $p<0.04$) did not change.
Conclusions: Impairment of functioning of cardio-vascular system assessed by increased value of VAC >1.2 was revealed in 30% of patients with acute coronary syndrome. Increase of VAC is associated predominantly with decrease of Ees and LV work efficiency (SW/PVA). Increased VAC index >1.2 indicating LV-arterial uncoupling may be an early marker of unfavorable cardiac remodeling.

12.9
VENTRICULAR ARTERIAL COUPLING IN ISOMETRIC HANDGRIP TEST IN UNTREATED HYPERTENSIVE PATIENTS

Anna Bogomaz, Yulia Kotovskaya, Zhanna Kobalava
Peoples' Friendship University of Russia, Moscow, Russia

Aim: To evaluate cardiovascular adaptation to increased afterload during handgrip isometric exercise (HIE) in untreated hypertensive patients.
Methods: 75 untreated hypertensive patients (age 54±7years, 44 males, BP 153/93 mmHg) underwent simultaneous EchoCG and blood pressure (BP) acquisition at rest and during HIE. End-systolic pressure was determined as 0,9 x brachial systolic BP (SBP). Arterial elastance (Ea) and LV elastance (Ees) were calculated as end-systolic pressure (ESP) /stroke volume (SV) and ESP/end-systolic volume (ESV). Ventricular-arterial coupling index was assessed as Ea/Ees. Efficiency of left ventricle (ELV) was evaluated by stroke work (SW)/pressure-volume area (PVA) ratio. SW=ESPчSV, PVA=SW+PE (ESPчESV/2-end diastolic pressure xESP/4). $p<0,05$ was considered significant.
Results: Ea/Ees<0,5 was found in 76% (n=57, 18 female) before HIE. In 38% (n=22, 4 (23%) female) Ea, Ees, Ea/Ees and SW/PVA did not change significantly. In 11% there was further decrease of Ea/Ees associated with significant increase of ELV. In 51% (n=29, 14 (49%) female) Ea/Ees increased due to increase of Ea from 1,98±0,32 to 2,35±0,41 ($p<0,05$) while Ees increased from 5,95±2,2 to 4,58±1,0 ($p<0,05$). Ea/Ees increase was associated with decrease of ELV from 0,89±0,02 to 0,84±0,02 ($p<0,05$) indicating cardiovascular misadaptation to HIE.
In subjects (n=18, 3 female) with normal Ea/Ees 0,5-1,2 before HIE Ea/Ees and ELV did not change in 8 (49%, all males). In 10 subjects (3 female) Ea/Ees decreased due to significant increase of Ees (from 3,15±0,68 to 5,02±1,34 ($p<0,05$), and ELV increased from 0,81±0,03 to 0,88±0,01 ($p<0,05$).
Conclusion: Cardiovascular misadaptation to afterload is the most prevalent type of reaction to HIE in subjects with decreased baseline Ea/Ees and may be also observed in subjects with normal baseline ventricular-arterial coupling. This misadaptation in subjects with baseline ventricular arterial uncoupling is associated with female gender.

12.10
REDUCED VENTRICULAR-ARTERIAL COUPLING AS AN EARLY MARKER OF CARDIOVASCULAR REMODELING IN HYPERTENSIVE MEN

Anna Bogomaz, Yulia Kotovskaya, Zhanna Kobalava
Peoples' Friendship University of Russia, Moscow, Russia

Objective: To evaluate ventricular-arterial coupling (VAC), left ventricular hypertrophy (LVH), diastolic function and arterial stiffness in young and middle-aged men with uncomplicated arterial hypertension
Methods: 97 young men aged 18-27 years (21,2±1,9 years, BP 156,5±14,0/98,5±9,1 mmHg) and 68 middle-aged men aged 40-60 years (n=68, age 53,9±7,2 years, BP 152,7±9,6/94,8±7,8 mmHg) (M) underwent simultaneous EchoCG, blood pressure (BP) and pulse wave velocity measurement. VAC index was calculated arterial elastance (Ea) and left ventricular elastance (Ees) ratio. Ea=end-systolic pressure/stroke volume, Ees=end-systolic pressure/end-systolic volume. LVH was diagnosed if LV mass index was >115 g/m2, Increased arterial stiffness -if PWV >10 m/s, diastolic dysfunction — if E/A <1,0 and E/E'<7 m/s.
Results: In young men Eea 1,86±0,32 and index VAC (0,52±0,10) was similar to that in middle-aged (1,9±0,47 and 0,48±0,19, respectively), despite that Ees in young men was significantly lower (3,67±0,85) than in middle-aged men (4,6±2,1, $p<0,01$). VAC index <0,5 was found in 34% young men and in 57% middle-aged men ($p<0,05$), LVH in 7,4% and 67% ($p<0,05$), diastolic dysfunction 4,1% and 62%, respectively. VAC index was similar in those with and without LVH or diastolic dysfunction in the both age groups. In young men with LVH VAC index was 0,63±0,26, without LVH 0,54±0,12, in middle-aged patients with LVH — 0,45±0,16, without LVH — 0,49±0,21. In young men with diastolic dysfunction VAC index was 0,61±0,13, without diastolic dysfunction — 0,58±0,16. In middle-aged men 0,45±0,14 and 0,48±0,16, respectively. PWV>10 m/s was found in 22,7% of young men and in 80,1% of middle-aged ($p<0,05$). No significant correlation between VAC index and BP, LVMI, PWV, E/A, E/E' was found.
Conclusion: Decrease in the VAC index<0,5 indicating LV-arterial uncoupling may be an early marker of cardiovascular remodeling in hypertensive men that may be observed before development of LVH, diastolic dysfunction or increased arterial stiffness.

12.11
SARCOPENIA AND VASCULAR RISK IN A HEALTHY ELDERLY UK POPULATION (BRAVES STUDY)

A. Nagy [1], I. Ramsay [1], J. Wright [1], C. Morrison [1], C. Bulpitt [1], F. Fantin [2], M. Zamboni [2], C. Rajkumar [1]
[1]*Brighton and Sussex University Hospitals NHS Trust, Brighton, UK*
[2]*Clinica Geriatrica, Ospedale Maggiore, Verona, Italy*

Introduction: Sarcopenia, the loss of skeletal muscle mass and strength that occurs with advancing age [1] is correlated with functional decline and disability but little is known about its relationship with cardiovascular risk. Bioimpedence analysis (BIA) is a validated technique for measuring muscle mass, convenient for use in large cohort studies. Arterial stiffness (compliance) is an independent predictor of cardiovascular events.
Methods: The BRAVES study was designed to compare cardiovascular risk between two healthy elderly cohorts in the UK and in Italy. We used data from the UK cohort to investigate the relationship between sarcopenia and vascular compliance.
Participants were eligible if aged 65-85 years, lived within the Brighton area and had weight loss of no more than 5% in the last month. All underwent physical exam, BIA assessment of skeletal mass index (SMI) and two measures of arterial compliance. Pulse wave velocity (PWV) was measured between carotid-femoral and carotid-radial arteries and the augmentation index (AIx) derived from carotid and radial arteries. A bivariate correlation was performed.
Results: Ninety patients (64 female; 26 male) had mean age 73, mean FFM 46.84kg (range 34.7-74.7) and mean SMI 6.77 (range 4.84-10.09). There was a negative relationship between SMI and Radial AIx (R=0.-542, p=0.000) as well as Carotid AIx (R=-0.391, p=0.002) but not PWV. Using multiple regression to control for the effects of age and gender, SMI was independently related to radial AIx (p=.013).
Conclusions: Skeletal muscle mass index is strongly negatively correlated with augmentation index, a measure of vascular stiffness. This finding suggests that elderly patients with higher muscle mass have a more compliant aorta and hence lower cardiovascular risk. Whether sarcopenia acts as a marker for CV risk or plays an active role in cardiovascular disease progression is not yet established and deserves further investigation.
References
1. Cruz-Jentoft, A.J., et al., Sarcopenia: European consensus on definition and diagnosis: Report of the European Working Group on Sarcopenia in Older People. Age Ageing, 2010. 39(4): p. 412-23.

13.1
THE EFFECTS OF ALPHA 1-ADRENOCEPTOR-BLOCKADE AND ANGIOTENSIN CONVERTING ENZYME-INHIBITION ON INDICES OF AORTIC STIFFNESS MEASURED BY AN OSCILLOMETRIC SINGLE CUFF METHOD IN HYPERTENSION: THE DOXAZOSIN RAMIPRIL STUDY

Andreas Jekell, Majid Kalani, Thomas Kahan
Karolinska Institutet, Department of Clinical Sciences, Danderyd Hospital, Stockholm, Sweden

Objectives: To study whether inhibition of the renin-angiotensin-aldosterone system has effects on arterial stiffness beyond blood pressure (BP) reduction alone.
Methods: Hypertensive patients (age 54±12 years, 34% women) were randomized double-blind to ramipril (10 mg od, n=32) or doxazosin (8 mg od, n=26) for 12 weeks. Central aortic BP and pulse pressure (PP), aortic pulse wave velocity (PWV), and augmentation index (AIx) were assessed by a single