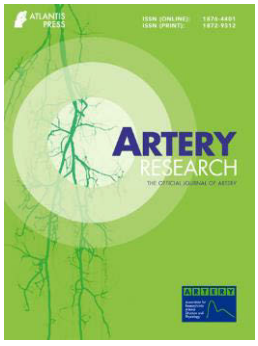


Artery Research

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

P59: KNOW YOUR VASCULAR AGE: A FEASIBILITY STUDY ON A NEW SERVICE IN COMMUNITY PHARMACIES

Sofia Maximiano, Patrícia Soares, Mariana Rosa, Ana Pinto, Maria Mendes, Joana Brito, Sonja Gose, Johannes Risse, Telmo Pereira, João Maldonado, Ema Paulino

To cite this article: Sofia Maximiano, Patrícia Soares, Mariana Rosa, Ana Pinto, Maria Mendes, Joana Brito, Sonja Gose, Johannes Risse, Telmo Pereira, João Maldonado, Ema Paulino (2018) P59: KNOW YOUR VASCULAR AGE: A FEASIBILITY STUDY ON A NEW SERVICE IN COMMUNITY PHARMACIES, Artery Research 24:C, 95–96, DOI: https://doi.org/10.1016/j.artres.2018.10.112

To link to this article: https://doi.org/10.1016/j.artres.2018.10.112

Published online: 7 December 2019

histological evaluation of retinal microcirculation (which shares the same embryological origins as the cerebral one) in a completely non-invasive fashion in humans. The aim of the study was to evaluate the relationship between PP/MAP and retinal arteriolar microcirculation.
Methods: Assessment included office BP measurements realized with SphygmoCor® with the patient resting in a supine position for at least 5 minutes followed by retinal microvascular analysis with AO RTX1® Camera to measure WT, internal diameter (ID), wall-to-lumen ratio (WLR) and WCSA, realized with the patients sitting in a stable position for at least 5 minutes.
Results: The study cohort consisted of 103 subjects on primary prevention and at intermediate risk, aged 20 to 80 years, with arterial hypertension and/or dyslipidemia. Study population was stratified according to median central PP (40 mmHg) and MAP (94 mmHg). Main results are shown in Table 1. Patients with a higher central PP showed an increased WT and WCSA. No difference was observed in WT and WCSA according to MAP.
Conclusions: Central PP is associated with structural changes in retinal microcirculation, namely a wall thickening and an increased vascular mass, as previously found on cerebral arterioles. Adaptive Optics allows a non-invasive evaluation of a microvascular territory which shares many morphological and physiological properties with the cerebral microcirculation, representing a promising tool for the prevention of cerebrovascular events.

	Pulse Pressure			Mean Arterial Pressure		
	< 40 mmHg	≥ 40 mmHg		< 94 mmHg	≥ 94 mmHg	
Small retinal arteries	n=49	n=53	p	n=48	n=54	p
Wall Thickness, - µm	21.7 ± 3.7	24.3 ± 4.2	0.002	22.6 ± 3.4	23.4 ± 4.7	0.794
Internal Diameter - µm	77.7 ± 13.1	81.2 ± 9.4	0.207	79.1 ± 9.6	79.9 ± 12.9	0.417
Wall to Lumen Ratio	0.284 ± 0.05	0.302 ± 0.05	0.120	0.287 ± 0.04	0.298 ± 0.06	0.410
Wall Cross Sectional Area, -µm²	3067± 873	3585 ± 845	0.005	3245 ± 755	3417 ± 999	0.529

References
1. Baumbach GL et al. Effects of local reduction in pressure on distensibility and composition of cerebral arteries. Circulation Research 1991; 68:338-351

Poster Session I — Interventions

P57
POLYPHENOLS IN COCOA-RICH CHOCOLATE IMPROVE VASCULAR FUNCTION, THE VENTRICLE—ARTERIAL COUPLING AND COGNITIVE PERFORMANCE OF YOUNG AND HEALTHY ADULTS

Telmo Pereira [1], Jacqueline Bergqvist [2], Bente Sveälv [3], Joaquim Castanheira [4], Jorge Conde [4]
[1]*Polytechnic Institute, Coimbra Health School, Portugal*
[2]*University of Gothenburgh, Sahlgrenska Academy, Portugal*
[3]*Gothemburg University, Sahlgrenska Academy, Portugal*
[4]*Polytechnic Institute, Coimbra Health School, Portugal*

Objective: To evaluate and explore the benefits of dark chocolate in young healthy adults.
Methods: Randomized study in 30 healthy participants aged 18 to 27 years. Half of the participants ingested a 20 g dose of low cocoa chocolate (LCC: ~55%; 12,61 ± 1,35 mg equivalent of epichatequin/g) and the others ingested a daily dose of 20 g of high cocoa chocolate (HCC: ~90%; 18,19 ± 2,64 mg equivalent of epichatequin/g). A baseline evaluation was performed before the participants started ingesting the assigned chocolate for a 30 days period, after which a final evaluation was performed. Each evaluation included heart ultrasonography, carotid-femoral pulse wave velocity (PWV) and carotid pulse wave analysis (PWA), flow mediated slowing (FMS), an analysis of the ventricular-arterial coupling (VAC), cognitive testing and functional near infra-red spectroscopy (fNIR) of the pre-frontal cortex.
Results: A statistically significant improvement was depicted over the brachial and central systolic and pulse pressures in the HCC group, and a trend for improvement in the AiX and the FMS was also observed in the HCC. The VAC parameters showed a significant improvement in the HCC group after intervention, increasing from 0.674 to 0.719 (p=0.004). Improvement in the memory scores (speed and accuracy) was observed in both groups, with a larger improvement in the HCC group, and related with an improvement in the pre-frontal cortex perfusion.
Conclusions: The intake of cocoa-rich chocolate improves vascular function and cognitive performance in healthy young adults, by reducing blood pressure, promoting vascular dilation, and improving brain perfusion over the prefrontal cortex.

P58
SINGLE-PORT THORACOSCOPIC SYMPATHICOTOMY FOR TREATMENT RESISTANT RAYNAUD'S PHENOMENON: FIRST REPORT OF A NOVEL MINIMALLY INVASIVE ENDOSCOPIC TECHNIQUE

Anniek van Roon [1], Michiel Kuijpers [1], Saskia van de Zande [1], Arie van Roon [1], Massimo Mariani [1], Reinhard Bos [2], Hendrika Bootsma [1], Theo Klinkenberg [1], Andries Smit [1], Udo Mulder [1]
[1]*University of Groningen, University Medical Center Groningen, Groningen, the Netherlands*
[2]*Medical Center Leeuwarden, Leeuwarden, the Netherlands*

Background: Raynaud's phenomenon of the hands is a great burden and reduces quality of life. In some patients, complaints may be resistant to vasodilatory treatment, for which additional options are very limited. Previously thoracic sympathectomy has been shown effective, but with great surgical burden. In our centre, single-port thoracoscopic sympathicotomy (SPTS) was developed, a new minimally invasive endoscopic technique extensively limiting surgical burden.
Objectives: The aim of this pilot study was to evaluate feasibility and efficacy of SPTS in patients with treatment resistant Raynaud's.
Methods: In the current study, we aim to include 10 patients with treatment resistant Raynaud's. SPTS was performed on the left side and the effects were compared contralateral after 1 and 12 months. To assess perfusion of the hands a cooling fingertip plethysmography (PPG) and laser Doppler imaging (LDI) were used. Pulse wave velocity (PWV) of the carotis-femoralis and carotis-radialis was measured.
Results: During this interim report, 7 patients are included so far (age 42 ± 13 years, 5/2 male/female, 5/2 primary/secondary Raynaud's). All 7 patients were satisfied. A clear improvement in hand perfusion was observed with LDI and PPG during cooling, as compared to the contralateral side. A trend in decrease of PWV carotis-radialis left was seen, while PWV at the other sites did not change significantly (figure 1).
Conclusions: SPTS is a novel minimally invasive technique which appears to be safe and feasible in patients with treatment resistant Raynaud's and increases hand perfusion. However, this study is on-going and long-term efficacy needs to be established.

P59
KNOW YOUR VASCULAR AGE: A FEASIBILITY STUDY ON A NEW SERVICE IN COMMUNITY PHARMACIES

Sofia Maximiano [1], Patrícia Soares [2], Mariana Rosa [2], Ana Pinto [2], Maria Mendes [2], Joana Brito [2], Sonja Gose [3], Johannes Risse [4], Telmo Pereira [5], João Maldonado [6], Ema Paulino [2]
[1]*Farmácias Holon, Lisboa, Portugal*
[2]*Farmácias Holon, Lisbon, Portugal*
[3]*McKesson Europe, AG, Portugal*
[4]*I.E.M. GmbH, Stolberg, Germany*
[5]*Instituto Politécnico de Coimbra — Coimbra Health School, Coimbra, Portugal*
[6]*Clínica da Aveleira, Coimbra, Portugal*

Background: Multiple studies report that stiffness of the elastic arteries has a predictive value independent of cardiovascular (CV) risk. According to the 2016 European Guideline on CV Disease Prevention in Clinical Practice by the European Society of Cardiology, arterial stiffness (AS) may predict future CV events and improve the classification of CV risk. (1-3).
Purpose: To evaluate the feasibility of incorporating AS assessment as a point-of-care test in community pharmacies, both as an independent parameter and integrated in a holistic service on CV risk assessment.
Methods: Eleven community pharmacies were selected to participate in the pilot project. Community pharmacists were trained to provide the service, and manuals were developed to assist them in the patient care process. Data were collected through GoogleForms®.
Results: Since March 2017, over 650 patients were incorporated in the service. 19.9% of participants displayed an increased Pulse Wave Velocity (PWV). Noteworthily, 12.3% of participants without previously known risk factors presented high PWV. 24 patients were referred to the GP. Several referrals to pharmacy services were made (n = 341). Based on feedback from pharmacies (on service pricing, service duration, and communication with patients and other healthcare professionals) modifications to the service were incorporated for the second phase of the study; in particular, the service price was adjusted, since only 33.3% of participants were willing to pay €15 for it.

Conclusions: Arterial stiffness is a useful and feasible parameter to be measured in community pharmacies. It allows for a holistic service, adding to other CV risk predictors already available.

References
1. Vermeersch SJ. Determinants of pulse wave velocity in healthy people and in the presence of cardiovascular risk factors: establishing normal and reference values. Eur Hear J. 2010;185:2338– 50.
2. Laurent S, Cockcroft J, Bortel L Van, Boutouyrie P, Giannattasio C, Hayoz D, et al. Expert consensus document on arterial stiffness: methodological issues and clinical applications. Eur Heart J. 2006;2588–605.
3. Massimo F. Piepoli, ArnoW. Hoes et al. 2016 European Guidelines on cardiovascular disease prevention in clinical practice The Sixth Joint Task Force of the European Society of Cardiology. Eur Heart J. 2016;2315–81.

P60
INFLUENCE OF ANGER ON ENDOTHELIAL DYSFUNCTION IN PATIENTS WITH RECENT MYOCARDIAL INFARCTION

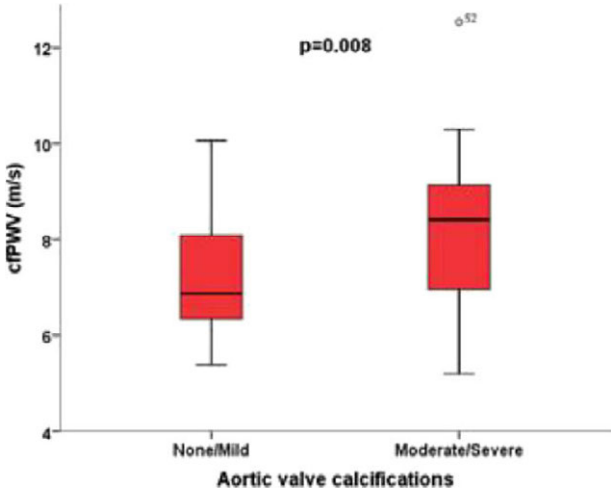
Bruna Eibel [1], Alexandre Quadros [2], Karine Schmidt [3], Carlos Gottschall [3], Márcia Moura [3]
[1]*Instituto de Cardiologia/Fundação Universitária de Cardiologia, (ARDI Group), Porto Alegre, RS, Brazil*
[2]*IC, Brazil*
[3]*Instituto de Cardiologia/Fundação Universitária de Cardiologia, Porto Alegre, RS, Brazil*

Background: The literature demonstrates that anger is associated with cardiovascular disease, but the underlying physiological mechanisms remain undefined. Endothelial dysfunction, present in atherosclerosis, has also been associated with anger.
Purpose: To examine the association between anger and endothelial function measured by flow-mediated dilatation (FMD) of the brachial artery.
Methods: Patients were assessed during hospitalization after acute myocardial infarction answered the Spielberger Trait-State Anger inventory (STAXI). After discharge, patients were submitted to ultrasound of the brachial artery, the FMD technique, which was calculated by the maximum percentual of change in the diameter of the brachial artery from baseline to peak of dilation after deflation of the cuff.
Results: The study included 90 patients, 86% caucasian, with 57 $\pm$ 10 years old, 73% male, 48% smokers, 57% with hypertension, 32% with dyslipidemia, 23% with diabetes, and 21% with a family history of arterial disease coronary artery disease. The mean dilation of this group was 6.70 $\pm$ 4.64. The presence of endothelial dysfunction was evaluated by the percentage of arterial dilation below 8.0%. In the multivariate analysis, only the anger reaction was associated with endothelial dysfunction. At each point of anger reaction increases 31% the chance of endothelial dysfunction ($p = 0.008$).
Conclusions: In this sample of infarcted patients with anger score below average, the anger reaction is related to endothelial dysfunction.

P61
ARTERIAL STIFFNESS IS ASSOCIATED WITH AORTIC VALVE CALCIFICATIONS

Dimitrios Terentes-Printzios [1], Vasiliki Gardikioti [1], Charalambos Vlachopoulos [1], Konstantinos Toutouzas [1], Maria Xanthopoulou [1], Vasiliki Penesopoulou [1], Georgios Latsios [1], Vicky Tsigkou [1], Charalambos Kalantzis [1], Gerasimos Siasos [1], Manolis Vavuranakis [1], Dimitrios Tousoulis [1]
[1]*Hypertension and Cardiometabolic Syndrome Unit, 1st Department of Cardiology, Medical School, National and Kapodistrian University of Athens, Hippokration Hospital, Athens, Greece*

Purpose/Background/Objective: Arterial stiffness and aortic hemodynamics are independent predictors of adverse cardiovascular events. Indications for Transcatheter Aortic Valve Implantation (TAVI) are increasing in number and Aortic Valve Calcifications (AVC) are an important prognostic factor of TAVI. We sought to investigate the associations between AVC and aortic vascular function/hemodynamics.
Methods: Fifty-two high-risk patients (mean age 80.4 $\pm$ 8.5 years, 27 male) with severe symptomatic aortic stenosis undergoing TAVI were included. Arterial stiffness was estimated through carotid-femoral pulse wave velocity (cfPWV) and brachial-ankle pulse wave velocity (baPWV). Aortic hemodynamics were also measured. Measurements were conducted prior to the implantation and at discharge. In all patients, a native and contrast-enhanced multislice cardiac computed tomography were performed pre-interventionally. AVC were then graded semi-quantitatively.
Results: Group 1 (subjects with none/mild AVC, $n = 29$) did not significantly differ on age, gender and body-mass index compared to group 2 (subjects with moderate/severe AVC, $n = 23$). From the traditional cardiovascular risk factors, only hypertension ($p = 0.008$), coronary artery disease ($p = 0.016$), atrial fibrillation ($p = 0.075$) and insulin-dependent diabetes mellitus ($p = 0.068$) were more statistically or showed a significant trend to be more prevalent in group 2. Group 2 had significantly higher both cfPWV and baPWV (8.3 $\pm$ 1.7 vs 7.2 $\pm$ 1.2 m/s and 1750 $\pm$ 484 cm/s vs. 2101 $\pm$ 590 cm/s with $p = 0.008$ and $p = 0.022$ respectively) compared to Group 1. (Figure) There was no difference in wave reflections indices between the two groups.
Conclusions: Our study shows that in patients with aortic stenosis there is a correlation between an increase in aortic stiffness and damage of aortic valvular leaflets as well as calcifications.



P62
DAPAGLIFLOZIN PRESERVES RENAL VASODILATING CAPACITY IN HYPERTENSIVE PATIENTS WITH TYPE 2 DIABETES

Rosa Maria Bruno [1,2], Livia Giannini [3], Angela Dardano [3], Edoardo Biancalana [3], Stefano Taddei [3], Lorenzo Ghiadoni [3], Anna Solini [3]
[1]*University of Pisa, Italy*
[2]*INSERM U970, Paris, France*
[3]*University of Pisa, Pisa, Italy*

Aim: Mechanisms through which SGLT-2 inhibitors achieve cardiovascular and renal protection are still unknown. We investigated whether dapagliflozin modulates Na and water balance and systemic and renal vascular parameters like endothelial function, arterial stiffness and renal vasodilating capacity.
Methods: 40 type2-diabetic hypertensive patients were studied at baseline (V0) and after four weeks (V1) of dapagliflozin 10 mg (Dapa, $N = 20$) or hydroclorothiazide 12,5 mg (HCT,$N = 20$), collecting blood and urinary samples for routine analyses, plasma renin activity, aldosterone, cathecolamines and 24 hour-urinary electrolytes. Flow-mediated dilation of the brachial artery (FMD), baseline (RI) and dynamic renal resistive index (DRIN), carotid-femoral pulse-wave velocity (PWV) and Augmentation Index (AIx) were also measured.
Results: Both Dapa and HCT marginally lowered systolic and diastolic BP values and did not change blood fasting glucose. Serum magnesium concentration significantly rose in Dapa group (from 1.88 $\pm$ 0.27 to 2.01 $\pm$ 0.22 mg/dl, $p = 0.02$ for time*treatment interaction), while magnesiuria was unchanged. 24h diuresis and glycosuria and osmolar clearance increased in Dapa ($p < 0.001$), with no changes in sodiuria and creatinine clearance. Dapa induced also a rise in aldosterone ($p = 0.02$). Nor DAPA neither HCT modified FMD, AIx and PWV. Interestingly, in Dapa group DRIN remained unmodified, while tended to increase in HCT group ($p = 0.05$).
Conclusions: 4-week Dapa treatment did not significantly influence BP, glucose and systemic indices of vascular function. However, in comparison to HCT, renal vasodilating capacity was preserved after Dapa, indicating a selective effect on renal vascular function, which may act asnephroprotective mechanism. Furthermore, the increase in serum magnesium might contribute to cardiovascular protection.