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P16: PULSE WAVE VELOCITY AND ITS ASSOCIATION WITH FIRST CARDIOVASCULAR EVENTS IN A PORTUGUESE HYPERTENSIVE SAMPLE

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augmentation index estimated by a novel wrist-worn tonometer. *Journal of hypertension* 2018 [Epub ahead of print].

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EFFECT OF UPRIGHT POSTURE ON CENTRAL WAVE REFLECTION IN 637 VOLUNTEERS NOT USING MEDICATIONS WITH DIRECT CARDIOVASCULAR INFLUENCES: DESCRIPTION OF DIFFERENT PHENOTYPES

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Background: The effect of upright posture on the level of augmentation index (Alx) remains controversial [1–3]. Phenotypic differences in Alx responses to upright posture are unknown.

Methods: Altogether 323 women and 315 men without cardiovascular disease and medications with direct cardiovascular influences were subjected to passive head-up tilt (5-min supine, 5-min upright). Haemodynamics were recorded using continuous tonometric pulse wave analysis and whole-body impedance cardiography.

Results: Mean (SD) age was 45.6 (1.2) years, BMI 26.8 (4.4) kg/m², and average blood count, plasma lipids and creatinine were normal. Alx decreased from supine 22.7% (11.9) to upright 13.8% (12.2) ($p < 0.001$), while heart rate related Alx@75 decreased from 17.9% (11.8) to 13.9% (11.0) ($p < 0.001$), respectively. In stepwise linear regression analyses, the explanatory variables for upright reduction in Alx were changes in ejection duration ($\beta = 0.744$), aortic reflection time ($\beta = -0.491$), and stroke volume ($\beta = 0.117$); and supine ejection duration ($\beta = 0.312$), systemic vascular resistance (SVR) ($\beta = -0.271$), pulse wave velocity (PWV) ($\beta = -0.203$), and systolic blood pressure ($\beta = 0.081$) ($p < 0.001$ for all). When divided to quartiles according to the supine-to-upright change in Alx 1) the quartile with lowest supine Alx had highest upright Alx, lowest supine SVR and PWV, and lowest upright heart rate; 2) the quartile with highest supine Alx had lowest upright Alx, highest supine SVR and PWV, and highest upright heart rate.

Conclusions: The level of Alx is decreased in the upright position. The phenotypic differences in the supine-to-upright change in Alx may explain why this variable has not predicted cardiovascular events in all endpoint studies.

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P16

PULSE WAVE VELOCITY AND ITS ASSOCIATION WITH FIRST CARDIOVASCULAR EVENTS IN A PORTUGUESE HYPERTENSIVE SAMPLE

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Objective: Pulse Wave Velocity (PWV) is considered a marker of cardiovascular (CV) risk prognosis. The objective was to evaluate the association of PWV, other features and CV events in a sample of hypertensive patients.

Design and method: We studied 314 hypertensive patients without previous CV events evaluated by PWV in a Portuguese average-size hospital, through its descriptive and survival analysis.

Results: Of the 314 patients (51% male) ageing 54.0 ± 14.2 years, 31.5% had resistant hypertension, 26.8% were diabetic, 66.6% had hyperlipidaemia, the average body mass index was 28.3 kg m⁻², and 16.6% were active smoker.

Through a follow-up of 2.1 ± 2.2 years, 28 patients (8.9%) had a CV event. Comparison of the patients with PWV ≤ 10 ms⁻¹ and the patients with PWV > 10 ms⁻¹, showed statistical significance for age (64.3 ± 10.5 vs 50.2 ± 13.4 years, $p < 0.0001$), casual systolic blood pressure (137.4 ± 16.3 mmHg vs 154.4 ± 21.4 mmHg, $p < 0.0001$), PWV (7.9 ± 1.2 ms⁻¹ vs 12.2 ± 1.9 ms⁻¹, $p < 0.0001$) left ventricular hypertrophy (193,3 ± 58.6 vs 235,8 ± 65.1, $p < 0.01$) and left auricular volume (19,9 ± 3.9 vs 23.3 ± 5.8, $p < 0.002$). Patients with PWV > 10ms⁻¹, 77,3% had left ventricular hypertrophy ($p < 0.004$) and 70% had left auricular enlargement ($p < 0.08$). In the survival analysis, the Kaplan Meier curve showed a worse prognosis for CV events with PWV > 10 ms⁻¹ (log rank 6.0, $p < 0,014$).

Conclusions: Higher PWV indicating worse artery damage is associated with end organ damage like left ventricular hypertrophy and left auricular enlargement. In patients with no previous CV events, PWV > 10 ms⁻¹ is an indicator for worse prognosis for CV events.

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ARTERIAL STIFFNESS OF THE FOREARM IS ASSOCIATED WITH NAILFOLD CAPILLARY COUNT IN SYSTEMIC SCLEROSIS: A NOVEL MARKER OF EARLY VASCULOPATHY?

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Background: Microvascular disease, with rarefaction of nailfold capillaries, is the hallmark of systemic sclerosis (SSc). Obliteration of the ulnar and radial artery is regularly observed, implicating involvement of the forearm arteries. Pulse wave velocity (PWV) may serve as early biomarker of forearm artery involvement, before occurrence of irreversible arterial obliteration.

Objectives: The aim was to investigate arterial stiffness of the aorta and the upper extremities in SSc patients and to correlate these findings with nailfold capillary count and extent of disease.

Methods: Aortic PWV was defined as carotid-femoral (cf). Upper extremity PWV was measured as carotid-brachial (cb) and carotid-radial (cr), the ratio between cbPWV/crPWV was used as an indication of the relative PWV change in the forearm. Capillary count was the mean capillary count per 3 mm of 8 fingers. The number of SSc classification criteria was used as surrogate for extent of disease. [1]

Results: In total, 19 SSc patients (median age 51 years, 68% female) were included. CbPWV/crPWV ratio correlated strongly with capillary count ($r = -0.55$, $p = 0.022$, figure 1) in SSc patients, with a trend in regards to its relation with the extent of disease ($r = 0.48$, $p = 0.053$).

Conclusions: Our findings demonstrate that arterial stiffness of the forearm has a relationship with nailfold capillary count and tends to be associated with the extent of disease in patients with SSc. These may suggest that vascular damage also occurs in larger arteries of the forearm, which potentially serves as novel tool for assessing early vascular involvement in SSc.

Correlation between cbPWV/crPWV and capillary count

