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P120

DETERMINANTS OF BRACHIAL-ANKLE PULSE WAVE VELOCITY

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It has been proven that aortic pulse wave velocity (aPWV) the measure of arterial stiffness is a strong and independent predictor of both cardiovascular events and all-cause mortality. Beyond the “gold standard” cfPWV brachial-ankle PWV (baPWV) measurement has been accepted for assessing arterial stiffness and endorsed into the position paper of Artery Society as a recommended method. The aim of this study was to define the determinants of baPWV.

Patients and Methods: baPWV and ABI were measured using Boso-ABI system in 188 consecutive adults (98 male, 91 female) at risk of or with manifest CV disease (mean age: 58 years). This oscillometric device is capable to measure blood pressure on both upper and lower extremities simultaneously with four cuff to assess ABI and baPWV, as well.

Results: baPWV was significantly correlated with age but this correlation was not as strong as it can be observed with aortic PWV (R = 0.172). Linear backward regression analysis confirmed that age and brachial systolic blood pressure proved to be the main determinants of baPWV.

Conclusions: baPWV is a suitable complimentary method for assessing arterial stiffness which can provide useful information regarding not only arterial stiffness but the peripheral arteries.

ASSOCIATION OF CARDIORESPIRATORY FITNESS WITH ARTERIAL STIFFNESS AND PERIPHERAL AND CENTRAL BLOOD PRESSURE IN RESISTANT HYPERTENSION PATIENTS

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Background: The relationship between arterial stiffness, blood pressure (BP) and cardiorespiratory fitness (CRF) has been studied in healthy populations and cardiovascular patients, since all of which proved to be independent predictors of all-cause mortality. We aimed to investigate the association of CRF with arterial stiffness and peripheral and central hemodynamics, in patients with resistant hypertension (RT).

Methods: This cross-sectional study, 30 patients (13 men, 17 women; age, 57.7 ± 8.1 years; weight, 79.2 ± 11.6 kg; body mass index, 29.7 ± 4.0 kg/m²) with resistant hypertension were recruited in the Hospital Infante D. Pedro (Aveiro) and Hospital Pedro Hispano (Matosinhos). Outcome measures included CRF (VO2peak), peripheral and central BP, and carotid-femoral pulse wave velocity (cf-PWV). Correlation analysis was conducted to assess the association between variables.

Results: A significant negative correlation was found between VO2peak (r = -0.363, p = 0.049) and peripheral systolic BP (r = -0.363, p = 0.049). VO2peak was also correlated with pulse pressure (PP) amplification ratio (r = 0.694, p = 0.001, r = 0.363, p = 0.035) and central systolic BP (r = 0.408, p = 0.035) and PP amplification ratio (r = 0.408, p = 0.035) remained significant after adjusted for age. VO2peak showed no correlation with PWV (9.4 ± 2.9 m/s; r = -0.075, p = 0.694) and peripheral (88.1 ± 12.2 mmHg; r = -0.138, p = 0.467) and central diastolic BP (88.5 ± 12.7 mmHg; r = -0.133, p = 0.483).

Conclusion: This study confirms the inverse relationship between CRF and central systolic BP and PP amplification ratio in RT patients, regardless of age.

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