P4.07: RELATIONSHIP BETWEEN CENTRAL AND PERIPHERAL AMBULATORY AND OFFICE BLOOD PRESSURE WITH LEFT VENTRICULAR MASS IN HYPERTENSIVE PATIENTS

E. Rodilla, J.A. Costa, S. Tejero, J.M. Pascual


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Conclusion: A structured ambulatory rehabilitation program improves pulsatile hemodynamics in CAD patients and may, thus, improve prognosis.

Figure

Arterial Stiffness before and after 5 week ambulant cardiology rehabilitation cf-PWV, carotid – femoral pulse wave velocity

P4.07
RELATIONSHIP BETWEEN CENTRAL AND PERIPHERAL AMBULATORY AND OFFICE BLOOD PRESSURE WITH LEFT VENTRICULAR MASS IN HYPERTENSIVE PATIENTS

E. Rodilla, J. A. Costa, S. Tejero, J. M. Pascual
Hospital de Sagunto, Servicio de Medicina Interna, Unidad de Hipertensión y Riesgo Vascular, Sagunto, Spain

Objectives: The purpose of the present study was to assess the relationship of peripheral and central, systolic and diastolic blood pressure with left ventricular mass, both measured in the office and under ambulatory conditions.

Methods: Cross-sectional study that included 71 never treated hypertensives (37 men, 52 ± 1%). 24 hours ambulatory peripheral and central (Mobil-O-Graph) as well as office peripheral (OMRON) and central blood pressure (Sphygmocor) together with determination of left ventricular mass (LVM) by echocardiography were performed in all patients and adjusted for height

Results: The mean age was 45.8 ± 140/90 (SD 140/90) as well as office peripheral (OMRON) and central blood pressure (Sphygmocor) together with determination of left ventricular mass (LVM) by echocardiography were performed in all patients and adjusted for height

Conclusions: In our population of untreated middle aged hypertensives, systolic BP was more closely related to LVMI than DBP, peripheral BP showed the greatest correlation (r = 0.743), followed by systolic ambulatory peripheral BP (SBPper_24, r = 0.508;p < 0.0001). In multiple regression analysis, adjusting by age and gender, all systolic BP measurements were independently related to LVMI, but central, ambulatory SBP showed the closest association with LVMI, independently of adjustment for height and BSAP.  

P4.08
AMBULATORY AND CENTRAL HAEMODYNAMICS ARE ELEVATED DURING HIGH-ALTITUDE HYPOXIA

M. Schultz, R. E. Climie, J. E. Sharman
Menzies Research Institute Tasmania, Hobart, Australia

Background: High-altitude hypoxia may cause temporary increases in brachial BP, but the effect on more sensitive BP measures (24h ambulatory and central BP) is unknown. This pilot study aimed to determine this, as well as the haemodynamic correlates of acute mountain sickness (AMS).

Methods: Measures of oxygen saturation (pulse oximetry), 24h ambulatory BP (ABT-24030), brachial and central BP (including augmentation index; Pulsocor) were recorded in 10 adults (aged 27 ± 4, 30% male) during a 16-day trek to Mt. Everest base camp, Nepal. Data was recorded at sea level (stage 1; <450m above sea level [ASL]) and at progressive ascension to 3440m ASL (stage 2), 4350m ASL (stage 3) and 5164m ASL (stage 4). The Lake Louise Score (LLS) was used to quantify AMS symptoms.

Results: Total LLS increased step-wise from sea level to stage 4 (0.3 ± 0.7 vs. 4.4 ± 2.0, P = 0.012), whilst oxygen saturation decreased to 77.9% in a similar step-wise fashion (P = 0.001). The highest recordings of 24h ambulatory BP, daytime BP, night-time BP, brachial and central SBP and DBP, augmentation index and heart rate (HR) were achieved at stage 3, which was significantly greater than at sea level (P < 0.005 for all). However, there was no difference in brachial or central PP, or PP amplification between stages (P = 0.05 for all). Overall, 24h ambulatory and night-time HR were strongly correlated with oxygen saturation (r = -0.741 and -0.608, both P < 0.001) and LLS (r = 0.648 and r = 0.493, both P < 0.001).

Conclusion: 24h ambulatory BP, central BP and HR are elevated during high-altitude hypoxia, but AMS symptoms are only related to tachycardia.

P4.09
BASELINE AUGMENTATION INDEX AND PULSE PRESSURE AMPLIFICATION DETERMINE THE RESPONSE TO ANTIHYPERTENSIVE THERAPY

M. Serg 1, 2, J. Graggaber 3, P. Kampus 1, 2,4, M. Zagura 1, 2, J. Kals 3, 5, K. M. Maki-Petaja 3, J. Cheriyan 3, M. Zilmer 2, J. Eha 1, 4, C. M. McEniery 3, I. B. Wilkinson 1
1Department of Cardiology, University of Tartu, Tartu, Estonia
2Department of Biochemistry, Centre of Excellence for Translational Medicine, Tartu, Estonia
3Clinical Pharmacology Unit, University of Cambridge, Addenbrooke’s Hospital, Cambridge, United Kingdom
4Heart Clinic, Tartu University Hospital, Tartu, Estonia
5Clinic of Vascular Surgery, Tartu University Hospital, Tartu, Estonia

Objectives: Essential hypertension is characterised by alterations in haemodynamics. Hence haemodynamic profiling could lead to improved blood pressure (BP) control in these patients. We tested if baseline haemodynamic indices predict the BP lowering effects of different classes of antihypertensive drugs in hypertensive patients.

Methods: In this double-blind placebo-controlled crossover study we randomised 53 treatment-naïve hypertensive patients to receive doxazosin 4 mg, candesartan 16 mg, bisoprolol 5 mg, losartan mononitrates (SNN) 50 mg, and placebo daily for 6 weeks. Brachial and central BP, augmentation index (AIx), aortic pulse wave velocity (aPWV), stroke volume (SV), cardiac output (CO), peripheral vascular resistance (PVR), and pulse pressure amplification (PPA) were measured at baseline and after each drug.

Results: Baseline AIx and PPA determined brachial and central BP reduction with antihypertensive therapy, particularly with bisoprolol. In patients with low baseline AIx (1.7-28.9%) and high PPA (1.22-1.87), bisoprolol had a weak antihypertensive effect, while the opposite was observed in patients with high AIx (36.3-48.2%) and low PPA (1.05-1.11). With candesartan, BP reduction was the largest, regardless of baseline AIx or PPA levels. There were no significant differences in BP reduction between the baseline extremes of SV, CO, PVR or aPWV with any drug.

Conclusion: Our study suggests that haemodynamic profiling by AIx or PPA could serve as a valuable tool in management of hypertension, particularly if beta-blockers are considered for treatment. Among the drug classes and doses used, the angiotensin II receptor antagonist reduced BP the most regardless of the underlying haemodynamic profile.

P4.10
PRINCIPAL FINDINGS FROM THE FIRST RANDOMISED STUDY TO DETERMINE THE VALUE OF CENTRAL BLOOD PRESSURE FOR GUIDING MANAGEMENT OF HYPTERTENSION: THE BP GUIDE STUDY

J. E. Sharman 1, M. Stowasser 2, W. P. Abhayaratna 3, T. H. Marwick 4
1University of Tasmania, Hobart, Australia
2University of Queensland, Brisbane, Australia
3Australia National University, Canberra, Australia
4Cleveland Clinic, Cleveland, United States

Introduction: Central blood pressure BP could be a better method to assess risk related to BP because it predicts mortality independent of brachial BP. This current study is the first randomized trial to test the usefulness of central BP as a management tool for doctors treating patients with hypertension.

Methods: Participants with uncomplicated essential hypertension (n = 284) were randomized to 12 months of treatment decisions guided by usual care (based on office, home and 24 hour ambulatory brachial BP) or, in addition, by central BP estimated using radial tonometry (based on age and sex-specific normal central systolic SBP values). Recommendations regarding titration of antihypertensive medication (increase, decrease or maintain dose) were provided to each participant and their general practitioner. Relevant clinical information (e.g. comorbidities, LV mass, blood biochemistry and BP-related symptoms) were considered when making titration recommendations in all participants. The primary outcome measures are: 1) change in LV mass (by real time three dimensional echocardiography); 2) amount of medication used; and 3) quality of life. Analysis will be by intention to treat.