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

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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 VENTRICAL MASS IN HYPERTENSIVE PATIENTS

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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%).

Results: The mean age was 45.8±12 years with office peripheral BP of 140/90 (SD 15/10), office central BP of 130/91 (SD 12/10), ambulatory peripheral BP of 128/84 (SD 13/12) and ambulatory central BP of 120/85 (SD 15/10) mmHg. The mean LVMI2.7 and LVMIBSA was 49.3 g/m2.7 and 104.2 g/m2, respectively. In bivariate analysis systolic ambulatory peripheral BP (SBPper_24, r 0.001) and LVMIBSA showed the closest association with LVMI, independently of adjustment for height2.7 (LVMI2.7) and body surface area (LVMIBSA).

Conclusions: In our population of untreated middle aged hypertensives, systolic BP was more closely related to LVMI than DBP, peripheral BP showed a greater association than office BP, and central BP had a greater relationship to LVMI than peripheral BP. Variation of central systolic 24 hours blood pressure caused therefore the greatest variation of LVMI.

P4.08

AMBULATORY AND CENTRAL HEMODYNAMICS ARE ELEVATED DURING HIGH-ALTITUDE HYPOXIA

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

Methods: Measures of oxygen saturation (pulse oximetry), 24hr ambulatory BP (A&D-TM2430), brachial and central BP (including augmentation index; Pulsor) 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; <4500m above sea level [ASL]) and at progressive ascent 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 24hr 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, 24hr 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: 24hr ambulatory BP, central BP and HR are elevated during high-altitude hypoxia, but AMS symptoms are only related to tachycardia.

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BASELINE AUGMENTATION INDEX AND PULSE PRESSURE AMPLIFICATION DETERMINE THE RESPONSE TO ANTHYPERTENSIVE THERAPY

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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-naive hypertensive patients to receive doxazosin 4 mg, candesartan 16 mg, bisoprolol 5 mg, isosorbide mononitrate (ISMO) 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 HYPERTENSION: THE BP GUIDE STUDY

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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. co-morbidities, 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.
Patients on ART exhibited higher ADMA levels versus ART-naïve controls who had lower levels of ADMA (P < 0.001). Among HIV infected patients, those on NNRTIs and PIs have comparable ADMA plasma levels. However, patients on NNRTIs [0.86 (0.77, 1.10)] or PIs [0.82 (0.71, 0.95)], P < 0.002]. ADMA levels did not differ between ART-naïve patients, P = 0.31.

Conclusions: ART-naïve patients exhibit lower ADMA levels, denoting a lower viral load that translates in a diminished inflammatory burden and better functional status. Patients on NNRTIs and PIs have comparable ADMA plasma levels.


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The common carotid artery (CCA) is an unusual localization of fibromuscular dysplasia (FMD). However, we previously detected CCA phenotypic alterations in a small population of patients with renal FMD and validated a CCA score. We aimed to test this score in a larger population of patients with renal FMD and hypertension.

Methods: CCA score was calculated with a high resolution echotracking device as the sum of B-mode and radiofrequency score as follows: B-mode: Normal = 1; discontinuous blood-intima interface = 2; discontinuous additional interface within the media = 3; continuous interface within the media = 4. Radiofrequency signals: Constant normal two-waved (double) signal = 1; alternation of double and triple signal over successive acquisitions = 2; constant three-wave (triple) signal = 3.

Results: 185 hypertensive patients with renal FMD (40 patients with unifocal and 145 with multifocal lesions) and a control group of 79 hypertensive patients without renal FMD were enrolled. Prevalence of CCA score > 3 was higher in patients with multifocal, with or without string of beads, than unifocal FMD and controls (Figure 1). In multivariate analysis, intima-media thickness (150μm increase: OR 1.83, 95%CI 1.27-2.64; P = 0.001) and FMD distribution (renal FMD alone: OR 2.97, 95%CI 1.38-6.37; P = 0.01. Multisite FMD: OR 6.03; 95%CI 2.62-13.89; P = 0.001.) were associated with CCA score > 3.

Conclusions: Phenotypic alterations of the CCA were reported in subjects with renal FMD with a higher prevalence in those with multisite lesions. The CCA score > 3 is associated with FMD distribution and intima-media thickness.