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ORAL SESSION 3C

BLOOD PRESSURE MEASUREMENT

3C.01 ADVERSE PROGNOSTIC VALUE OF PERSISTENT OFFICE BLOOD PRESSURE ELEVATION IN WHITE COAT HYPERTENSION

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Objective: Stratification of cardiovascular (CV) risk is of fundamental importance in white coat hypertension (WCH) to identify individuals in need of closer follow up and perhaps antihypertensive drug treatment.

Design and method: In subjects representative of the general population of Monza (Italy), the risk of CV and all-cause mortality was assessed over 16 years in stable and unstable WCH individuals, i.e. those in whom ambulatory BP normality was associated with a persistent or non persistent office BP elevation at two consecutive visits, respectively. Data were compared with those from an entire normotensive group, i.e. ambulatory and persistent office BP normality.

Results: Compared to the normotensive group, the risk of CV and all cause death was not significantly different in unstable WCH, whereas in stable WCH the risk was increased also when data were adjusted for baseline confounders, including ambulatory BP(hazard ratio 12.39 p=0.0178 for CV and 1.91 p=0.0178 for all cause death). At a multivariable analysis, office BP was among the factors independently predicting death, and results were superimposable with use of Monza population- and guidelines-derived cutoff values for ambulatory BP normality (125/79 and 73/080 mmHg, respectively).

Conclusions: Thus, only when office BP is persistently elevated does WCH reflect the existence of an abnormal long term mortality risk. This means that in WCH office BP is prognostically relevant and that repeated collection of office BP values should be regarded as necessary.

3C.02 IN WHITE COAT HYPERTENSIVES CENTRAL PRESSURE AND HEMODYNAMIC VALUES ARE MORE CLOSE TO NORMALITY THAN TO TREATED HYPERTENSIVES FOR SIMILAR AGE, 24-H AND NIGHTTIME PRESSURES

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Objective: It is controversial whether subjects with white coat hypertension (WCHT) have hemodynamic and structural abnormalities versus normotensives (NT) and hypertensives (HT). Patterns of nighttime BP as non-dipper is ND and data from central hemodynamics/central pressures (pulse wave velocity, PWV and augmentation index (AIx) estimating aortic wave reflection reflects cardiovascular prognosis.

Design and method: We compared PWV, AIx, augmentation pressure (AugP) and pulse pressure amplification (PPA) from aortic wave, between NT (n = 175), WCHT (n = 315) and treated HT (n = 691) all with 24h BP<130/80 and nighttime BP<120/70 mmHg. Groups were compared separately for 24h Systolic BP<120 mmHg and between 120–129 mmHg, after adjustment (ANCOVA) for age, gender, BMI and diabetes.

Results: The percentage of ND was 40.8% in NT, 31.5% in WCHT and 38.3 in HT (χ²p=0.048). For 24h SBP<120 mmHg aortic stiffness was higher in HT (n = 306, PWV = 10.8 ± 2.5 m/s and AIx 0.32 ± 0.17, p < 0.045) than in WCHT (n = 75, PWV = 10.0 ± 2.8 m/s and AIx 0.27 ± 0.13) and NT (n = 109, PWV = 9.7 ± 2.2 m/s and AIx 0.26 ± 0.16). AugP and AIx were higher (p<0.01) in HT (12.5 ± 8.1 mmHg and 29 ± 14.1) than in WCHT (10.9 ± 7.5 mmHg and 22 ± 15.7) and NT (10.7 ± 6.2 mmHg and 24.3 ± 12.3). For 24h SBP 120–129 mmHg aortic stiffness was higher in HT (n = 494, PWV = 10.9 ± 2.7 m/s and AIx 0.36 ± 0.15, p<0.01) than in WCHT (n = 241, PWV = 9.7 ± 2.4 m/s and AIx 0.29 ± 0.17) and NT (n = 66, PWV = 9.3 ± 2.0 m/s and AIx 0.28 ± 0.16). AugP and AIx were higher (p<0.01) in HT (14.9 ± 8.5 mmHg and 29.5 ± 11.7) than in WCHT (12.1 ± 8.2 mmHg and 26.0 ± 14.9) and NT (12.3 ± 6.9 mmHg and 27.0 ± 12.8).

Conclusions: For similar age, gender distribution, and 24h and nighttime BP the values of aortic stiffness, central aortic pressures and wave reflection of subjects with WCHT are more close to those of normotensives than to those of treated HT reinforcing the concept that WCHT may be a much more benign condition than treated true hypertensive patients for similar 24h and nighttime BP levels.

3C.03 OPTIMAL DURATION OF HOME BLOOD PRESSURE MEASUREMENTS FOR THE DIAGNOSIS OF ARTERIAL HYPERTENSION: A PROSPECTIVE MULTICENTER STUDY

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Objective: The optimal measurements duration and cut off values for home blood pressure monitoring (HBPM) are not well defined for the first diagnosis of hypertension. In this study, we compare three measurement duration protocols (3 day, 5 day and 7 day) of HBPM considering 24h ambulatory blood pressure monitoring (ABPM) as a reference standard for the diagnosis of hypertension.

Design and method: Two hundred and sixty six subjects who are suspected to have hypertension in office BP were completed to 24 h ABPM and to 7 days HBPM protocol from 4 university hospitals. HBPM protocol consists of three measurements taken 2h in waking up (between 7:00 and 9:00 a.m.) and three measurements taken before sleep (between 9:00 and 11:00 p.m.) for 7 days. Hypertension was defined as BP more than 130/80 mmHg for ABPM.

Results: The area under the ROC curve (95% confidence interval) was 0.801 (0.735–0.867) for the 3-day measurements, 0.787 (0.719–0.856) for the 5-day measurements, and 0.789 (0.720–0.859) for the 7-day measurements for the diagnosis of hypertension. There were no significant difference of intraclass correlation coefficients of systolic and diastolic blood pressure between measurement duration protocols and ABPM. Bland–Altman plots showed smaller and random dispersion for the 3-day HBPM measurements. Optimal cut off values of 3 day HBPM measurements by Youden index were 132.1 mmHg in systolic BP (sensitivity: 70% and specificity: 72%) and 81.8 mmHg in diastolic BP (sensitivity: 88% and specificity: 59%).

Conclusions: A 3-day protocol of HBPM has not inferior accuracy than a 5-day and 7-day measurement of HBPM for the diagnosis of hypertension considering ABPM as a reference. Optimal BP threshold values of the 3 day HBPM protocol are lower than HBPM values of current guideline (135/85mmHg).

3C.04 THE EFFECT OF HEART RATE ON AMBULATORY PULSE PRESSURE IS SENSITIVE TO THE VARIATION OF ARTERIAL STIFFNESS WITH PRESSURE

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Objective: We have previously shown that given repeated blood pressure (BP) measurements the mean pulse pressure (PP) can be expressed as a sum of two components: one corresponds to purely elastic artery with constant stiffness (sPP) and the other, to the tendency of arteries to stiffen at elevated pressures (stPP). Prognostic significance was demonstrated only for sPP in hypertensive patients with lower-than-median heart rate (HR). In the present work we investigated the HR dependence of these PP components.

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