P598

Relation between nighttime hypertension and left ventricular hypertrophy in treated hypertensive patients

A. Bachr-Cherif1, S. Bennouar2, N. Dammene Debbi1, A. Bouamra3, M.T. Bouafia1. 1University of Bleda 1, University Hospital Center Bleda, Bleda, Bleda 1, Central Laboratory of Biochemistry, Bleda, University of Bleda 1, Centre of Epidemiology, University Hospital Center Bleda, Bleda, Algeria.

Purpose: The aim of this study was to evaluate left ventricular hypertrophy (LVMH) in individuals with daytime, nighttime and day-nighttime hypertension (HT) in our city (Algeria).

Design and method: This cross-sectional study included 1247 untreated hypertensive individuals. The study included 519 treated hypertensive patients who underwent a complete two-dimensional echocardiographic examination (2DE) including strain analysis. According to current guidelines, night-time hypertension was defined as nocturnal systolic BP ≥ 120 mm Hg or diastolic BP ≥ 70 mm Hg and day-time hypertension as systolic BP ≥ 135 mm Hg and diastolic BP ≥ 85 mm Hg.

Results: Mean age was 55.3 years±11.4 years, with a 57% of women. The prevalence of HT was 61.7%; it was more frequent in males (67.8% vs 55.7% in women, p<0.01), higher office BP (SBP 144.1±4.1 vs 134.4±4.4 mmHg; p=0.02 and DBP 85.1 vs 83.1±3.8 mmHg; p=0.01) and a greater waist circumference 102.4±10 vs 98±13 cm; p=0.01). Using aforementioned criteria, the study sample included 22% normotensive subjects, 24% with isolated daytime HT, 21% with isolated nighttime HT and 33% with day-nighttime HT. 2DE LVMH was significantly lower in women than in men (SBP 190.6±20 vs 192.3±19 mmHg; p<0.001). AS was significantly higher in NSR than in NSS (9.7±2.5 vs 7.7±2.5 m/s2; p<0.0001) meanwhile the vascular tone expressed by RI was similar between groups (71±11 vs 69±9%, p=0.288). The arterial vasodilation, dependent on endothelial function, was significantly lower in NSR than in NSS (EF 4.7±9 vs 11±14%, p=0.004). The difference in 24MABP after high-salt diet compared with low-salt diet was similar between NSR and NSS (85.2±8 vs 76.1±7 mmHg; p=0.037) but it reached significant differences when they were compared to participants who had normal level of serum uric acid over time (n=497), subjects with hyperuricemia at both visits (n=65) experienced worse temporal changes in LVMH (+7.2 g/m2 vs +2.4 g/m2; p=0.011) and E/e’ ratio (+0.97 vs +0.27; P<0.0008).

Conclusion: A defective arterial vasodilation dependent on endothelial function was found in NSS subjects compared with NSR. This endothelial dysfunction correlated negatively with LVMH. Finally, positive correlation was observed between the degree of salt sensitivity and arterial stiffness in this particular cohort of subjects.

P599

Relation between nighttime blood pressure and left ventricular mass index in treated hypertensive patients

T. Kuznetsova1, N. Cauwenberghs1, F. Haddad2, L. Thijis3, J.A. Staessen1. 1University of Leuven, Leuven, Belgium; 2Stanford University Medical Center, Stanford, United States of America.

Background: Previous studies showed that serum uric acid as a marker of increased xanthine oxidase activity may be a useful prognosticator for incident heart failure particularly in patients with hypertension. However, population data on the longitudinal changes in left ventricular (LV) structure and function in relation to serum uric acid are sparse.

Purpose: We, therefore, assessed in the general population whether hyperuricemia predicts longitudinal changes in echocardiographic indexes reflecting LV hypertrophy.

Methods: In 641 randomly recruited Flemish participants (mean age 50.6 years, 50.9% women), we assessed echocardiographic indexes of LV structure and diastolic function at baseline and after 4.7 years. We regressed longitudinal changes (Δ) in these indexes on baseline uric acid, and reported standardized effect sizes as a percentage of the SD of LV changes associated with a 1-SD of uric acid.

Results: In multivariable-adjusted cross-sectional analyses, higher serum uric acid correlated (P=0.019) with greater LV mass index (LVMi) and E/e’ ratio measured at follow-up. From examination 1 to 2, LVMi and E/e’ ratio increased by +3.6±1.32 g2/m4 and +0.37±1.46, respectively (P<0.0001). In longitudinal analyses, after full adjustment, higher baseline serum uric acid independently predicted a greater increase in LVMi (effect size: +1.18%; P=0.0021) and E/e’ ratio (+2.1%; P<0.0001) during follow-up. Compared to participants who had normal level of serum uric acid over time (n=497), subjects with hyperuricemia at both visits (n=65) experienced worse temporal changes in LVMi (+7.2 g/m2 vs +2.4 g/m2; p=0.011) and E/e’ ratio (+0.97 vs +0.27; P<0.0008).

Conclusion: A decrease in nighttime blood pressure was associated with increased left ventricular mass index, as indicated by the arterial vasodilation and fibrosis identified by cardiac magnetic resonance, a technique with limited availability.

P600

Impact of the use of left ventricular mass/end-diastolic volume ratio by 3D echocardiography on derived global longitudinal strain and diastolic function in native hypertensive patients

M. Lembo, R. Esposito, R. Sorrentino, M. Petitto, C. Santoro, V. Fazio, B. Tramarin, G. De Simone, M. Gaiderisi, University Hospital Federico II, Naples, Italy.

Background: In hypertensive patients, high left ventricular (LV) mass/end-diastolic volume ratio (LVM/EDV) has been related with a large evidence of myocyte hypertrophy, fibrosis and fibro-fat infiltration that is identified by cardiac magnetic resonance, a technique with limited availability.

Purpose: We examined the ability of three-dimensional (3D) LVM/EDV ratio in detecting a phenotype of LV concentric geometry, possibly identifying early cardiac systolic and diastolic dysfunction in native hypertension.

Methods: We enrolled 144 native hypertensive patients (MF=92/52, age 43.4±14.5 years, blood pressure [BP] = 143.3±13.8/88.9±8.8 mmHg, which underwent two-dimensional (2D) and 3D-echocardiography. 2D-Speckle tracking echocardiography (STE) was also used to calculate LV global longitudinal strain (GLS). Exclusion criteria were diabetes mellitus, coronary artery disease, overt heart failure, valve heart disease, primary cardiomyopathies, atrial fibrillation or inadequate echo-imaging. The population was divided into tertiles according to LVM/EDV ratio: the 1st tertile with LVM/EDV ratio < 1.01 (n=42), the 2nd tertile with LVM/EDV ratio 1.01 to < 1.22 (n=51), and the highest tertile (HT) with LVM/EDV ratio >1.22 (n=51).

Results: The three tertiles were comparable for heart rate, body mass index (BMI), systolic and diastolic BP. The HT patients were older than patients in the 1st and 2nd tertiles (p<0.0001 and p=0.003 respectively). 2D-LvGls was more impaired in the HT (20.3±3.3% vs. the 1st (21.6±1.8%, p=0.006) and 2nd tertiles (21.5±1.8%, p=0.007). Among LV diastolic parameters, E/A ratio was lower in HT (1.0±0.29 vs the 1st (1.3±0.42, p<0.001) and 2nd tertiles (1.3±0.45, p=0.014), average of septal and lateral mitral e’ velocity was lower in HT vs the 1st tertile (9.6±2.5 vs. 12.4±3.7 cm/s, p<0.0001), while no significant difference was found with the 2nd tertile. E/e’ ratio resulted higher in the HT only vs the 1st tertile (7.9±2.3 vs. 6.6±1.7, p<0.01). In the pooled population LVM/EDV ratio was positively related to GLS (considered in absolute value).