Role of Doppler tissue imaging in the assessment of diastolic dysfunction in hypertensive patients with and without concentric geometric remodeling.

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It has been shown that in patients with essential hypertension and cardiac hypertrophy, there are differences in diastolic function evaluated by using TDI or TD.

We studied 17 patients (46±9 years, 11 male) with never treated essential hypertension. Echocardiographic evaluation was used to assess the following parameters: concentric remodeling (CR) pattern, defined as a normal left ventricular mass index with a relative wall thickness >0.45; global diastolic dysfunction (GDD), detected by correcting for age the TD flow early to atrial (E/A) ratio values; regional diastolic dysfunction (RDD) evaluated by TD, with the sample volume positioned within the basal septum; and tissue Doppler imaging (TDI) evaluated by CR and GDD. CR was found in 12 patients (70%); among these, 4 showed both GDD and RDD, while 5 patients showed only RDD. In the absence of CR, no patient showed either GDD or RDD. At Fisher test analysis, RDD was significantly associated with the presence of CR (p=0.019), whereas no significant association was found between CR and GDD. TDI showed a higher sensitivity in detecting diastolic dysfunction than TD (75% vs 33%) and a higher negative predictive value (63% vs 38%); both TDI CR and GDD showed a lower sensitivity in detecting diastolic dysfunction than TD (58% vs 33% and 70% vs 40%, respectively). TDI was lower (p<0.01) in group 2 patients than in group 1 patients. Although no differences were found in both groups (p=ns), while the E/A ratio was lower in group A (0.91±0.31 vs 1.06±0.31, p<0.001). LV mass was significantly higher in group A (202.3±53.5 g vs 177.4±51 g, p<0.0001). Using the Levy height-indexed threshold (143 g/m for men and 102 g/m for women), LVH prevalence was 36% in the hypertensive group. Systolic blood pressure (BP) in group A was 166.2±20 mm Hg, diastolic BP was 93.2±12.2 mm Hg, and the proportion of treated hypertensive pts with normal BP values was of only 15%, reflecting poor BP control.

Conclusions: The prevalence of HTN in this population is high, as is the prevalence of LVH. BP control in treated pts with known HTN is poor. These findings have important medical and economic implications and should represent the basis for setting-up more efficient programmes for a better BP control in the general population.

Arterial distensibility and ambulatory blood pressure as determinant of left ventricular hypertrophy and intima-media thickness in elderly subjects.

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Morbidity and mortality in hypertension are primarily related to arterial diseases that may affect several organs. The aim of this study was to evaluate the ambulatory blood pressure measurement (ABPM) and pulse wave velocity analysis (PWV) in 3 groups composed by elderly subjects, being selected as “normotensive” (Group I, n=24, 72.04±4.72 years), “essential hypertensive” (Group II, n=32, 72.34±5.50 years), and “systolic-diastolic hipertensive” (Group III, n=33, 71.42±5.72 years), in an effort to identify, among the assessed variables, those that could be correlated to the determination of the target organ damage (TOD) defined as left ventricular hypertrophy (LVH) and intima-media thickness of the left and/or right common carotid artery (IMT-CCA). The following parameters were measured in the ABPM measures; the IMT-CCA measures, by means of carotid ultrasonography; the left ventricular mass and left ventricular mass index measures, by means of echocardiography; and the PWV measures. The distribution of age, gender and anthropometric values showed similarity among the 3 groups, the same occurring to the analysis of the averages of the biochemical parameters. We also demonstrated a similar distribution for IMT-CCA in the 3 assessed groups (p=0.200), and for LVH in the 2 hypertensive groups (p=0.557), the latest showing, however, higher statistical values when compared to the normotensive group (p<0.001).

The variables with positive correlation to the LVH were: 24-hour systolic, diastolic and pulse pressure; daytime systolic BP; heart rate; systolic BP and PWV; and the variable with negative correlation was the systolic-nocturnal fall. The 24-hour systolic BP and pulse pressure, daytime systolic and diastolic BP and PWV were also significantly associated to the IMT-CCA, while the systolic-nocturnal fall and diastolic-nocturnal fall appeared as negative correlations for IMT-CCA.

In investigating the TOD determinants, we verified that the 24-hour systolic BP was the only variable associated to the LVH (p=0.0161), while the PWV was the only associated to the IMT-CCA (p=0.033). Thus, we demonstrated that the analysis of these ABP and PWV variables is of great relevance for the investigation of the target organ in elderly subjects.

Prevalence of hypertension and left ventricular hypertrophy in a Romanian population. A populational clinical - echocardiographic study.

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Background: Hypertension (HTN) is one of the major risk factors for atherosclerosis and coronary artery disease. Its prevalence has important medical and socioeconomic implications. Left ventricular hypertrophy (LVH) adversely impacts the prognosis of hypertensive patients (pts).

Aim: To determine the prevalence of HTN and that of LVH in an adult population (~35 years) in Bucharest, the capital of Romania.

Methods: 363 patients (pts) (50.9% men, mean age 56.3 ± 11 years) from a region of Bucharest, Romania, selected to constitute a statistically representative sample group were screened. A complete echocardiographic study was performed on each patient, including measurements of LV dimensions, ejection fraction (EF), fractional shortening (FS), and transmural flow peak E, A, and E/A ratio by PW-Doppler. LV mass was calculated using the Devereux formula.

Results: Patients with normal blood pressure (n=248 pts, 57% men, mean age 57±9), LVH were found in 12 patients (70%); among these, 4 showed both GDD and RDD, while 5 patients showed only RDD. In the absence of CR, no patient showed either GDD or RDD. At Fisher test analysis, RDD was significantly associated with the presence of CR (p=0.019), whereas no significant association was found between CR and GDD. TDI showed a higher sensitivity in detecting diastolic dysfunction than TD (75% vs 33%) and a higher negative predictive value (63% vs 38%); both TDI CR and GDD showed a lower sensitivity in detecting diastolic dysfunction than TD (58% vs 33% and 70% vs 40%, respectively). TDI was lower (p<0.01) in group 2 patients than in group 1 patients. Although no differences were found in both groups (p=ns), while the E/A ratio was lower in group A (0.91±0.31 vs 1.06±0.31, p<0.001). LV mass was significantly higher in group A (202.3±53.5 g vs 177.4±51 g, p<0.0001). Using the Levy height-indexed threshold (143 g/m for men and 102 g/m for women), LVH prevalence was 36% in the hypertensive group. Systolic blood pressure (BP) in group A was 166.2±20 mm Hg, diastolic BP was 93.2±12.2 mm Hg, and the proportion of treated hypertensive pts with normal BP values was of only 15%, reflecting poor BP control.

Conclusions: The prevalence of HTN in this population is high, as is the prevalence of LVH. BP control in treated pts with known HTN is poor. These findings have important medical and economic implications and should represent the basis for setting-up more efficient programmes for a better BP control in the general population.