Metabolic Aspects and Mechanisms

9.27 Metabolic Syndrome and Biventricular Hypertrophy in Essential Arterial Hypertension

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Introduction. The metabolic syndrome (MS) is associated with structural and functional alterations of the left ventricle (LV); no evidence is available of the impact of the MS on the right ventricle (RV).

Methods. In order to assess whether MS, as defined by the ATP III Report, is associated with biventricular hypertrophy, a total of 286 hypertensive subjects (mean age 58.7 ± 12.2 years) attending our out-patient clinic underwent the following procedures: (1) physical examination and clinic blood pressure measurement; (2) routine laboratory investigations; (3) M-mode, two-dimensional and Doppler echocardiography. LV hypertrophy (LVH) was defined by LM mass index $>51/47 \text{ g/m}^2.7$ in men and women, respectively. Right-sided chambers were measured in parasternal long axis at the outflow tract and subcostal view; RV hypertrophy (RVH) was defined by anterior RV wall thickness $>6.0/5.5 \text{ mm}$ in men and women, respectively. Filling velocities of both ventricles were assessed by pulsed Doppler echocardiography.

Results. Structural cardiac alterations were more pronounced in hypertensive men and women with MS than in their non-MS counterparts and involved both ventricles as shown by the differences in continuous variables as well as in prevalence rates of LVH (58% and 48% vs 28% and 30%, respectively, $p < 0.01$) and RVH (48% and 54% vs 25% and 35%, respectively, $p < 0.01$). Both LV and RV filling in MS hypertensives were more dependent on the atrial systole.

Conclusions. Our study shows that in human hypertension structural and functional cardiac changes induced by MS are not limited to the left ventricle but also involve the right one.