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LETTER TO THE EDITOR

Left ventricular hypertrophy in hypertension: Need of ethnic-specific criteria

Hypertension is the most important risk factor associated with the development and progression of left ventricular hypertrophy (LVH), which in turn is a powerful, independent predictor of cardiovascular morbidity and mortality. The echocardiographic assessment of the LV mass represents the reference imaging tool for its established diagnostic sensitivity and specificity in detecting LVH and, consequently, in stratifying the total cardiovascular risk in the hypertensive setting.[1] Therefore, we read with great interest the original paper by Yang et al.[2] that sought to assess the prevalence of LVH (and its clinical correlates) in individuals with white coat hypertension (WCH) a condition on whose adverse clinical significance there are not always univocal opinions.[3] Particularly noteworthy of this study is the methodological accuracy in defining the WCH phenotype, based on 24-hr (i.e., <130 mmHg), day-time (i.e., <135/85 mmHg), and night-time (i.e., 120/70 mmHg) blood pressure (BP) normality. This allowed the authors to exclude from the selection individuals with isolated nocturnal hypertension which can be erroneously classified when WCH is defined only on the basis of 24-hr or day-time BP thresholds. That this is not a marginal aspect is strongly supported by the findings of a recent study by our group. Among 3223 consecutive untreated and treated patients with office BP greater than 140 and/or 90 mmHg and average ambulatory 24-hr BP less than 130/80 mmHg (i.e., WCH and uncontrolled WCH) isolated nocturnal hypertension was found in 26.9% of WCH and 31.8% of uncontrolled WCH, respectively.[4]

The study by Yang et al.,[2] assesses the prevalence of echocardiographic LVH, defined according to the American Society of Echocardiography (ASE) and the European Association of Cardiovascular Imaging (EACVI) (i.e., 115/95 g/m^2), in 203 individuals with WCH and in 503 sustained normotensives, documented that this marker of subclinical organ damage was present in about 20% of WCH and 13% of normotensives.[5,6]

Considering that the study sample consisted of individuals with an average age of just over 50 years, with no history of cardiovascular disease, type 2 diabetes mellitus (DM), and hypertension this amount of subclinical cardiac involvement appears quite high (and particularly implausible in the group of fully normotensive subjects characterized by a global low cardiovascular risk).

The Pressioni Arteriose Monitorate E Loro Associazioni (PAMELA) a population-based study carried out in a middle-aged Italian population showed that prevalence rates of LVH (i.e., LVMI 115/99 m^2) in normotensive and pre-hypertensive participants were 2.1% and 6.7%.[7] In the Characteristics and Course of Heart Failure Stages A and B and Determinants of Progression (STAAB) cohort study, investigating a representative sample of the German general population (44% with hypertension and 8% with DM), LVH (i.e., LVMI >115/95 g/m^2) was found in 1.9% of cases.[8] The discrepancies between Yang's findings and those of the aforementioned European studies suggest that using echocardiographic thresholds recommended by international guidelines (primarily derived from Caucasians) may lead to significant misdiagnosis of LVH in Chinese patients with hypertension as well as in members of the general Asian population. The EchoNoRMAL collaboration, a multi-ethnic Population-based datasets of echocardiographic measurements from 22 404 healthy adults demonstrated that indexation of LV is not enough to correct ethnic-related differences and recommended that ethnic-appropriate reference values need to be implemented for clinical and research purposes.[9] Finally, data from the Echocardiographic Measurements in Normal Chinese Adults (EMINCA) study showed that the overall prevalence of abnormal LV geometric patterns in hypertensive patients was significantly lower with reference diagnostic thresholds derived from healthy Chinese volunteers than from ASE/ EACVI guidelines.[10] Thus, modern precision cardiovascular medicine can no longer ignore the application of thresholds based on the ethnic-specific normal echocardiographic reference in the identification of hypertensive cardiac damage.

AUTHOR CONTRIBUTIONS

Cesare Cuspidi conceived the comments to the paper by Yano et al. and wrote the first draft. Marijana Tadic shared the observations and contributed to the final draft of the manuscript

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