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Left atrial systolic force in hypertensive patients with left ventricular hypertrophy: the LIFE study.

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Abstract

In hypertensive patients without prevalent cardiovascular disease, enhanced left atrial systolic force is associated with left ventricular hypertrophy and increased preload. It also predicts cardiovascular events in a population with high prevalence of obesity. Relations between left atrial systolic force and left ventricular geometry and function have not been investigated in high-risk hypertrophic hypertensive patients. Participants in the Losartan Intervention For Endpoint reduction in hypertension echocardiography substudy without prevalent cardiovascular disease or atrial fibrillation (n = 567) underwent standard Doppler echocardiography. Left atrial systolic force was obtained from the mitral orifice area and Doppler mitral peak A velocity. Patients were divided into groups with normal or increased left atrial systolic force (>14.33 kdyn). Left atrial systolic force was high in 297 patients (52.3%), who were older and had higher body mass index and heart rate (all $P < 0.01$) but similar systolic and diastolic blood pressure, in comparison with patients with normal left atrial systolic force. After controlling for confounders, increased left atrial systolic force was associated with larger left ventricular diameter and higher left ventricular mass index (both $P < 0.01$). Prevalence of left ventricular hypertrophy was greater (84 vs. 64%; $P < 0.001$). Participants with increased left atrial systolic force exhibited normal ejection fraction; higher stroke volume, cardiac output, transmitral peak E velocities and peak A velocities; and lower E/A ratio (all $P < 0.01$). Enhanced left atrial systolic force identifies hypertensive patients with greater left ventricular mass and prevalence of left ventricular hypertrophy, but normal left ventricular chamber systolic function with increased transmitral flow gradient occurring during early filling, consistent with increased preload.

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