

## Treatment of Diastolic Dysfunction in Hypertension

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### COMMENTARY

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Changes in LV diastolic filling characterise Left Ventricular (LV) Diastolic Dysfunction (LVDD), which is a powerful predictor of cardiovascular events and heart failure. Hypertension is the most common cause of LVDD in the general population, and it promotes it through a variety of mechanisms, including hemodynamic overload and myocardial ischemia. Age, ethnicity, dietary sodium, obesity, diabetes mellitus, and chronic renal disease are all factors that contribute to LVDD in hypertensive people. LVDD can be improved by lowering blood pressure with antihypertensive drugs; however, it is uncertain if this improvement in LV diastolic function can improve cardio vasculature. Changes in LV diastolic filling characterise Left Ventricular (LV) Diastolic Dysfunction (LVDD), which is a powerful predictor of cardiovascular events and heart failure.

Hypertension is the most common cause of LVDD in the general population, and it promotes it through a variety of mechanisms, including hemodynamic excess and myocardial infarction (Age, ethnicity, dietary sodium, obesity, diabetes mellitus, and chronic renal disease are all factors that contribute to LVDD in hypertension people. LVDD can be improved by lowering blood pressure with antihypertensive drugs; however, it is uncertain if this improvement in LV diastolic function can improve cardio vasculature. One of the early cardiac symptoms of systemic hypertension is abnormalities in left ventricular (LV) diastolic function in the presence of normal LV systolic performance.

Although it is clear that age, bodyweight, blood pressure, left atrial size, LV systolic function, interstitial fibrosis, impaired coronary blood flow, and sympathetic stimulation all play a role in diastolic filling abnormalities, these filling abnormalities have been observed more clearly in patients with LV hypertrophy. Several studies suggest that poor diastolic function may contribute to a reduced LV systolic response to isotonic or isometric exercise, at least in part. Some antihypertensive medicines, such as Angiotensin Converting Enzyme (ACE) inhibitors and calcium antagonists, especially those of the phenylalkylamine type, can considerably enhance diastolic function when taken for short or extended periods of time. When LV mass was lowered by long-term antihypertensive medication, inappropriate diastolic filling was considerably improved. Even after medication was stopped and blood pressure returned to normal, LV mass remained low. These findings imply that reducing LV mass may improve LV diastolic function in and of itself. More research is needed to see if improving LV diastolic function affects the long-term prognosis with hype.

Hypertension is the most prevalent cause of heart failure, which is one of the most common causes of cardiovascular morbidity and mortality. Isolated diastolic dysfunction is frequently associated with hypertensive heart disease, according to recent research. An active relaxation phase and a passive compliance period can be distinguished in ventricular diastolic function. These two components have been studied invasively and are still the gold standards for diastolic function research. In a clinical situation, however, echocardiographic and Doppler methods are the most useful for assessing ventricular filling. As a result, the analysis of mitral flow E and A waves has yielded crucial and helpful information. Unfortunately, these indexes are influenced by much too many variables. The ability to assess diastolic function has improved thanks to new indices derived from ventricular time intervals, tissue Doppler imaging, and colour M-mode echocardiography. In addition, new techniques such as Magnetic Resonance Imaging (MRI) and cine Computed Tomography (cine CT) have improved our understanding of left ventricular filling in hypertension.

Diastolic dysfunction has been discovered to be widespread in patients with hypertension using these approaches, even before left ventricular hypertrophy is visible and hypertension develops in young, normotensive male offspring of hypertensive parents. Furthermore, myocardial ischemia and fibrosis have recently been identified as two significant variables linked to diastolic dysfunction in hypertension. Diastolic dysfunction has been linked to an increased risk of cardiovascular morbidity and mortality, as well as the development of heart failure, in half of hypertensive patients. Treatment of diastolic dysfunction in hypertension is an important and desirable goal, given the high prevalence of hypertension and its related consequences. Angiotensin-converting enzyme inhibitors and angiotensin receptor blockers have been found to improve diastolic function and are suggested as first line

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medicines in the management of hypertension in diastolic heart failure patients. Beta-blockers, calcium channel blockers, and diuretics have also been demonstrated to improve diastolic filling indices.