Effects of Highly Absorptive Curcumin on Systolic and Diastolic Function in Hypertensive Patients with Left Ventricular Hypertrophy

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Abstract

Background: Nuclear acetylation of cardiomyocytes is being recognized as a critical event. Signals activated by increased hemodynamic overload to the heart finally reach nuclei of cardiomyocytes, change patterns of gene expression and cause their maladaptive hypertrophy. Acetylation of hypertrophy-responsive transcription factors by an intrinsic histone acetyltransferase (HAT), p300, is a critical event during this process. Cardiac p300 activity is increased in common types of heart failure in which pathological cardiomyocyte overgrowth occurs in response to hemodynamic overload. A natural compound, curcumin (Cur), possesses HAT inhibitory activity with specificity for p300. We have demonstrated that Cur treatment prevents the deterioration of systolic function in two different rat models of heart failure, hypertension and myocardial infarction. Recently, by using a novel drug-delivery system, we have developed highly absorptive curcumin (HS-Cur). We hypothesized that HS-Cur improves LV function in hypertensive patients.

Protocol

Methods and Results: Twenty hypertensive patients received daily HS-Cur (60 mg/day) for 24 weeks. Anti-hypertensive treatment was continued and unchanged during this period. No adverse effects were observed, and all patients completed the 24-week follow-up period. LV function was assessed by two-dimensional and Doppler echocardiography at baseline and at the end of follow-up. The ratio of early diastolic transmitral flow velocity/early diastolic velocity of mitral annulus, a parameter of diastolic function, improved from 12.0 ± 0.58 to 11.3 ± 0.56 (p=0.097). Fractional shortening increased from 37 ± 1.1% to 40 ± 1.1% (p=0.056). However, systolic and diastolic blood pressures did not change during this period (from 130 ± 3/75 ± 3 to 135 ± 4/78 ± 2, p>0.1). In a subset of patients with left ventricular hypertrophy (LVH, LV mass index>116 g/m²), LV mass index significantly decreased from 127 ± 9.0 to 115 ± 5.8.

Conclusion: Treatment of hypertensive patients by 60mg/day of HS-Cur for 24 weeks is safe and well-tolerable. HS-Cur regresses LVH and appears to improve LV systolic function as well as diastolic function independent of blood pressure in hypertensive patients. Dietary compound is expected as a novel useful agent for heart failure in humans.

Disclosure of Interest: Non

Objective

To examine the effect of highly absorptive curcumin (thercurain) on diastolic dysfunction in hypertensive left ventricular hypertrophy