Cardiac Magnetic Resonance Assessment of Left Ventricular Mass in Autosomal Dominant Polycystic Kidney Disease


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Abstract

Background and objectives Autosomal dominant polycystic kidney disease (ADPKD) is associated with a substantial cardiovascular disease burden including early onset hypertension, intracranial aneurysms, and left ventricular hypertrophy (LVH). A 41% prevalence of LVH has been reported in ADPKD, using echocardiographic assessment of LV mass (LVM). The HALT PKD study was designed to assess the effect of intensive angiotensin blockade on progression of total kidney volume and LVM. Measurements of LVM were performed using cardiac magnetic resonance (MR).

Design, setting, participants, & measurements Five hundred forty-three hypertensive patients with GFR >60 ml/min per 1.73 m² underwent MR assessment of LVM at baseline. LVM was adjusted for body surface area and expressed as LVM index (LVMI; g/m²).

Results Baseline BP was 125.1 ± 14.5/79.3 ± 11.6 mmHg. Average duration of hypertension was 5.79 years. Prior use of angiotensin-converting enzyme inhibitors or angiotensin receptor blockers was present in 59.5% of patients. The prevalence of LVH assessed using nonindexed LVM (g) was 3.9% (n = 21, eight men and 13 women) and 0.93% (n = 5, one man and four women) using LVMI (g/m²). In exploratory analyses, the prevalence of LVH using LVM indexed to HW₂/₇, and the allometric index ppLvmass, ranged from 0.74% to 2.23% (n = 4 to 12). Multivariate regression showed significant direct associations of LVMI with systolic BP, serum creatinine, and albuminuria; significant inverse associations with LVMI were found with age and female gender.

Conclusions The prevalence of LVH in hypertensive ADPKD patients <50 years of age with short duration of hypertension, and prior use of angiotensin-converting enzyme inhibitors/angiotensin receptor blockers is low. Early BP intervention in ADPKD may have decreased LVH and may potentially decrease cardiovascular mortality.

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