Amlodipine or lisinopril was not better than chlorthalidone in reducing renal outcomes in hypertension and impaired renal function


Clinical impact ratings: GIM/TP/GP ★★★★★★ Hospitals ★★★★★★ Cardiology ★★★★★★ Endocrinology ★★★★★ Nephrology ★★★★☆☆

**Question**
What is the effect of first-line therapy with a calcium-channel blocker (amlodipine) or an angiotensin-converting enzyme (ACE) inhibitor (lisinopril) compared with a diuretic (chlorthalidone) on renal disease outcomes in patients with hypertension and impaired renal function?

**Methods**
Design: Subgroup analysis of a randomized placebo-controlled trial (Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial [ALLHAT]).
Allocation: [Concealed].
Blinding: [Blinded (clinicians, patients, data collectors, outcome assessors, and steering committee)].
Follow-up period: Mean 4.9 years.

**Patients:** 33,357 patients ≥ 55 years of age (mean age 67 y, 53% men) who had stage 1 or stage 2 hypertension and ≥ 1 additional risk factor for coronary heart disease. Exclusion criteria were symptomatic heart failure, left ventricular ejection fraction < 35%, or serum creatinine level > 176.8 µmol/L (2 mg/dL).

**Intervention:** Chlorthalidone, 12.5 to 25 mg/d (n = 15,255), amlodipine, 2.5 to 10 mg/d (n = 9,048), or lisinopril, 10 to 40 mg/d (n = 9,054). Patients were stratified by baseline glomerular filtration rate (GFR) (≥ 90, 60 to 89, and < 60 mL/min per 1.73 m²) and by presence or absence of diabetes mellitus (36% of patients had diabetes).

**Outcomes:** End-stage renal disease (ESRD) (kidney transplantation, start of dialysis, or death caused by kidney disease).

**Main results**
ESRD developed in 448 patients. Overall, rates of ESRD did not differ between patients who received chlorthalidone (1.8/100 patients) and either those who received amlodipine (2.1/100 patients) (relative risk [RR] 1.1, 95% CI 0.9 to 1.4) or those who received lisinopril (2.0/100 patients) (RR 1.1, CI 0.9 to 1.4). These results were similar across the 3 strata of baseline GFR (Table).

**Conclusion**
In patients with hypertension, amlodipine or lisinopril was not superior to chlorthalidone in reducing end-stage renal disease, even among those who started with reduced renal function.

**References**

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