11:30 am–Noon & 1:30–2:00 pm
Monday, April 27th • Lobby

PS1 - 06

Increased Incident Renal Disease with ACE-I + Thiazide Therapy for Hypertension: The Geisinger Clinic Population

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Background and Aims: Thiazide diuretics are recommended alone or in combination for uncomplicated hypertension (HTN). Most patients require treatment with 2 or more drugs. Based on studies of monotherapy, ACE-I are recommended for patients at risk of renal disease, including diabetics. Data are sparse regarding thiazide plus ACE-I combination therapy. We hypothesized that thiazide plus ACE-I is associated with a lower incidence of renal disease compared with other common thiazide combinations, but that confounding by indication for diabetes might attenuate this effect.

Methods: We conducted a retrospective cohort study of thiazide combinations in a 41 site clinical practice that is the dominant provider in a large rural area. Data were extracted from an electronic medical record for all patients >60 years treated for HTN between 2001 and 2006. Patients with prevalent renal disease, or <6 months of treatment or follow-up, were excluded. Diabetes was defined as ICD-9 250.* Renal disease was defined as ICD-9 codes 403.*-404.*, 593.9, 585.*-586.* or an estimated glomerular filtration rate (eGFR) <60 mL/min/1.73m2. Incident renal disease by eGFR required >2 measurements persisting >3 months.

Results: Among 4700 patients (98% Caucasian, 69% female, mean age 70 yrs, mean follow-up 32.5 months), the incidence of renal disease was 22.7%. Five drug categories accounted for 97% of thiazide combinations: ACE-I, Angiotensin Receptor Blocker (ARB), Beta-blocker (BB), Calcium Channel Blocker (CCB) and Potassium-sparing diuretic (P-S). In Cox models with ACE-I + thiazide as the reference group, adjusted for age, sex, and pre-treatment blood pressure, patients who used BB + thiazide (HR 0.72, 95% CI, 0.60-0.86) and CCB + thiazide (HR 0.72, 0.55-0.96) had significantly lower hazard ratios for incident renal disease than those who used ACE-I + thiazide. In analyses stratified on diabetes status, results were generally similar for patients with and without diabetes except for the suggestion of a greater rate of incident renal disease in patients without diabetes who used P-S + thiazide (HR 1.23, 1.01-1.49) compared with ACE-I + thiazide.

Conclusions: Contrary to expectation, ACE-I with thiazide was associated with an increased incidence of renal disease compared with all other groups except potassium-sparing diuretics. This risk was significantly greater than that observed with BB. The association was not meaningfully changed by accounting for diabetes.