Heart failure and chronic kidney disease: racial differences in mortality and development of end-stage renal disease

Jay Xue, DVM, Charles Herzog, MD, Robert Foley, MB, MSc, Allan Collins, MD, FACP
United States Renal Data System, Minneapolis Medical Research Foundation, University of Minnesota Twin Cities

Introduction

- White patients with heart failure (HF) and chronic kidney disease (CKD) have higher mortality rates than African Americans with the same conditions.
- No study has examined non-CKD subjects with HF to determine racial differences in mortality and the effect of HF on the progression to end-stage renal disease (ESRD).

Methods

- Subjects were elderly Americans (aged 65 years and older) insured by Medicare.
- Data were from the 5% sample, randomly selected from Medicare claims.
- Baseline conditions (e.g., HF) were coded during a one-year period in 2002.
- Subjects were followed for up to one year until death or ESRD.
- Due to small sample sizes of other minority groups, only African Americans and whites were included in the study.
- The X² test was used for univariate analysis of categorical data. Cox proportional modeling was used to obtain the relative risk for death or ESRD.

Results

- OF 1,271,215 subjects, approximately 8% were African American.
- Baseline HF in African Americans and whites was 11.7% and 9.0%, respectively; baseline CKD was 10.6% and 7.3% (P < 0.01).
- In African Americans and whites, 3.7% and 2.3%, respectively, had both HF and CKD, 8.1% and 6.7% had HF only, and 6.9% and 6.4% had CKD only (P).
- The proportion of African Americans and whites who died was 25.2% and 22.5% and 6.7% and 6.4% for HF only, 10.7% and 9.0% for CKD only, and 4.3% and 4.1% for neither condition (P < 0.01).
- After adjustment for age, gender, diabetes, and hypertension, hazards ratios for mortality in African Americans relative to whites (hazard ratio = 1.0) were 0.94 (0.88-0.99), 1.23 (1.14-1.33), and 1.12 (1.08-1.16) for HF+CKD, HF only, CKD only, and non-HF+CKD, respectively.
- ESRD in African Americans and whites was 4.66% and 1.91% for HF+CKD respectively, 2.34% and 0.89% for CKD only, 0.28% and 0.12% for HF only, and 0.14% and 0.04% for non-HF+CKD (P < 0.001).
- African Americans had higher hazards ratios for developing ESRD in all HF and CKD categories (P < 0.001).

Conclusions

- African Americans with Medicare have a higher prevalence of recognized CKD particularly those with an additional diagnosis of heart failure.
- While patients with HF (with or without CKD) are more likely to die than their African American counterparts, whereas whites without HF are less likely to die than African Americans.
- African Americans are more likely to develop ESRD than whites regardless of HF or CKD status.
- It appears that part of the higher incidence rates for African Americans may be explained by a survival advantage in those with CKD and heart failure.
- The reasons for this survival advantage need to be addressed in further studies.