INSUFFICIENT NATRIURETIC RESPONSE TO FUROSEMIDE PREDICTS WORSENING RENAL FUNCTION IN ACUTE DECOMPENSATED HEART FAILURE INDEPENDENT OF BASELINE RENAL FUNCTION

ACC Poster Contributions
Ernest N. Morial Convention Center, Hall F
Sunday, April 03, 2011, 10:00 a.m.-11:15 a.m.

Session Title: Myocardial Function/Heart Failure - Clinical Pharmacological Treatment
Abstract Category: 21. Myocardial Function/Heart Failure—Clinical Pharmacological Treatment
Session-Poster Board Number: 1017-26

Authors: Dhssraj Singh, Kevin Shrestha, Wai Hong Wilson Tang, Cleveland Clinic, Cleveland, OH

**Background:** Treatment of acute decompensated heart failure (ADHF) with loop diuretics is complicated by insufficient natriuresis. We hypothesize that insufficient natriuretic response to diuretic therapy, characterized by a lower amount of sodium excreted in response to furosemide (estimated by spot urine sodium-to-furosemide ratio [USFR]), predicts subsequent worsening renal function (WRF) and adverse long-term clinical events.

**Methods:** We enrolled 41 subjects treated with continuous intravenous furosemide infusion and measured spot USFR ≥3 hours after a steady level of furosemide was achieved. WRF was defined as serum creatinine (sCr) rise of ≥0.3 mg/dL. Adverse long-term events (death, transplant or rehospitalization) were tracked for 4±3 months.

**Results:** In our study cohort (age 60±15 years, admission sCr 1.8±0.9 mg/dL, median BNP 674 pg/mL, furosemide dose 13±6 mg/hour), baseline USFR did not correlate with age, BNP, sCr or diuretic dose (p>0.40 all). Low USFR predicted subsequent WRF, and independent of admission sCr, diabetes mellitus and hypertension (OR: 3.5, 95% CI: 1.3-12.3, p=0.009). USFR ≤2.3 mmol/mg detected WRF with 78% sensitivity, 63% specificity (AUC 0.74, p=0.013) and was associated with poorer long-term outcomes (HR: 2.8, 95% CI 1.2-7.6, p=0.024).

**Conclusions:** In ADHF patients treated with continuous furosemide infusion, insufficient natriuretic responses to diuretic therapy predict subsequent WRF and adverse long-term events independent of baseline renal function.