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A Comparison of Traditional and Novel Definitions (RIFLE, AKIN, and KDIGO) of Acute Kidney Injury for the Prediction of Outcomes in Acute Decompensated Heart Failure

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Commentary

By Professor Richard Glassock

In a prospective analysis of 637 hospital admission for acute decompensated congestive heart failure (HF) to a tertiary medical center in Ireland in 2002–2009, Roy and co-workers examined the prognostic utility of several definitions of acute kidney injury (AKI) in predicting adverse outcomes (death, re-hospitalization, the need for dialysis therapy). The criteria used for diagnosis and staging the severity of AKI were the RIFLE, AKIN, KDIGO and the Worsening Renal Function (WRF-assessed by a ≥ 0.3 mg/dl increase from 'baseline' values of serum creatinine). The comparisons were made by the Receiver Operating Characteristic (ROC) method. Acute kidney injury was quite common in this cohort (incidence of 38.3% by any definition) and AKI was associated with a greater frequency of adverse outcomes at 30 days and 1 year of follow up, and poorer outcomes were seen with increasing severity of AKI. The individual criteria showed only small differences in predictive ability (by ROC). Issues of confounding by unmeasured variables are an inherent weakness of this observational study, and urine output criteria could have been influenced by diuretic administration. As is common in such analysis, there are uncertainties regarding inputed 'baseline' serum creatinine levels when contemporaneous pre-AKI values are unknown.

It would be of interest to examine the predictive ability (for adverse outcomes) such as in-hospital mortality of the newly described absolute delta creatinine method of diagnosis and staging of AKI (see Wang H.E. et al., Nephrol Dial Transplant, March 20, 2013) and to compare the utility of these systems by net reclassification index (NRI) or integrated discrimination index (IRI) statistics instead of the less sensitive ROC method. Nevertheless, these patients constitute an important subset of AKI and better quantification of risk may help in stratifying them for potential interventions to reduce re-hospitalization or for preferential admission to intensive care units. This type of study is an important start along this pathway.

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