

One-Year Prognosis of Kidney Injury at Discharge From the ICU: A Multicenter Observational Study.

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Abstract

OBJECTIVES: The association between outcome and kidney injury detected at discharge from the ICU using different biomarkers remains unknown. The objective was to evaluate the association between 1-year survival and kidney injury at ICU discharge.

DESIGN: Ancillary investigation of a prospective observational study.

SETTING: Twenty-one ICUs with 1-year follow-up.

PATIENTS: Critically ill patients receiving mechanical ventilation and/or hemodynamic support for at least 24 hours were included.

INTERVENTIONS: Serum creatinine, plasma Cystatin C, plasma neutrophil gelatinase-associated lipocalin, urinary neutrophil gelatinase-associated lipocalin, plasma Proenkephalin A 119-159, and estimated glomerular filtration rate (on serum creatinine and plasma Cystatin C) were measured at ICU discharge among ICU survivors.

MEASUREMENTS AND MAIN RESULTS: The association between kidney biomarkers at discharge and mortality was estimated using logistic model with and without adjustment for prognostic factors previously identified in this cohort. Subgroup analyses were performed in patients with discharge serum creatinine less than 1.5-fold baseline at ICU discharge. Among 1,207 ICU survivors included, 231 died during the year following ICU discharge (19.2%). Estimated glomerular filtration rate was significantly lower and kidney injury biomarkers higher at discharge in nonsurvivors. The association between biomarker levels or estimated glomerular filtration rate and mortality remained after adjustment to potential confounding factors influencing outcome. In patients with low serum creatinine at ICU discharge, 25-47% of patients were classified as subclinical kidney injury depending on the biomarker. The association between kidney biomarkers and mortality remained and mortality was higher than patients without subclinical kidney injury. The majority of patients who developed acute kidney injury during ICU stay had elevated biomarkers of kidney injury at discharge even with apparent recovery based on serum creatinine (i.e., subclinical acute kidney disease).

CONCLUSIONS: Elevated kidney biomarkers measured at ICU discharge are associated with poor 1-year outcome, including in patients with low serum creatinine at ICU discharge.