

Category : **Renal: failure**

A34 - Biomarkers of kidney stress during early critical illness identify patients with impaired kidney function at icu discharge when assessed using cystatin-c but not creatinine.

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Introduction:

The Nephrocheck™ assay is a combination two urinary biomarkers (TIMP-2:IGFBP-7) which predicts AKI risk. We investigated the association between kidney stress during early critical illness and kidney function at ICU discharge.

Methods:

Participants were all inpatients at a critical care unit, UK. Those who died in ICU were excluded. TIMP-2:IGFBP-7 was measured on day 1,3,5, and 7, peak measurement in first 7 days was categorised as: Low risk (<0.3), Low-Medium Risk (0.3-0.99), High-Medium Risk (1-2) or High Risk (2+). eGFR at ICU discharge was assessed using Creatinine and Cystatin C. Differences in eGFR between groups were assessed using the Jonckheere-Terpstra test.

Results:

We included 35 patients, median age 54yrs (range 21-76). Median ICU stay was 16 days (range 5-54). Median baseline eGFR-Cr was 96 ml/min/1.73 m2 (range 16-121). 13 patients developed creatinine defined AKI in the first 10 days with 7 receiving kidney replacement therapy (KRT). Distribution of peak TIMP-2:IGFBP-7 within the first 7 days was: Low risk (N 3), Low-Medium Risk (N 11), High-Medium Risk (N 11), High Risk (N 10). Cystatin C eGFR at ICU discharge was lower than Creatinine eGFR (70 vs 108ml/min/1.73m2, P<0.001). No patient remained on KRT at ICU discharge. Peak TIMP-2:IGFBP-7 category correlated with ICU discharge Cystatin C eGFR (P=0.0128) but not Creatinine eGFR (P=0.166), Figure 1.

Conclusion:

In critical illness assessment of kidney function is impeded by falls in creatinine generation. Here kidney stress was detected in 86% of cases whereas creatinine defined AKI was observed in 40%. When kidney function was assessed using Cystatin-C, severity of early kidney stress identified worse kidney function at ICU discharge. TIMP-2:IGFBP-7 may help risk-stratify long term renal function following critical illness. Evaluation of kidney biomarker tests should consider using Cystatin C rather than Creatinine to assess kidney outcomes.

Image :

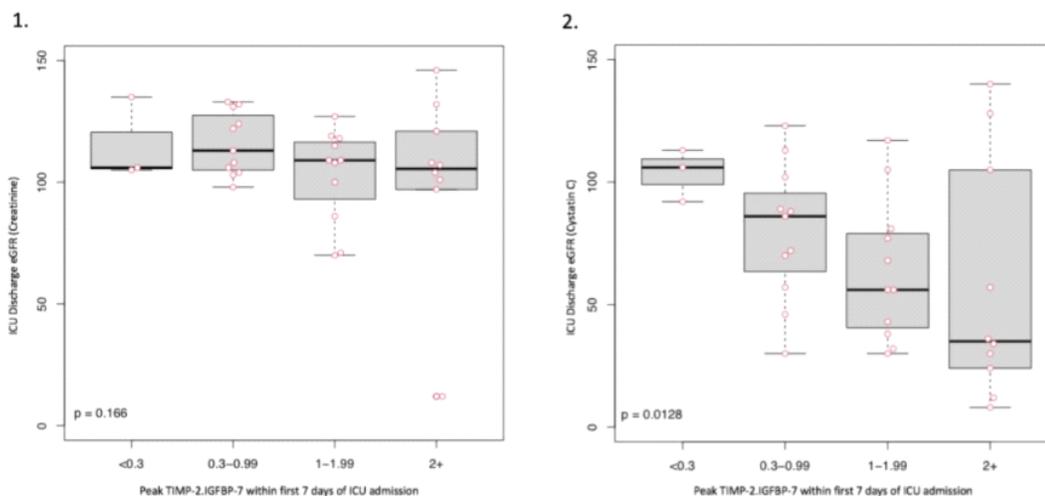


Figure 1: Whisker and Boxplot charts of findings. Charts show peak TIMP-2:IGFBP-7 (Nephrocheck) within first 7 days against ICU discharge eGFR (Creatinine – Chart 1) (Cystatin C – Chart 2). P values shown are based on

Jonckheere-Terpstra test for trend.