

BIOMARKERS

HOW PRECISE IS NEPHROCHECK®?

Recent studies have reported that monitoring urinary concentrations of TIMP-2 and IGFBP7 using the NephroCheck® test (Astute Medical, USA), might serve as an early method to detect acute kidney injury (AKI) following cardiac surgery. However, new data from Onnen Moerer and colleagues suggest that this diagnostic test might not be as precise as originally thought.

The researchers analyzed the accuracy of the multiplied concentrations of urinary TIMP-2 and IGFBP7 (measured using the NephroCheck® test) for early identification of AKI in 42 patients undergoing coronary bypass grafting surgery. Urine samples were analyzed before, immediately after, and 4 h after surgery, and at 8.00 am on the first postoperative day. The biomarker concentrations on the first postoperative day were significantly higher in patients with AKI than in those without AKI, but no between-group differences were found at the earlier time points.

By contrast, previous studies reported that this diagnostic test could predict elevated risk of AKI as early as 4 h after cardiac surgery. The researchers suggest that this difference might be related to the fact that, unlike previous studies, they did not limit their cohort to patients at high risk of AKI. Furthermore, they could not confirm previously published cut-off points of the multiplied biomarker concentration for diagnosis of AKI. They attribute these divergent results to differences in patient cohort composition, surgical setting and methodologies.

The researchers conclude that the NephroCheck® test is adequate to predict AKI after cardiac surgery, but shows a trend towards moderate sensitivity and specificity only on the first postoperative day. They suggest that quantification of urinary TIMP-2 and IGFBP7 concentrations for prediction of AKI might be most applicable in patients at high risk of AKI, and less precise in those at lower risk.

“The quest for an ideal biomarker or combination that can be applied across a large set of patients with varying risks of developing AKI is to be continued,” says Moerer. “We are interested in applying the biomarker set to other high-risk patient cohorts and during planning of therapy regimens for patients in intensive care.”

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