

ACUTE KIDNEY INJURY

Hydration status linked to risk of contrast-induced AKI

Pre-procedural fluid levels in patients undergoing elective coronary angiography can be accurately assessed by bioimpedance vectorial analysis (BIVA). This readout predicts the occurrence of contrast-induced acute kidney injury (CI-AKI), according to findings recently published in the *Journal of the American College of Cardiology*.

As the most common renal complication following contrast medium infusion for angiographic procedures, CI-AKI is associated with increased long-term cardiovascular risk. Although previous studies indicated a lower incidence of CI-AKI in well-hydrated patients, the lack

of a tool to accurately measure hydration status put patients at risk. “We could not demonstrate the importance of hydration in the prevention of CI-AKI unless we could clearly show that our hydration protocol was effective,” explains researcher Claudio Ronco. “The solution came from the availability of a simple, noninvasive fluid assessment method—BIVA.”

Although BIVA is regularly used by nephrologists to monitor fluid levels in patients on dialysis, the technique had not been evaluated in patients undergoing angiographic procedures. Accordingly, the researchers used BIVA to assess fluid status in 900 patients with stable coronary artery disease (CAD) immediately before undergoing coronary angiography.

Overall, CI-AKI occurred in 54 patients (6%), all of whom received standard intravenous saline hydration 12 h before and after contrast medium infusion. Pre-procedural BIVA indices were significantly higher in patients who developed CI-AKI—indicating lower fluid

levels—than in unaffected patients. When patients were stratified into quartiles according to BIVA values, incidence of CI-AKI progressively increased from the first quartile (low BIVA values, high total body water) to the fourth quartile (high BIVA values, fluid depleted). Patients with the highest BIVA values had a threefold increased incidence of CI-AKI compared with those with the lowest values.

“Point-of-care BIVA is a user-friendly, rapid, simple tool for assessing peri-procedural fluid levels in CAD patients undergoing contrast medium administration,” the researchers state in their report. They continue, “BIVA-guided monitoring of fluid infusion could be advisable to ensure optimal patient fluid status.”

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Original article Maioli, M. *et al.* Pre-procedural bioimpedance vectorial analysis of fluid status and prediction of contrast-induced acute kidney injury. *J. Am. Coll. Cardiol.* doi:10.1016/j.jacc.2014.01.025

