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Forced Diuresis with Matched Hydration Using the RenalGuard® System for the Prevention of Contrast Induced Acute Kidney Injury: A Real Life Single-Center Experience

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Background:
Contrast-induced acute kidney injury (CI-AKI) is a frequent complication of coronary angiography associated with unfavorable outcome. Recently, two randomized controlled trials have demonstrated that furosemide induced diuresis with matched isotonic intravenous hydration using the RenalGuard system reduces the risk of CI-AKI in high-risk patients undergoing coronary procedures. The efficacy and safety of this strategy has never been reported in real life practice.

Methods:
We analyzed data of patients at high risk to develop CI-AKI who were hospitalized in our cardiology department for acute coronary syndrome from August to November 2012 and were treated with the RenalGuard system during coronary angiography with or without angioplasty.

Results:
sixteen patients were enrolled, 62.5% males, mean age was 73.6±10.9 years, 94% where hypertensive and 63% were diabetics. Mean ejection fraction was 41±15%, mean eGFR was 35±15.6 ml/min/1.73m^2 and mean baseline hemoglobin was 11.3 ±1.8 g/dL. The mean volume of contrast media delivered was 83±38.5ml (25-172). According to known predictive risk score the patients in this group had a calculated risk of 26.1% for CI-AKI and 1.09% risk of requiring dialysis. Monitored by the RenalGuard system they received a mean IV hydration saline of 3,139±1,475 ml closely matched to mean urine output of 2,804±1,460 ml. None of the patients developed CI-AKI as defined by 0.5 mg/dl or 25% rise in serum creatinine at 48–72 h post contrast administration. There were no major device-related complications. There was no urinary tract infection, no hypokalemia and no hypernatremia in 48-72 hours following the procedure.

Conclusion:
Forced diuresis with matched IV hydration is safe and significantly reduces the risk of CI-AKI in real world high risk patients.