Risk of acute kidney injury after exposure to gadolinium-based contrast in patients with renal impairment

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Background and Aims: Gadolinium-based contrast media (Gd-CM) are reported to induce acute kidney injury (AKI) in a high-risk population group at the usual dose for magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) examinations. We assessed gadolinium-induced nephropathy in patients with renal impairment who underwent MRI or MRA examinations, and evaluate the risk factors.

Methods: In this retrospective study, 238 patients with baseline renal impairment, who received MRI or MRA examinations with Gd-CM, were recruited.

Results: After all other AKI causes—liver decompensation, severe heart failure, all kinds of shock, and severe sepsis—and patients on dialysis were excluded, 158 patients were enrolled. AKI was defined as a decrease in GFR > 10% of baseline data within 3 days after Gd-CM administration. Regression analysis was used to find independent risk factors for gadolinium-induced ARF (Gd-ARF). Twenty-six of the 158 patients (16.5%) developed Gd-ARF. There were no significant differences in gender, age, or baseline eGFR between those who did and who did not develop AKI. Co-morbid coronary artery disease, liver cirrhosis, diabetic mellitus, and hypertension were not significantly associated with the development of Gd-ARF. However, sepsis was an independent risk factor for Gd-AKI after multivariate regression analysis (adjusted odds ratio: 4.417; 95% confidence interval: 1.671, 11.676, \( p = .03 \)).

Conclusions: Sepsis was an independent risk factor for Gd-CM nephropathy at the usual dose for MRI and MRA examinations. It is important to identify high-risk patients and closely monitor renal function after Gd-CM administration.

References: