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Risk factors for post-contrast acute kidney injury in patients repeatedly administered both iodine- and gadolinium-based contrast media on the same visit to the emergency department: A retrospective study

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Objectives: To investigate the risk factors for the development of post-contrast acute kidney injury after sequential administration of both iodine- and gadolinium-based contrast media during a single visit to the emergency department in patients with an eGFR of >30 mL/min/1.73 m².

Methods: This retrospective cohort study analyzed the data of 140 patients. The primary outcome was the development of post-contrast acute kidney injury, i.e., an increase in serum creatinine level of $\geq 25\%$ or 0.5 mg/dL over the baseline or reduction in eGFR of $\geq 25\%$ within 72 h from the last administration of contrast media.

Results: Post-contrast acute injury developed in 38 (27.1%) patients after the administration of both contrast media during a single emergency department visit. Univariable analysis showed that high osmolality, sodium, chloride, glucose, and creatinine levels; low platelet count and eGFR; diabetes; and a short period between each administration of contrast media were associated with the development of post-contrast acute kidney injury. On multivariable logistic regression analysis, only hyperosmolality was independently associated with the development of post-contrast acute kidney injury, whereas hypoosmolality, mild to moderately reduced kidney function, and a period of >4 h between each administration of contrast media were not independently associated with post-contrast acute kidney injury.

Conclusions: Baseline serum osmolality is a valid risk factor for post-contrast acute kidney injury in patients repeatedly administered both contrast media. Hyperosmolality is associated with an increased risk of post-contrast acute kidney injury in patients with an eGFR of >30 mL/min/1.73 m².