

## 생리식염수 및 N-acetylcysteine이 CT 촬영 후 조영제 신독성 발생에 미치는 효과

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### Effects of Saline and N-acetylcysteine to Prevent Contrast-Induced Nephropathy Following Contrast-enhanced Computed Tomography

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**Background :** Although radiocontrast agent is known to be a risk factor for acute kidney injury, previous clinical studies have focused on patients receiving coronary angiography. We assessed the incidence, risk factors of contrast-induced nephropathy (CIN), and the protective effect of saline and N-acetylcysteine (NAC) in patients undergoing contrast-enhanced computed tomography (CT).

**Methods :** We initiated the program named "the prevention of CIN" at Seoul National University Hospital from November, 2006. In this program, patients with estimated GFR (eGFR)  $<60$  ml/min/1.73m<sup>2</sup> undergoing contrast CT in outpatient setting were automatically referred to nephrologists, and the patients received intravenous saline and NAC before and after the CT scan. Serum creatinine was assessed 3 to 5 days after CT. The patients who underwent the contrast CT in outpatient clinic without hydration or NAC were recruited by electronic medical record as controls. CIN was defined as an increase of  $\geq 25\%$  or  $\geq 0.5$  mg/dL in serum creatinine after exposure to radiocontrast agent.

**Results :** A total of 2,059 patients were evaluated (patients enrolled in the program, n=723; controls, n=1,336). Overall, 2.5% of patients developed CIN. The incidence of CIN was 1.0%, 2.9%, and 18.0% in patients with eGFR 45 to 59, 30 to 44, and  $<30$  ml/min/1.73m<sup>2</sup>, respectively. The risk factors for CIN were diabetes, hypertension, anemia, and decreased renal function in univariate analysis. Logistic regression showed diabetes (OR 2.028, 95% CI 1.089–3.773) and baseline renal function (eGFR 30 to 44 ml/min/1.73m<sup>2</sup>, OR 3.902, 95% CI 1.738–8.706; eGFR  $<30$ , OR 28.550, 95% CI 13.575–60.043; compared to the patients with eGFR 45 to 59 ml/min/1.73 m<sup>2</sup>) as independent risk factors. Also, "the prevention of CIN program" significantly decreased the incidence of CIN (OR 0.509, 95% CI 0.263–0.987).

**Conclusion :** Our results suggest that CIN after contrast-enhanced CT is not uncommon, especially in patients who have decreased renal function and that "the prevention of CIN program" including saline and NAC is recommendable for the patients with chronic kidney disease.

**Key Words :** 급성 신손상, 만성 신질환, 조영제 신독성

Acute kidney injury, Chronic kidney disease, Contrastnephropathy