P30

Higher Infusion Rate of Mannitol Increases the Risk of Acute Kidney Injury in Patients with Intracranial Hemorrhage

Min Young Kim[1], Na Ree Kang[1], Jung Eun Lee[2], Wooseong Huh[2], Yoon-Goo Kim[2]
DaeJoong Kim[2], Seung-Chyul Hong[3], Jong-Soo Kim[3], Ha Young Oh[2], HyeRyoun Jang[2]

Division of Nephrology[1], Department of Internal Medicine, Seoul Medical Center, Seoul, Korea
Division of Nephrology[2], Department of Internal Medicine, Samsung Medical Center,
Sungkyunkwan University School of Medicine, Seoul, Korea
Department of Neurosurgery[3], Samsung Medical Center, Sungkyunkwan University chool of Medicine, Seoul, Korea

Background: Mannitol, an osmotic agent used to decrease intracranial pressure, can cause acute kidney injury. The objective of the present study was to identify the impact of mannitol on the incidence and severity of acute kidney injury (AKI) in patients with intracranial hemorrhage.

Methods: We retrospectively studied 153 adult patients who received mannitol infusion after intracranial hemorrhage (ICH) between January 2005 and December 2009 in the neurosurgical intensive care unit. AKI was defined as an increase in serum creatinine by 0.3 mg/dL or more, according to the AKIN classification. Multivariate analysis was used to evaluate the risk factors for AKI after intracranial hemorrhage.

Results: The incidence of AKI was 10.5% (n=16). Significantly more patients who recieved mannitol infusion at a rate >55 μg/kg/hr developed AKI compared to patients who received mannitol infusion at a rate ≤55 μg/kg/hr (19.0% versus 4.4%; p=0.004). Higher mannitol infusion rate was associated with more severe AKI. Independent risk factors of AKI were diastolic blood pressure ≥110 mmHg (OR 22.992, 95% CI 2.478-213.342), furosemide administration (OR 7.633, 95% CI 1.009-57.761), mannitol infusion rate >55 μg/kg/hr (OR 15.565, 95% CI 1.711-141.612), glomerular filtration rate <60 mL/min/1.73m2 (OR 181.050, 95% CI 7.718-4246.824).

Conclusion: AKI following mannitol infusion in patients with ICH was common. Higher infusion rate of mannitol was associated with more frequent and more severe AKI.

Key Words: 만니톨, 급성 신 손상, 두개내 출혈
Mannitol, Acute kidney injury, Intracranial hemorrhage