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Acute Kidney Injury

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Incidence and Risk Factors for Contrast-induced Acute Kidney Injury in patients taking Trimethoprim-sulfamethoxazole

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Background: trimethoprim-sulfamethoxazole (TMP-SMX) is commonly used to prevent pneumocystis pneumonia and for wide range of infections in the outpatient setting. Previous studies have shown a relationship between TMP-SMX and acute renal injury. The attributable risk for renal dysfunction from contrast medium in patients taking TMP-SMX not been well established. We investigated the incidence and risk factors for contrast-induced acute kidney injury (CI-AKI) associated with TMP-SMX.

Methods: We reviewed medical record database for all patients who received ≥3 days of treatment with TMP-SMX between from January 2009 to December 2015. Among these, we included patients underwent contrast-enhanced computed tomography (ECT) scan and for whom a baseline and follow-up determination of serum creatinine were available. CI-AKI was defined as an increase in serum creatinine (sCr) more than 25% of baseline value or 0.3 mg/dL at between 48 hours and 96 hours after ECT. We excluded patients who already had been receiving dialysis

Results: Of 213 patients who met inclusion criteria, 18 (8.5%) had increases in sCr that met predetermined criteria for CI-AKI: The mean age was 58.81 ± 17.59 years. 45 patients (21.2%) had diabetes mellitus. Variables independently associated with CI-AKI included high weight (p=0.049), high potassium level (p=0.048), high potassium/sodium ratio (p=0.030), high Blood urea nitrogen level (p=0.027), high C-reactive protein(CRP) level (P=0.032), high HbA1c level (p=0.019), high CKD stage (p=0.023), concominant use of nephrotoxic drug (OR = 3.00; 95% CI = 1.115-8.099; P = 0.037).

Conclusion: As it is well-known, the incidence of CI-AKI was higher in patients with high CRP level, advanced CKD satge and concominant use of nephrotoxic drug. Moreover, in high risk patients with hyperkalemia or high potassium/sodium ratio, TMP-SMX interruption should be considered to prevent the development of CI-AKI.

Keywords: Contrast-induced acute kidney injury, Radiocontrast induced nephropathy, RCIN, TMP-SMX, trimethoprim-sulfamethoxazole