ACUTE KIDNEY INJURY – CLINICAL

PREVALENT USE OF RENIN-ANGIOTENSIN SYSTEM BLOCKADE IS ASSOCIATED WITH INCREASED RISK FOR ACUTE KIDNEY INJURY IN CRITICALLY ILL PATIENTS

Ji Yong Jung1, Ae Jin Kim1, Eul Sik Jung1, Han Ro1, Chungsik Lee2, Jae Hyun Chang1, Hyun Hee Lee1 and Wookyung Chung1

1Gachon University Gil Medical Center, Internal Medicine, Incheon, Republic of Korea, 2Cheju Halla General Hospital, Internal Medicine, Jeju, Republic of Korea

Introduction and Aims: Acute kidney injury (AKI) is a major clinical problem and predictor of outcome especially in critically ill patients in intensive care unit (ICU). Renin-angiotensin system (RAS) blockades are commonly used but can cause AKI during inter-current illness. The aim of this study was to evaluate whether the prevalent use of RAS blockades affected the incidence of AKI in ICU patients.

Methods: This was a large retrospective study of 26,287 patients who admitted to an ICU from January 2003 to December 2013. AKI was defined according to Acute Kidney Injury Network (AKIN) criteria. The primary outcome was the incidence of AKI based on prescription of RAS blockades.

Results: RAS blockades users showed an increased incidence of AKI during the ICU stay than those of non-users (49.7% vs. 17.3%, P <0.001). In multivariable analysis, use of RAS blockades remained an independent and significant predictor of AKI (odds ratio [OR], 1.56; 95% confidence interval [CI], 1.37-1.79; P <0.001). The hospital length of stay (17.9 ± 27.6 days versus 25.5 ± 57.9 days, P <0.001) and ICU length of stay (4.1 ± 6.0 days versus 4.5 ± 6.7 days, P <0.001) also significantly increased in RAS blockades user group. There were no significant differences for cumulative 90 days survival rates between RAS users and non-users (hazard ratio [HR], 0.91; 95% CI, 0.75-1.12; P =0.381). However, the adjusted mortality risk associated with AKI was 1.38 (95% CI 1.22 to 1.56, P <0.001) and increased with increasing AKI stage: 1.17 (1.02- 1.36), 1.77 (1.45-2.16), and 1.93 (1.55-2.41; P < 0.01 for trend).

Conclusions: Use of RAS blockades was associated with increased development of AKI and prolonged ICU length of stay. Large, multi-center randomized trials are needed to confirm whether temporary withholding of these medications can affect outcomes in ICU patients.