

**UNIVERSITI TEKNOLOGI MARA**

**A RETROSPECTIVE STUDY ON THE  
USE OF ANGIOTENSIN  
CONVERTING ENZYME  
INHIBITOR/ANGIOTENSIN  
RECEPTOR BLOCKER AND THE  
INCIDENCE OF ACUTE KIDNEY  
INJURY**

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## ABSTRACT

Angiotensin-converting enzyme inhibitor (ACEI) and angiotensin receptor blocker (ARB) are recognized as being useful for renoprotective in certain population of hypertensive patients, but both drugs are also known to be nephrotoxic and may induced acute kidney injury (AKI) by decreasing kidney perfusion. The objective of this study was to examine if taking ACEI or ARB is associated with risk of kidney injury. A retrospective records review study was done in Hospital Serdang, Selangor involving cases of cardiovascular patients. Three hundred and fifteen cases were reviewed. Forty nine cases were included in the analysis of AKI with eight cases (16.3%) showed declining eGFR  $\geq 25\%$  in seven days; however, there was no significant association ( $p > 0.05$ ) found between ACEI or ARB and AKI. Further analysis was done to identify the decline in eGFR  $\geq 35\%$  within three months. The decline in eGFR  $\geq 35\%$  within three months was lower (4%) compared to incidence of AKI and showed no significant association ( $p > 0.05$ ) with use of ACEI or ARB. The incidence of hyperkalemia was also documented with 5.6% (n=17) out of three hundred and one patients were having potassium level  $> 5.0$ mmol/L; however, no significant association ( $p > 0.05$ ) found between ACEI or ARB and hyperkalemia. Factors associated with the decline in eGFR  $\geq 35\%$  within three months were identified using multivariate logistic regression analysis. The number of medication co-prescribed with ACEI or ARB (OR=1.32, 95%CI 1.10-1.58) was the only one main factor that found to be significantly associated with the incidence of AKI. Extra caution should be exercised when ACEI or ARB is initiated together with diuretics, NSAIDs and other nephrotoxic agents that may precipitate renal insufficiency.

Keywords: angiotensin-converting enzyme inhibitor, angiotensin receptor blocker, acute kidney injury, glomerular filtration rate (eGFR), hyperkalemia

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