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Acute Kidney Injury

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Incidence and risk factors of acute kidney injury associated with acute pyelonephritis according to RIFLE classification

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Background: Acute kidney injury (AKI) associated with acute pyelonephritis (APN) rarely has been reported. The aim of this study was to evaluate the incidence and risk factors of AKI associated with APN

Methods: We retrospectively reviewed the medical records of 408 patients over 18 years age hospitalized for APN management from October, 2009 to September, 2014 in Gyeongsang National University Hospital. Demographic data, clinical symptoms and signs, and laboratory findings were gathered from the medical records and analyzed.

Results: AKI occurred in 257 patients (63%). As per RIFLE classification, renal injury was graded as “renal risk” (62.2%), “renal injury” (26.5%), and “renal failure” (11.3%). AKI frequently occurred in patients with male gender, old age, chronic kidney disease, initial shock, and complicated conditions ($p=0.008$, <0.001 , 0.004 , 0.024 , <0.001 , respectively). The severity of renal dysfunction according to RIFLE also positively correlated with above variables ($p=0.006$, <0.001 , <0.001 , <0.001 , <0.001 , respectively). Flank pain and bacteremia was also frequently in AKI patients ($p<0.001$, 0.004 , respectively). Thrombocytopenia, leukocytosis, anemia, lower albumin level, high ESR and CRP level was frequently observed in AKI patients ($p=0.001$, <0.001 , <0.001 , <0.001 , <0.001 , respectively). Admission period and antibiotics duration was prolonged in AKI patients ($p<0.001$, <0.001 , respectively). Multivariate analysis presented that age over 65, complicated APN, high CRP level, lower albumin level, and presence of bacteremia was independent risk factor of occurrence of AKI in patients with APN ($p=0.027$, OR 1.741 (CI:1.067-2.841), $p=0.010$, OR 1.835 (CI :1.154-2.918), $p=0.016$, OR 1.003 (CI :1.001-1.006), $p=0.028$, OR 0.582 (CI:0.359-0.942), $p=0.034$, OR 1.717 (CI:1.043-2.827), respectively).

Conclusion:

AKI is common in patients with APN, especially aged person, complicated conditions, and severe infection. Physicians should attempt to prevent, detect, and manage AKI associated APN in patients with comorbid conditions.

Keywords: Acute kidney injury, Infection, pyelonephritis