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Acute kidney injury and mortality in elderly population with femoral neck fracture

Woori Cho, Won-Yong Cho, Sang-Kyung Jo, SeWon Oh, Myung-gyu Kim, Jihyun Yang, Yoon Kyung Choi, Tae Yeon Hwang, Kijoon Lim, Hyunseo Kim
Department of Internal Medicine-Nephrology, Korea University Anam Hospital, Korea, Republic of

Objectives: Femoral neck fracture is common in the elderly population due to the increase of osteoporosis and fragility. Femoral neck fracture is associated with increased morbidity and mortality. Acute kidney injury (AKI) was known as the important risk factor for mortality. However, there is a lack of data about the incidence and the risk factors of AKI in the elderly population.

Methods: This study is an observational cohort study including 285 patients who were over 65 years of age and underwent femoral neck fracture surgery from January 2013 to June 2017. AKI was defined by the Kidney Disease Improving Global Outcomes criteria. Mortality was defined as death after the surgery during hospital stay.

Results: The mean age was 76.73 ± 6.75 and 24.6% was male. The 67(23.5%) patients developed AKI during the hospital stay: 57(85.1%), 5(7.5%), and 5(7.5%) patients were classified as AKI stage 1, 2 and 3, respectively. Patients with AKI had lower baseline estimated glomerular filtration rate, higher uric acid, E/e' ratio, diabetes (DM) and hypertension (HTN) ($P < 0.05$). Presence of HTN (OR 2.251, 95% CI: 1.020-4.972, $P = 0.045$), DM (OR 2.129, 95% CI: 1.046-4.331, $P = 0.037$), and higher E/e' ratio (OR 1.134, 95% CI: 1.054-1.219, $P = 0.001$) were independently associated with higher risk for developing AKI. AKI above stage 2 had significantly increased risk for mortality compared with those including stage 1 AKI and non AKI (log rank test, $P = 0.018$). AKI above stage 2 group was associated with higher risk for mortality (OR 12.762, 95% CI: 1.050-155.166, $P = 0.046$). Low albumin level, and heart failure ($EF < 40\%$) were independent predictors for mortality.

Conclusions: Femoral neck fracture showed high incidence of AKI in the elderly population. DM, HTN, E/e' ratio was associated with AKI. Patients who have undergone severe form of AKI were associated with in hospital mortality. Careful management for high risk patients is needed after femoral neck operation.