

KSN 2016 Abstract Submission

Dialysis

KSN2016ABS-1146

Residual urine volume is simple and useful in predicting adverse outcome in dialysis patients

Mi Jung Lee*¹, Young Eun Kwon², Kyoung Sook Park², Hyung Jung Oh², Jung Tak Park², Tae-Hyun Yoo², Yong-Lim Kim³ on behalf of Clinical Research Center for End-Stage Renal Disease, Yon Su Kim⁴ on behalf of Clinical Research Center for End-Stage Renal Disease, Chul Woo Yang⁵ on behalf of Clinical Research Center for End-Stage Renal Disease, Nam-Ho Kim⁶ on behalf of Clinical Research Center for End-Stage Renal Disease, Shin-Wook Kang² on behalf of Clinical Research Center for End-Stage Renal Disease, Seung Hyeok Han²

¹Department of Internal Medicine, CHA Bundang Medical Center, CHA University, Seongnam-si, ²Department of Internal Medicine, Yonsei University College of Medicine, Seoul, ³Department of Internal Medicine, Kyungpook National University School of Medicine, Daegu, ⁴Department of Internal Medicine, Seoul National University College of Medicine, ⁵Department of Internal Medicine, Catholic University of Korea College of Medicine, Seoul, ⁶Department of Internal Medicine, Chonnam National University Medical School, Gwangju, Korea, Republic Of

Background: Preservation of residual renal function (RRF) is crucial in the management of end-stage renal disease (ESRD) patients on dialysis therapy. RRF can be assessed by simply measuring urine volume, calculating glomerular filtration rate (GFR) using 24h urine collection (24h-GFR), or estimating GFR (eGFR) using the proposed equations. However, the latter two methods are inconvenient and impractical in clinical practice, and can merely reflect small solute clearance. Furthermore, to date, the relative contribution of these three RRF parameters in predicting prognosis has not been fully investigated in dialysis patients.

Methods: Using the database from a prospective cohort study of the Clinical Research Center for ESRD, we compared differential implication of the three RRF parameters in 1,946 dialysis patients from 36 dialysis centers in Korea. Residual 24h-GFR and eGFR were determined by an average of renal urea and creatinine clearance based on 24-hour urine collection and CKD-EPI (Chronic Kidney Disease Epidemiology collaboration) equation, respectively. The primary outcome was all-cause death. Prognostic value of three surrogates was compared using Harrell's C index.

Results: The mean age of subjects was 56.1 ± 13.5 years, 1,106 (56.8%) patients were male. A total of 1,254 (64.4%) patients were on hemodialysis and 692 (35.6%) patients were on peritoneal dialysis. The median value of urine volume was 500 (interquartile range [IQR], 0 to 1,100) ml/day, and 639 (32.8%) patients were anuric (urine output less than 100 ml/day). The median value of 24h-GFR and eGFR was 2.0 (0.1 to 5.4) and 5.2 (4.1 to 7.1) ml/min/1.73 m², respectively. During a mean follow-up of 42 months, deaths occurred in 385 (19.8%) patients. In multivariable Cox analyses, residual urine output (hazard ratio [HR], 0.959 per 100 ml/day increase; 95% confidence interval [CI], 0.939 to 0.979; P<0.001) and 24h-GFR (HR, 0.976; 95% CI, 0.953 to 0.998; P=0.034) were independently associated with all-cause mortality. However, eGFR (HR, 0.993; 95% CI, 0.960 to 1.026; P=0.667) did not predict all-cause mortality. When each parameter was added to null model, only residual urine volume

improved the discriminative ability for the prediction of adverse outcome (*c*-statistic, 0.759 [0.734 to 0.784] vs. 0.754 [0.729 to 0.779]; P=0.010).

Conclusion: Residual urine volume was an independent predictor for all-cause mortality and exhibited the strongest predictive value, compared to 24h-GFR and eGFR. These findings suggest that measuring urine volume could be a simple and valid method to determine residual renal function for predicting prognosis in dialysis patients.

Keywords: all-cause mortality, Dialysis, Glomerular filtration rate, Residual renal function, Urine output