ABSTRACT

BACKGROUND: Residual renal function (RRF) expressed as residual GFR (rGFR) and urine volume (UV) decreases over time since hemodialysis (HD) initiation and its decline is associated with increased mortality in patients undergoing HD. Studies evaluating diuretics’ use and the role of limited ultrafiltration (UF) to preserve RRF in HD patients are scarce.

OBJECTIVE: To describe the decline of rGFR and UV during the first year of dialysis in patients treated with diuretics and limited UF, and compare it with incident HD patients treated by a conventional approach with no limitation of UF.

METHOD: Retrospective case-series, single-center study of ten incident HD patients with an additional case-control analysis. The control group included 20 age- and sex-matched patients from the NECOSAD-2 study. RRF was calculated from 24-h urine collections at three, six and 12 months. For statistical analysis we used Wilcoxon signed-rank test, Spearman coefficient correlations and a Generalized Linear Model.
RESULTS: The mean dose of furosemide was higher at 12 months compared with three months (235 mg/day vs. 147 mg/day). The UF volumes were low at three months and decreased further at 12 months (955 mL and 531 mL respectively). We found no statistically significant difference on change in UV and rGFR between three and 12 months (p > 0.05 for all comparisons). Higher UF at 12 months correlated with lower UV (r = -0.51, p < 0.01) and lower rGFR (r = -0.67, p < 0.001). Compared with controls, patients with limited UF had a lower monthly rate of decline in UV {[-45 (-81, -8) ml/month vs. +28 (-76, 131) ml/month], (p < 0.05)}. The monthly decline rate in rGFR was also lower, but not statistically significantly different {[-017 (-0.24, -0.10) mL/min/1.73m²/month vs. -0.03 (-0.28, 0.20) mL/min/1.73m²/month], (p > 0.05)}. Limited UF did not result in worse pre-dialysis systolic blood pressure at 12 months (147 ± 10 mmHg) compared with three months (144 ± 17 mmHg), (p > 0.05).

CONCLUSIONS: This study showed that a combined strategy using diuretics and limiting UF may help preserve UV in incident HD patients. Further randomized control trials are needed to explore this important strategy.

KEY WORDS: diuretics; hemodialysis; residual renal function; ultrafiltration; ultrafiltration rate; urine volume.