Abstract: Chronic kidney disease (CKD) is characterized by aortic stiffness and increased cardiovascular mortality. In end-stage renal disease, aortic stiffness predicts mortality, whereas this role remains uncertain in mild-to-moderate CKD. We aimed to investigate whether aortic pulse wave velocity (aPWV) predicts mortality and renal disease progression in CKD patients. We enrolled 135 CKD patients stages 2-4 [estimated glomerular filtration rate (eGFR): 41.1 (28.5-61.6) ml/min per 1.73 m²] in the study and assessed aPWV. The combined renal end-point was defined as at least 50% decline in renal function and/or start of renal replacement therapy. During the observational period of 42 (30-50) months six patients were lost of follow-up, 13 patients died and 16 patients reached the combined renal end-point. Stratification according to the mean of aPWV (10 m/s), Kaplan-Meier analysis revealed increased mortality with aPWV>=10 m/s (log-rank P< 0.05). Stepwise logistic regression analysis confirmed aPWV as an independent predictor for mortality in CKD stage 2-4. The hazard ratio of mortality in the cohort with an aPWV at least 10 m/s was 5.1 (1.1-22.9). By contrast, Kaplan-Meier analysis revealed no effect of aPWV on the combined renal end-point (log-rank P = 0.90). These results provide the first direct evidence that in patients with CKD stage 2-4, increased aortic stiffness determined
by aPWV is a strong independent predictor of all-cause mortality.