

The risk factors for progression of chronic kidney disease in a cohort of South African black patients

Shriyan Maharaj

University of the Witwatersrand, Johannesburg, South Africa

Abstract

Background: Increasing prevalence of chronic kidney disease (CKD) is a global health concern. Complex and heterogenous patient factors influence the natural course of CKD. We examined the relationship between predefined risk factors and the rate of progression and outcomes of CKD.

Methods: Retrospective chart analysis was performed involving a cohort of 265 adult patients who presented at Chris Hani Baragwanath Hospital during 2010 to 2020. Descriptive statistics representing demographic profiles were examined, as well as associations between risk factors and outcomes. Estimated glomerular filtration rate (eGFR) decline was computed based on the recorded annual eGFR measurements. To examine the relationship between risk factors, eGFR change rate, and categorical patient outcomes, regression analysis was performed.

Results: The mean age of participants was 56.6 (13.8) years; males constituted 144 (54%) of the study group. Major risk factors included hypertension (83%), diabetes (39%), and HIV (35%). Many patients were impacted by multiple concomitant risk factors (61%), with hypertension being a co-morbid diagnosis in >50% of patients with diabetes and HIV. The annual mean eGFR decline rate over four years was 1.63 mL/min/1.73 m². Decline rate was higher for diabetics: 2.3 mL/min/1.73 m² (SD 3.8), almost double that of non-diabetics. Baseline-stage CKD 3A progressed more rapidly than CKD 3B. The mean eGFR was 28.0 mL/min/1.73 m², with an average decline rate over the study period of 26%. Significant predictors of a higher-than-average rate of eGFR decline over the study duration were diabetes and dyslipidaemia (OR = 6.65 95% CI: 1.2–34.8). Age, HIV, and smoking also contributed to the rate of decline. Hypertension was not a strong prognosticator in the model. Acute kidney injury (AKI) was a frequent complication, noted in 44 (17%). When documented AKI cases with a significant decline in eGFR were excluded, the overall nature of the relationships reported based on the full sample remained unchanged.

Conclusions: Common modifiable risk factors, when present at initial evaluation, were demonstrated to accelerate CKD progression and have worse outcomes. These patients are most likely to benefit from close monitoring, tighter risk factor control, and earlier planning for renal replacement therapy.