RISK FACTORS FOR THE DEVELOPMENT AND PROGRESSION OF RENAL DISEASES IN DISADVANTAGED POPULATIONS: ROLE OF THE RENIN-ANGIOTENSIN SYSTEM BLOCKADE

Chronic kidney disease is becoming a public health challenge due to the high risk of progression to end-stage kidney disease, the increased cardiovascular burden and management costs, especially among disadvantaged communities. Although the high prevalence of hypertension and diabetes in these populations are recognized risk factors and a leading cause of chronic kidney disease, ethnic populations show a greater likelihood of developing end-stage kidney disease regardless of these cardiovascular risk factors. The association between low socioeconomic status and the prevalence/progression of chronic kidney disease observed in population-based studies suggests that socioeconomic disadvantage could be a plausible reason for the increased burden of renal disease among minorities. Interventions for management and prevention of chronic kidney disease include angiotensin converting enzyme inhibitors and angiotensin receptor blockers. Few studies of these agents have been conducted in indigenous populations, but there is evidence that angiotensin converting enzyme inhibitors are effective in reducing premature deaths and progression of chronic kidney disease, as well as being highly cost-effective, especially in terms of renal replacement therapies avoided. It is plausible that these disadvantaged groups may benefit more than others from a renal and cardiovascular prevention program, but considerable under-recognition and under-treatment of these conditions still exist. (Ethn Dis. 2009 [Suppl 1];19: S1-86–S1-89)

From the Mario Negri Sud Consortium, S. Maria Imbaro (Ch), Italy (AM, GFMS); Diaverum Corporate Medical—Scientific Office, Lund, Sweden (GFMS).

Address correspondence and reprint requests to: Ausilia Maione; Mario Negri Sud Consortium; S. Maria Imbaro (Ch), Italy; 39 0872 570480; 39 0872 570263 (fax); maione@negrisud.it

Ausilia Maione, MSc PharmChem; Giovanni F. M. Strippoli, MD, PhD, MPH, MM

BACKGROUND

Chronic kidney disease (CKD) is a medical and public health challenge. There have been variable definitions of CKD, and a review of population-based data, which defined CKD as glomerular filtration rate <60 mL/min/1.73 m², found that 7.2% of people aged ≥30 years and 23.4%–35.8% of people aged ≥64 years were affected by CKD.1

Studies have found that patients with CKD may have a high risk of progression to end-stage renal disease (ESRD), requiring dialysis or renal transplantation for renal replacement therapy. CKD and ESRD are associated with excess cardiovascular mortality and morbidity.2

Hypertension and diabetes are well-established causes of kidney disease. Data from a community-based (N = 23,534) prospective observational study3 of 20 years’ duration show that the incidence of CKD increases 3- to 9-fold per category increase in blood pressure, according to the Sixth Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure blood pressure categories.4 CKD associated with diabetes, also called diabetic nephropathy or diabetic kidney disease, involves the presence of microalbuminuria or macroalbuminuria and occurs in a large proportion of diabetic patients (25%–40%). In addition, having diabetes is associated with an odds ratio for end-stage renal disease of 11.1 (95% confidence interval [CI] 7.2–16.9).5 Hypertension and diabetes are also associated with excess cardiovascular morbidity and mortality independently and in the presence of renal disease.

ETHNICITY AND CHRONIC KIDNEY DISEASE

Sociodemographic status and ethnicity have received attention for being associated with an increased risk of adverse vascular outcomes, including cardiovascular events and mortality. Data from the United States Renal Data System show that the risk of progression from CKD to ESRD is significantly higher among ethnic minorities compared with the general population, and incidence rates in some groups are up to 4 times higher than in Whites.6 Although diabetes and hypertension are the leading causes of CKD, and Blacks and other minorities are more likely to have diabetes and hypertension, these ethnicities have a greater probability of developing ESRD regardless of the presence of these 2 risk factors7 (Table 1).

The association between low socioeconomic status and the prevalence and progression of CKD has been widely observed in population-based studies,8–11 which suggests that socioeconomic disadvantage could be a reason for the increased prevalence of renal disease among minorities. Results of an ecological study performed in the 36 Aboriginal and Torres Strait Islander Commission regions of Australia showed a strong association between area-based measures of disadvantage and the regional incidence of ESRD in indigenous Australians (Table 2).12

Recent data indicate that compared with a population of age- and sex-matched nonindigenous children, Aboriginal children in Australia had no increase in albuminuria, proteinuria, or persistent hematuria, the most important markers for CKD; they suggested that ESRD in aboriginal people may therefore be preventable during early life.13 We should aim to broadly