Editorial Comments

Challenges for nephrology practice in Sub-Saharan Africa

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The burden of chronic kidney disease (CKD) and end-stage kidney disease (ESKD) presents a challenge for both developed and emerging countries. While dialysis and transplantation consumes an ever-increasing proportion of the health budget in countries such as the United States, Japan and Taiwan, there is limited availability of these expensive therapies in the majority of emerging countries and even less in Sub-Saharan Africa (SSA) where diseases such as HIV/AIDS, tuberculosis and malaria account for much of the available funding.

Burden of chronic kidney disease

The lack of renal registries in most African countries makes it difficult to obtain accurate statistics about CKD. Recently, CKD was reported to account for 8–12% of hospital admissions in Nigeria [1]; it affects mainly young adults aged 20–50 years in SSA and is primarily due to hypertension and glomerulonephritis (GN), unlike developed countries where CKD presents in middle-aged and elderly patients and is predominantly due to diabetes mellitus and hypertension.

The study by van Rensburg et al. adds to the available data on CKD in South Africa; the majority of patients presented late with presumed hypertensive nephropathy (51.2%) and chronic kidney failure of unknown aetiology (37.9%), requiring renal replacement therapy (RRT), and this is similar to other studies from Africa. Studies from Nigeria showed that 62% were of unknown aetiology, with hypertension accounting for 61%, diabetes mellitus for 11% and chronic GN for 5.9% of the remaining patients whose aetiology was ascertained [2]. Previous studies from South Africa reported on hypertension and GN as being the chief causes (45 and 52%, respectively) amongst RRT patients [3,4].

Hypertension and CKD

Hypertensive nephropathy is viewed as the major cause of ESKD in many parts of Africa. Hypertension is an important cause of CKD in SSA ranging from 25% in Senegal, 29.8% in Nigeria, 45.6% in South Africa to 48.7% in Ghana, especially in black patients [7]. Hypertension affects about 25% of the adult population and was the cause of ESKD in 21% of patients on RRT in South Africa [8]. This preponderance of hypertensive ESKD in black individuals may be attributed to genetic variants in the gene that encodes non-muscle myosin 2a protein (MYH9). Studies in African-American patients with hypertensive ESKD (without diabetes) suggest that much of the excess risk of ESKD is attributable to a MYH9 risk haplotype and suggest that hypertension may cause progressive kidney disease only in genetically susceptible individuals or be the result of a primary renal disease [9].

Conclusion

Lack of resources is a major constraint on the provision of renal care in many parts of Africa. Rationing of services is practised in many parts of Africa, including South Africa, resulting in small numbers of patients selected for RRT [10]. Appropriate training and retention of healthcare workers is a challenge for many African countries [11] and is a prerequisite for screening and early detection programmes for CKD.

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References

Increasing evidence base for sodium bicarbonate therapy to prevent contrast media-induced acute kidney injury: little role of unpublished studies

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Contrast agents are annually administered to millions of patients worldwide [1]. Contrast-induced acute kidney injury (CI-AKI) is the third leading cause of acute kidney injury (AKI) in hospitalized patients, accounting for about 10% of hospital-acquired renal failure [2]. Sodium bicarbonate-based hydration was found to be superior to normal saline in prevention of CI-AKI in several recent meta-analyses [3–8]. These meta-analyses included up to 18 trials out of a total of 24 currently identified and eligible investigations (Table 1). Subgroup meta-analyses limited to published trials (full manuscripts after peer review) showed bicarbonate hydration to be superior to normal saline, whereas unpublished studies (presented at meetings with limited peer review and available as abstracts) were controversial, showing either a significant [6] or non-significant decrease in risk of CI-AKI [7,8]. All meta-analyses demand additional studies to be performed based on the fact that substantial heterogeneity and publication bias were found, as after adjustment for presumed unpublished trials by trim-and-fill analysis, the estimated pooled odds ratios did not reach statistical significance [3–5,7].

However, heterogeneity found in these meta-analyses may be due to factors other than publication status such as differences in peri-procedural hydration protocols or concurrent medications, use of contrast media with varying osmolarity and differences in radiographic procedures. Whereas the imposed risk for AKI by various low-osmolar or iso-osmolar contrast media is still a matter of debate [9,10], the type of procedure definitely has consequences for the risk of the patients. Weisbord et al. [11] showed that the incidence of CI-AKI is lower for intravenous contrast application than for arterial angiographies, with significant differences in coronary and non-coronary arteriographies.

In the current issue of Nephrology Dialysis and Transplantation (NDT), Hoste and co-workers [12] present a comprehensive meta-analysis including a total of 18 trials also showing subgroups of both full papers (published) and abstracts (unpublished). The special aspect of this meta-analysis is their separate analysis for non-coronary and coronary procedures as well as acute coronary procedures. A marginally significant beneficial effect of hydration with sodium bicarbonate in coronary procedures was observed, whereas the effect in patients undergoing acute coronary procedures was highly significant. If the benefit of bicarbonate in preventing CI-AKI is real, this may be relevant for daily practice because most hydration protocols using isotonic bicarbonate are using a shortened peri-procedural hydration regimen with a higher volume of 3 ml/kg/h given 1 h before intervention, which turns out extremely useful in the acute care setting.

As mentioned, heterogeneity was observed in all meta-analyses that were previously performed. This may be