GUEST EDITORIAL

Chronic kidney disease

In the USA, the proportion of the population with chronic kidney disease (CKD) reached 15% by 2017.[1] In South Africa (SA), this figure may well be higher. CKD management in the developed world aims at the apex of the triangle, e.g. improvements in dialysis and transplantation, as well as the mid-triangle area, i.e. strategies in slowing the progression to end-stage renal disease. In SA, however, the huge costs of dialysis and transplantation dictate that our CKD management should first and foremost be aimed at prevention and, secondly, at renoprotection. The review presented in the CME section of *SAMJ*[2] highlights recent information relating to the use of metformin in the management of diabetes in patients with CKD, the essential and early treatment of CKD acidosis (i.e. estimated glomerular filtration rate (eGFR) ≤59 mL/min), early dietary therapy, early lowering of serum uric acid and the introduction of adequate and ongoing exercise – all aimed at slowing the progression of CKD. Furthermore, the use of high-dose statins in preventing cyst growth and eventual renal failure in patients with autosomal-dominant polycystic disease is explained.

One development not mentioned in the review, is the pivotal importance of vitamin D metabolism and secondary hyperparathyroidism (sHPT) in renoprotection. Effective treatment of sHPT significantly reduces the risk of myocardial infarction, stroke and heart failure; therefore, correct management is essential. This is discussed in an article by Friedl and Zitt[3] on vitamin D prohormone in the treatment of sHPT in patients with CKD. Early in CKD (stage 2), the osteocyte begins to produce increased levels of fibroblast growth factor 23 (FGF23), and by CKD stages 3a and 3b the levels are >1 000 times increased. With every decrement of the GFR, phosphate retention would tend to occur, but is offset by an even higher secretion of FGF23. Given the inexorable fall in GFR, sooner or later the serum phosphate will be permanently increased. A reduction in dietary phosphate ingestion is mandatory for all patients with CKD stage 3 and onwards.

Sunlight converts epidermal vitamin D_2 into inactive vitamin D_3 (calciferol), which is stored in the liver. However, large quantities are also stored in adipose tissue of obese persons. Low levels of circulating vitamin D_3 are commonly found in CKD stage 3a onwards, especially in overweight patients. FGF23 inhibition of the reabsorption of tubular phosphate results in intermittent hypophosphataemia, which occurs early on in CKD. Moreover, the increased FGF23 markedly inhibits the action of the proximal tubular 1α-hydroxylase enzyme responsible for the conversion of calciferol to calcitriol ($1,25(OH)_2D_3$). Low levels of active vitamin D_3 result in a marked decrease in the absorption of dietary calcium, resulting in intermittent hypocalcaemia and sHPT. Prevention of sHPT should start early, when the eGFR is ≤60 mL/min. Early administration of calcitriol has resulted in accelerated coronary and carotid artery calcification. However, the administration of relatively large doses of calciferol (20 000 - 30 000 IU weekly) on a permanent basis is safe, and will not lead to hypercalcaemia or metastatic vascular calcification. The extent to which this strategy is effective in preventing sHPT is still a matter of debate, but does form part of the most recent recommendations.[4] Calcitriol in a dose of 0.25 μg/day should be introduced only when the eGFR has decreased to <20 mL/min.

Finally, it is in the hands of our general practitioners and primary healthcare workers to diagnose CKD early and to either introduce adequate therapy or to refer early. Future government support for a prevention programme is also absolutely essential, but is currently not provided for.

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