

Recognising and diagnosing chronic kidney disease: Part 1

For many reasons, general physicians find renal disease difficult to diagnose, understand and treat. The terms 'chronic kidney disease' (CKD) and 'glomerular filtration rate' – representing the renal function equation – have been introduced to clarify some of these difficulties. Unfortunately, these pivotal concepts are often poorly understood. CKD risks being unrecognised because there are no specific symptoms, and it is often not diagnosed or only diagnosed at an advanced stage. Tests for CKD are, however, simple and freely available.

CKD and advancing chronic renal failure (CRF) are underdiagnosed generally, particularly in rural areas. At the same time, there is an alarming rise in the incidence of serious CRF. From global estimates, we can suppose that 5 million South Africans over the age of 20 have CKD, and the figure is almost certainly higher among black South Africans.

In South Africa (SA), hypertension and diabetes, both diseases that are markedly influenced by lifestyle choices, are by far the main causes of CKD and CRF. This being so, the potential for prevention by early diagnosis and proper treatment to slow or minimise the progression of functional deterioration is huge.

The annual cost of renal replacement therapy is approximately ZAR200 000 per patient for dialysis and about ZAR300 000 in the first year, and ZAR160 000 - 180 000 in subsequent years, for transplantation.

The March CME is the first of a two-part series of articles derived from the National Kidney Foundation of South Africa guidelines for the diagnosis and management of CKD. April will carry the second part of these guidelines. The intention is to help generalists be aware of this heterogeneous condition, diagnose and manage it to the best of their ability, and mitigate the burden of disease that CKD represents.

Effects of methamphetamine abuse on the kidneys and blood pressure

Methamphetamine abuse has risen dramatically in SA, particularly in the Western Cape Province and by young people of lower socioeconomic status and educational level. Methamphetamine is relatively easy and inexpensive to produce, making it readily accessible.

A closely related amphetamine, known as Ecstasy, initially used as an appetite suppressant, rapidly became a recreational drug used in dancing clubs and was found to cause hyperthermia, dehydration and rhabdomyolysis, and an increased risk of acute renal failure. The toxic effects of amphetamines include cardiomyopathy, ischaemic heart disease, aneurysm formation, seizures, psychosis, hallucinations, stroke, hyperthermia, rhabdomyolysis, pulmonary hypertension, systemic hypertension, acute renal failure and hepatocellular damage. There have been isolated reports of adverse renal effects, including necrotising renal vasculopathy, an exaggerated decline in renal function over a 15-year follow-up of patients who used methamphetamines, a higher serum creatinine level 1 year after transplant in recipients from donors who had used methamphetamines, and early graft loss of two kidneys from donors who had used methamphetamines.

The chronic effects of methamphetamine abuse on the kidneys and blood pressure have not been documented. Jones and Rayner^[1] reviewed patients referred for evaluation of kidney disease and/or hypertension who had been abusing methamphetamines and whose mean age was just 29 years, and concluded that methamphetamine use is associated with severe hypertension, half of the subjects fulfilling criteria for malignant hypertension and mesangiocapillary glomerulonephritis that rapidly evolves to end-stage renal disease.

Preventing liver fibrosis and cancer in Africa

As is well recognised, hepatitis B virus (HBV) infection is endemic in sub-Saharan Africa (SSA), and the HBV-related disease burden is high.

The lifetime risk of HBV infection is >60%, and >8% of those infected remain chronic HBV carriers who are at risk of progressive liver disease and HBV-related hepatocellular carcinoma (HCC). SSA has one of the highest HBV-related liver cancer rates in the world, as it is the most common cancer among males and third most common among females.

Unfortunately, HCC is usually a highly aggressive tumour with limited treatment options, particularly in resource-poor settings, such as SSA. Furthermore, HBV-related HCC affects patients in their working and reproductive years.

The achievements of a collaborative research project, the PROLIFICA project, are outlined in an editorial entitled 'Prevention of Liver Fibrosis and Cancer in Africa: The PROLIFICA project – a collaborative study of hepatitis B-related liver disease in West Africa.'^[2]

So far the project has succeeded in achieving capacity building in each of the three countries (The Gambia, Sénégal and Nigeria) involved in the study. Local health infrastructure has benefited from new technologies, such as the Fibroscan to assess liver fibrosis using ultrasound-based transient elastography, a mass spectroscopy system in The Gambia for local biomarker research, and the development of in-house laboratory assays, as well as skills transference for improved liver cancer healthcare, in West Africa.

Local nursing, medical and laboratory staff have benefited from training, education and employment opportunities. Procedures and training in effective and secure data management and ethical research practices have been a central part of the PROLIFICA platform. Local researchers have availed themselves of specialised academic mentorship at each of the three sites involved in the study to obtain higher research degrees and academic publications. Finally, community education on HBV infection, mode of transmission and prevention is also likely to have had a positive impact on HBV awareness, at both community and political levels. Above all, the PROLIFICA platform has facilitated the development of strong relationships for future research collaborations and a deeper understanding of the barriers to improved healthcare delivery in Africa.

The Vaccine and Cervical Cancer Screen project 2

This issue of *SAMJ* carries the third in the series of articles dealing with HPV and cervical cancer, 'The Vaccine and Cervical Cancer Screen project 2 (VACCS 2): Linking cervical cancer screening to a two-dose HPV vaccination schedule in the South-West District of Tshwane, Gauteng, South Africa.'^[3] This study again provided the opportunity to investigate the outcome of cervical cancer screening in mothers and guardians by linking this to the vaccination of the girls in their care. Female parents and guardians of primary school girls were invited to take part in self-administered HPV screening, the screen kit consisting of a sample collector with user instructions available as an Evalyn brush.

Linking self-testing HPV screening to HPV vaccination proved a promising alternative to the current screening policy, although greater uptake rates are required. Given the effective communication of results via the school system and using mobile phone technology, large numbers of women can potentially be screened without impacting on the over-burdened primary care services.

Dementia in rural SA: A pressing need for epidemiological studies

With older age being a major risk factor for dementia, the increasing numbers of older adults worldwide will increase demand for services to diagnose, treat and care for people with dementia. Little is known about the prevalence of dementia or its impact on older adults living in low- and middle-income countries (LMICs) in Africa, including SA. Furthermore, research into the aetiology and risk factors in LMICs is scant. The need for studies to investigate these factors in SA is therefore critical, say De Jager *et al.*^[4]

Alzheimer's disease is the most common form of dementia in older adults and possibly contributes to 60 - 70% of cases. Other major varieties include vascular dementia, dementia with Lewy bodies and frontotemporal dementia. In SA, disorders associated with neurodegeneration such as traumatic brain injury (TBI), alcohol dependence and HIV infection are affecting increasing numbers of older adults. There is also a growing burden of disease from non-communicable diseases such as diabetes, heart disease and obesity resulting from increasingly unhealthy lifestyles and diet, which contribute to dementia risk.

TBI: The hidden pandemic

Few resources are available for the rehabilitation of TBI patients in SA, and access to rehabilitation facilities in the public sector is limited. TBI can require a long and arduous recovery process, and many survivors are left with permanent physical, emotional and cognitive disabilities. Perhaps unsurprisingly, TBIs from interpersonal violence are largely inflicted by right-handed perpetrators, which results in frontal lobe and/or left temporal lobe injuries. The neurocognitive and behavioural sequelae of frontal lobe injuries include poor judgement, impaired problem-solving ability and loss of the ability to think abstractly, poor organisational skills, loss of inhibition and impulsive behaviour, aggression, personality changes, depression, anxiety and reduced social skills. Left temporal lobe injuries can result in communication difficulties due to disorders of language (receptive aphasia), including loss of the ability to comprehend speech. These deficits have a disabling effect on survivors' ability to cope with activities of daily living and with constructive engagement within their families and communities. Poor impulse control and weak social skills result in dangerous situations for survivors and for those around them.

The experiences of TBI survivors and their family members as outlined by Webster *et al.*^[5] served to inform the development of simple, integrated coping strategies, namely two 'S-Plan' tools, one for survivors and their

families/caregivers, and the other for care workers, in conjunction with counselling and support-group processes. The S-Plan constitutes a discharge resource to inform patients and their carers.

Successful TBI support will not only benefit survivors and their family units, but can also contribute towards a reduction in future violent acts perpetrated by TBI survivors. The ComaCARE Trust is a non-profit organisation based at Groote Schuur Hospital in Cape Town. ComaCARE has been addressing the needs of survivors and families since 2005 by providing a psychosocial service that employs community caregivers in the acute-care setting. In 2012, recognising that TBI survivors are usually discharged into the care of an unprepared family unit, ComaCARE developed a brain injury prevention and family support service in Khayelitsha. This HeadsUP! Hub provides supportive intervention for families that involves counselling by social workers and training for families (to know what to do if their relative displays disruptive behaviour at school or the workplace, aggression, memory problems, anxiety, depression or sleep disturbances). For the next phase of this research, these integrated tools will be piloted from 2015 as part of a longitudinal research project to be conducted in under-resourced communities in Cape Town.

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