

## Control and Prevention of Metabolic Syndrome, Renal Failure and Hepatitis C Infection

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*Dear Editor,*

I read with great interest the article "Diabetes, renal failure and hepatitis C infection: The puzzle should be attended more in future" by SM Alavian (1). This editorial focuses its message on drawing the attention of the scientific community on emerging and increasing prevalence of the metabolic syndrome (high blood glucose, high blood pressure, abnormality in lipid profile, abdominal obesity, and fatty liver), which, if not controlled, would lead to poor consequences such as cardiovascular diseases, stroke and renal insufficiency. The editorial also demonstrated the imposing risks of hepatitis C infection in haemodialysis (HD) and kidney transplant patients, and the consequent high health and financial burden in different countries.

Metabolic syndrome can be controlled by adjusting/ changing life style (physical fitness, cessation of smoking, weight reduction and dieting) together with early and regular management and control of hypertension and diabetes mellitus. These can result in preventing and/

or reducing the risk of cardiovascular diseases, stroke and chronic kidney disease (CKD). In fact, patients at risk of developing CKD include those with family history of renal disease, older age group, diabetes mellitus, hypertension, kidney stones, and chronic urinary tract infections. The risk is increased in patients with poor glycaemic control, uncontrolled hypertension and in patients with high levels or progressive proteinuria. Early detection and management of CKD, which itself is a major risk factor for cardiovascular disease, has been shown to be cost-effective and can reduce the risk of CKD progression and cardiovascular disease by 20% to 50% (2). Referral of patients with early stages of CKD to nephrologist would benefit from adequate conservative management of general health and change of lifestyle, and reduce the specific risk effect on kidneys by strict glycaemic and blood pressure control and the use of angiotensin converting enzyme inhibitors and angiotensin receptor blockers, lipid-lowering agents, correction of anaemia and management of bone and mineral metabolism. These measures can help in preserving functioning nephrons, delaying the progression of kidney disease, and consequently delay the requirement of renal replacement therapy (RRT), and reduce the cardiovascular morbidity and mortality (3). Early referral would also benefit such patients by

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having the time to be educated about the type of their disease and ways to delay its progression, psychological and social support, the different types and options of RRT and early preparation and creation of a suitable dialysis access (4). One of the major benefits of early referral of CKD patient to nephrologist is the ability to complete the pre-transplant work up and assess the suitability of CKD for pre-emptive kidney transplantation. The sufficient time will help in evaluation and suitability of the live-related kidney donor, including management of hepatitis C infected patients, and achievement of adequate matching between the recipient and the donor (3).

Hepatitis C infection remains a significant health and financial burden worldwide. Patients undergoing HD treatment are at an increased risk of contracting hepatitis C viral infection than in general population (5). This is due to their impaired cellular immunity, chronic renal failure and diabetes mellitus, but mainly due to regular blood exposure of HD patients, frequent hospitalizations and surgery, and the need of blood transfusion; though less frequently is required nowadays because of the increasing availability of erythropoietin stimulating agents (6). Despite the lack of effective vaccine, transmission of hepatitis C virus among HD patients can still be minimised or prevented. Implementation of infection control policies and procedures have been shown to significantly reduce the risk of cross-infection between HD patients (7). These include hand washing, wearing sterile gowns, masks and gloves, and proper disposal of contaminated linens and used disposables, proper decontamination and sterilization of dialysis machines and other devices and adequate and continuous training of nursing staff. However, the non-adherence, inadequately applied and/or a breakdown in the infection-control policies and procedures remains a significant obstacle. This could be the result of lack or inadequate training and education of nursing staff and poor supervision of implementation of infection-control measures. The magnitude of increasing seroconversion may also be exacerbated by shortage or frequent turnover of nursing staff in dialysis units. These often faced practice difficulties, increasing demands on HD service, expensive and side effects of management of hepatitis C infection and the absence of hepatitis C vaccine are all in favour of isolating hepatitis C-infected HD patients and the use of dedicated HD machines (8).

In 1995, Abu-Aisha *et al.* (9) reported, in a prospective study, about the effect of chemical and heat disinfection of HD machines on the spread of HCV infection.

Following the seroconversion of 28% of HD patients in first 12 months and 32.2% in the following 18 months, and in the absence of other sources of infection with HCV, they concluded that HD machines were the most likely source of transmission of HCV infection, and therefore, it was important to assign specific HD machines for anti-HCV-positive patients. Similar conclusions have also been reported by other studies (reviewed in reference (6)). More recently, it has been shown that hepatitis C virus transmission can be acquired through sharing a haemodialysis machine (10). Previously, it has been demonstrated that isolation of patients, and HD machines, with hepatitis C infection showed a significant decrease in the annual incidence of hepatitis C seroconversion from an average of 2.4% between the years 1998 and 2001 to 0.2% between 2002 and 2003, with no new seroconverted cases been reported since 2004 until this date (5, 8). Therefore, isolation of patients and HD machines, together with strict adherence to infection control policies and procedures, result in a significant decline in the incidence and better control of viral hepatitis transmission among HD patients.

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