HIV/AIDS—DOMINANT PLAYER IN CHRONIC KIDNEY DISEASE

HIV-associated nephropathy (HIVAN) is now the third leading cause of end-stage renal disease (ESRD) in African Americans between the ages of 20 and 64 years. Statistics in the United States estimate the incidence of HIVAN to be between 3.5% and 12%. The estimated number of those living with HIV worldwide is 37.4 million, with 26 million in Africa. If the US data for HIVAN were extrapolated to Africa, between 0.9 and 3.1 million people would be predicted to have HIVAN. These figures predict an unprecedented (and possibly underestimated) burden of chronic kidney disease (CKD) in Africa, especially if we take into account the socioeconomic associations with CKD for the African continent. This potentially large number of patients poses daunting logistic, financial, and ethical issues for physicians and nephrologists practicing in Africa. Preventing chronic kidney disease due to HIV in Africa should become a major priority. This would enable early detection and treatment of HIVAN in order to prevent or delay progression to ESRD. As HIV infection is a risk factor for the development of CKD, the HIV Medicine Association of the Infectious Diseases Society of America recommends screening for CKD in HIV-infected patients; screening tests should be similar to those for patients with diabetes mellitus to detect early renal involvement. Preventive strategies need to be determined; prospective studies including antiretroviral therapy, angiotensin-converting enzyme inhibitors, and other therapeutic agents are required.

Key Words: HIV/AIDS, HIV-Associated Nephropathy (HIVAN), Chronic Kidney Disease (CKD), End Stage Renal Disease (ESRD), Preventive Strategies

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INTRODUCTION

This article reviews the impact of HIV/AIDS on chronic kidney disease (CKD) and the therapeutic modalities for HIV-associated nephropathy (HIVAN). Early diagnosis of CKD and treatment strategies to prevent or delay progression to end-stage renal disease (ESRD) in HIV infection should be a major priority.

The first sign of the HIV pandemic appeared in June 1981 when the Centers for Disease Control (CDC) reported 5 cases of Pneumocystis carinii pneumonia. Reports of AIDS in Africa started emerging in 1984, and 20 years later, data released by the Joint United Nations Programme on HIV and AIDS (UNAIDS) reveal the extent of the global burden of HIV (Fig. 1). The estimated number of those living with HIV worldwide is 37.4 million, with 26 million in Africa. Sub-Saharan Africa has slightly >10% of the world’s population but is home to >60% of those living with HIV. In Sub-Saharan Africa, an estimated 3.1 million people became newly infected with HIV in 2004, while 2.3 million died of AIDS.

HIV INFECTION AND THE KIDNEY

An association between HIV and renal disease was first reported in 1984 in New York City and Miami. These groups described HIV-positive individuals with proteinuria and progression to ESRD within 8–16 weeks; mortality approached 100% within 6 months of diagnosis. The existence of a specific HIVAN was subsequently confirmed as a distinct pathological entity. HIV-associated nephropathy (HIVAN) is the most common lesion affecting the kidney in numerous biopsy series and was initially thought to be associated with AIDS. This lesion can occur at any stage of HIV infection, even prior to antibody seroconversion. Studies demonstrate a marked racial predilection for the development of HIVAN, as >90% of patients are Black, with a male predominance in both adults and children. The reasons for this racial predilection are as yet unexplained. Some have postulated a genetic predisposition, but candidate genes have not been identified. One study has shown a strong familial clustering of ESRD caused by hypertension or diabetes among Blacks commencing renal replacement therapy (RRT) because of HIVAN. In addition, HIVAN appears to follow a more severe clinical course in Black patients with a higher prevalence of severe glomerular lesions, such as focal glomerulosclerosis.

In addition to the specific histologic lesion of HIVAN, a wide clinical and pathologic spectrum of acute and chronic renal disease occurs with HIV infection. For the purpose of this review, we shall not consider HIV and acute renal failure. Regarding CKD and HIV, glomerular involvement with HIV can be divided into four categories (Table 1). Chronic kidney disease in HIV infection, apart from being due to the direct or indirect effects of HIV and/or its treatment, may be compounded by common co-morbid conditions like diabetes mellitus and hypertension.

HIV INFECTION AND CHRONIC KIDNEY DISEASE

In the United States, African Americans develop hypertension-associated...