The prevalence of impaired renal function in well-treated people living with HIV is low but remains higher than in uninfected controls

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BACKGROUND

Reduced kidney function is an important non-AIDS comorbidity, with a reported prevalence of up to 24 % in people living with HIV [1-3]. Previous studies are focused in populations at increased risk of kidney disease, such as those with uncontrolled HIV infection, of African descent or with hepatitis C (HCV) coinfection.

We aimed to:

• Determine the prevalence of reduced kidney function in well-treated PLWH and in matched uninfected controls.

• Determine if HIV is independently associated with reduced kidney function.

METHODS

Scandinavian PLWH, virologically suppressed on combination antiretroviral treatment, without intravenous drug use, or HCV co-infection were recruited from the Copenhagen comorbidity in HIV infection (COCOMO) study. Sex and age matched uninfected controls were recruited from the Copenhagen General Population Study.

SEX, Age and Renal Function

In all participants a single blood sample was collected. Serum creatinine was used to calculate estimated glomerular filtration rate (eGFR) using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula in accordance with European AIDS Clinical society (EACS) guidelines [4,5]. Reduced kidney function was defined as eGFR ≤ 60 ml/min/1.73m².

Statistical analysis

We used logistic regression analyses to determine risk factors associated with reduced kidney function. We adjusted for age, sex, BMI, cumulative smoking, diabetes and hypertension. We also assessed whether various HIV-related factors were each associated with reduced kidney function.

RESULTS:

Clinical characteristics are presented in Table 1. Most PLWH were receiving cART (98.6%) and had suppressed viral replication (95.4%). Current median (IQR) CD4 count was 700 (521-900), few had CD4 count below 200 cells/mm², few had CD4 count between 200-350, few had CD4≥350 and few had CD4≥500.

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There was no interaction between diabetes and HIV status or between HIV status and hypertension. We found evidence of interaction between age and HIV status on reduced kidney function in our adjusted model with accnetuated effects of age among PLWH. Among PLWH, the odds ratio of reduced kidney function per decade older was 1.5 [95%CI: 0.6-4.4] and 4.8 [95%CI: 3.2-6.7] for uninfected controls (p for interaction = 0.016).

Mode of transmission, current CD4 level, CD4 level nadir, time with HIV and previous AIDS-defining diagnosis were not associated with reduced kidney function (table 3).

CONCLUSIONS

• Prevalence of reduced kidney function is higher in PLWH than in uninfected controls.

• HIV was independently associated with reduced kidney function and the effect of HIV seemed to be accentuated among older individuals.

We additionally investigated whether HIV modifies the effect of age, hypertension and diabetes on reduced kidney function.

Abbreviations: BMI, body mass index; IQR, interquartile range; SD, standard deviation. eGFR, estimated glomerular filtration rate.

Table 1. Clinical characteristics.

Table 2. Multivariable logistic regression analyses to determine whether HIV is independently associated with reduced kidney function.