RENAL FUNCTION RAPIDLY DECREASES IN HIV-INFECTED PATIENTS RECEIVING ANTIRETROVIRAL THERAPY

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INTRODUCTION

- Chronic kidney disease (CKD) is now epidemic among patients with human immunodeficiency virus (HIV)
- As recent advances in antiretroviral therapy (ART) have induced the increasing frequency of hypertension (HT) and diabetes (DM) in addition to longevity.
- However, there are no studies addressing the clinical question of how renal function decreases in them.

OBJECTIVES

- How quickly eGFR could decreases in HIV-infected patients.
- What are related factors for decline in eGFR?

METHODS

Retrospective cohort study for six-years.

Subjects:

- A total of 661 HIV-infected patients.
- Excluded patients who were received hemodialysis at enrollment.

Methods:

- CKD was defined as an eGFR less than 60 ml/min/1.73m^2.
- Consecutive data of eGFR were obtained during 6 years from 2008 to 2014.
- The differences in mean eGFR between each year and 2008 (reference) were compared using Student's paired t-test.
- A multiple linear regression model was constructed to identify factors associated with amount of difference in mean eGFR between 2008 and 2014 (⊿eGFR).

RESULTS

Table 1. Demographics and laboratory characteristics

No. of HIV-infected patients	n = 661
Age (y)	46 ± 12
Men (%)	90.5
Japanese (%)	94.1
Prevalence of HT (%)	18.8
Prevalence of DM (%)	6.7
Presence or absence of ART use (%)	90.2
Duration of ART use (y)	5 ± 3
Urinary albumin creatinine ratio（mg/g）	101 ± 596
eGFR (ml/min/1.73m^2)	85.3 ± 19.6
Cystatine C（mg/L）	0.80 ± 0.25
CD4（cells/μL）	411 ± 204
HIV-RNA（< 50 copies/mL, %）	81.7

Figure 1. Changes of eGFR in six years

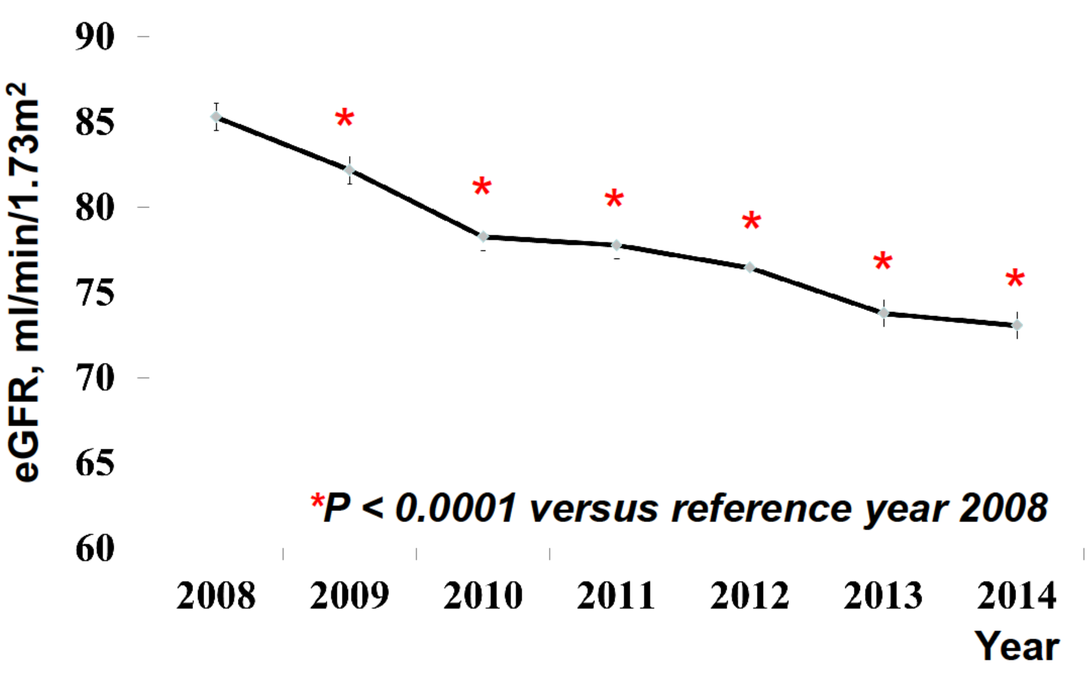

Figure 2. Amount of difference in mean eGFR between 2008 and 2014

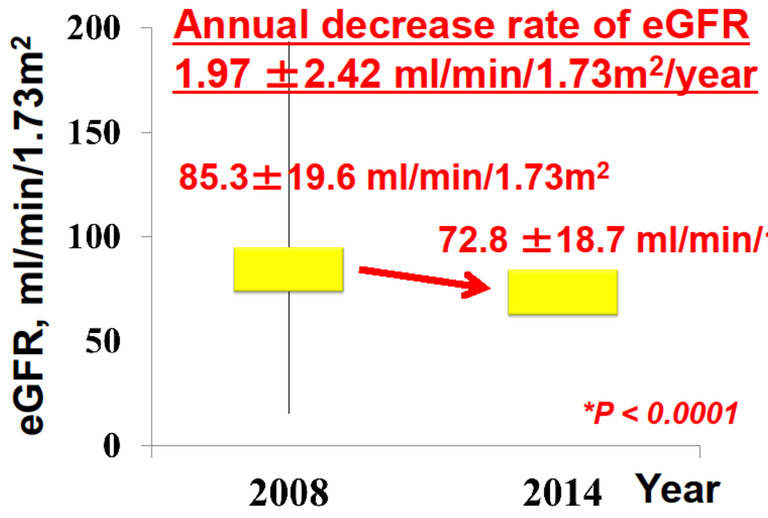

Figure 3. Progress of prevalence of CKD

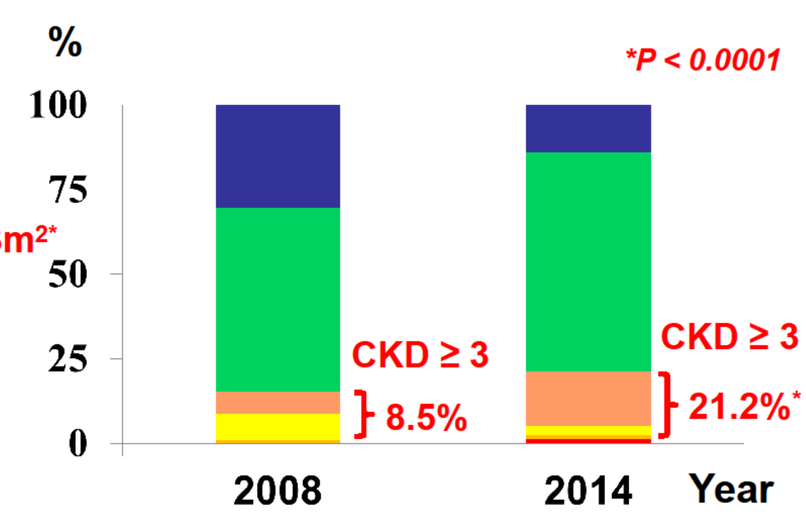

Table 2. Factors associated with the⊿eGFR

Variable	Standardized β	*P* value	VIF
Age	-0.02	0.5797	1.24
Men	-0.08	0.0573	1.03
Prevalence of DM	0.09	0.0287	1.14
Prevalence of HT	0.01	0.8835	1.12
TDF user	0.02	0.7086	1.14
Urinary albumin creatinine ratio ≥ 30 mg/g	0.17	0.0002	1.22
eGFR < 60 ml/min/1.73m^2	0.19	<0.0001	1.12
CD 4 > 400	-0.04	0.2876	1.06
Viral load of HIV > 50 copy/mL	0.11	0.0109	1.22

DISCUSSION

■ Annual decrease rate of eGFR was 1.97 ±2.42 ml/min/1.73m^2/year.

⇒ Decline rate of eGFR is 0.34±0.02 mL/min/1.73 m^2/year in Japanese general population of the same age.

⇒ HIV-infected individuals have greater decline rate of eGFR.

■ Prevalence of DM, urinary albumin creatinine ratio ≥ 30 mg/g, eGFR < 60 ml/min/1.73m^2, and viral load of HIV > 50 copy/mL at baseline were significantly associated with decrease rate of eGFR.

⇒ We have to consider not only HIV virus load, but also presence or absence of DM as a risk of renal impairment.

CONCLUSION

A yearly-averaged decrease rate of eGFR is extremely high in HIV-infected patients.

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