

Prevalence of chronic kidney disease in elderly patients with human immunodeficiency virus infection on antiretroviral therapy

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Background

Renal insufficiency may affect up to 10% of HIV patients as a result of HIV-associated nephropathy (HIVAN) consequence of HIV replication in the kidney, AIDS related kidney disease or medication mainly with tenofovir, atazanavir or abacavir, being important to consider the potential impact on antiretroviral therapy.^(1,2)

The increasing number of elderly patients with HIV, coupled with the prevalence of Chronic Kidney Disease (CKD) at this age and the side effects of antiretrovirals led us to select them, as an at-risk population for clinical drug monitoring.

Purpose

Assessment kidney function in elderly patients infected by HIV treated with antiretrovirals.

Methods

Retrospective study (2010) of HIV-infected elderly patients (≥ 65 years) monitored at the Infectious Disease Unit of the author's Hospital to identify those with Chronic Kidney Disease. Data were obtained from-patient medical records, pharmacy medicines database and laboratory test results.

❖ The criteria for definition of **Chronic Kidney Disease** is:

✓ Kidney damage (KD) for ≥ 3 months, as defined by structural or functional abnormalities of kidney, with or without decreased glomerular filtration rate (GFR), manifested by either:

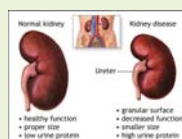
1. Pathological abnormalities; or
2. Markers of kidney damage, including abnormalities in the composition of the blood or urine, or abnormalities in imaging tests.⁽³⁾

✓ GFR < 60 ml/min/1.73 m² for ≥ 3 months, with or without kidney damage.⁽³⁾

❖ Proteinuria (> 30 mg/dL) is an early and sensitive marker of KD.⁽³⁾

❖ **Modification of Diet in Renal Disease** (MDRD) equation was used to determine the estimate GFR (eGFR):⁽³⁾

$$\text{GFR (mL/min/1.73 m}^2\text{)} = 175 \times (\text{serum creatinine})^{-1.154} \times (\text{age})^{-0.203} \times (0.742 \text{ if female}) \times (1.210 \text{ if black})$$



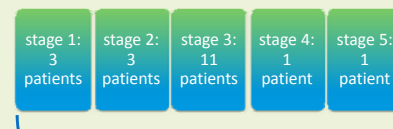
❖ The **stages** (1-5) of CKD (Table 1) are defined based on the level of kidney function.⁽³⁾

Stages of Chronic Kidney Disease		
Stages	Description	GFR (mL/min/1.73m ²)
1	Kidney damage with normal or ↑GFR	≥90
2	Kidney damage with mild or ↓GFR	60-89
3	Moderate ↓GFR	30-59
4	Severe ↓GFR	15-29
5	Kidney failure	< 15 (or dialysis)

Table 1. Stages of CKD. K/DOQI (National Kidney Foundation, Kidney Disease Outcome Quality Initiative), clinical practice guidelines for CKD.

Results

63 patients



From the 63 patients, 19 had CKD in different stages (Table 2).

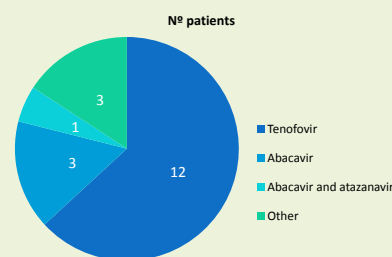
Of this nineteen, 14 were men, mean age 70.9 (65-79), 18 with mean serum creatinine 1.25±0.39mg/dL and 1 with 10.92mg/dL on hemodialysis.

Patient (19)	Age	Gender	Serum creatinine (t-3 months)	eGFR (MDRD) (t-3 months)	Serum creatinine (t)	eGFR (MDRD) (t)	Proteinuria (mg/dL)	Stage of CKD
a	76	F	1.02	53	1.10	48	20	3
b	67	M	1.15	63	1.35	53	100	3
c	65	M	0.97	78	0.72	110	200	1
d	65	F	2.67	18	2.16	23	30	4
e	78	F	1.10	48	1.23	42	0	3
f	69	M	1.51	46	1.65	42	50	3
g	77	M	2.09	31	2.00	33	100	3
h	67	M	1.35	53	1.31	55	10	3
i	65	M	0.87	88	0.79	98	30	1
j	66	M	1.05	71	1.19	61	30	2
k	76	M	1.61	42	1.38	50	10	3
l	70	M	0.98	76	1.20	60	30	2
m	79	M	1.18	60	1.02	70	30	2
n	70	M	1.20	60	1.28	56	5	3
o	65	F	1.10	50	1.12	49	5	3
p	65	M	n.a. (HD)	n.a. (HD)	10.92	5	n.a. (HD)	5
q	71	M	0.80	95	0.66	119	100	1
r	73	F	0.96	57	0.96	57	10	3
s	78	M	1.41	49	1.43	48	5	3

Table 2. Stages of the patients with CKD. Male (M), female (F), hemodialysis (HD), n.a. (not applicable).

The 19 patients with CKD, 12 were in their therapeutic regimen tenofovir, 3 were abacavir and 1 was atazanavir and abacavir.

Those antiretrovirals are known to cause renal impairment. (Graphic 1)



Graphic 1. Number of patients with tenofovir, abacavir, atazanavir and abacavir

Conclusions

A significant number of this population have a decreased eGFR and have CKD probably due to age, to HIV-associated nephropathy, but also to the presence of tenofovir, abacavir or atazanavir.

Bibliography

1. Kidney Int. 2001; 60: 821-830;
2. Kidney Int. 2003; 63: 2295-2301;
3. National Kidney Foundation Guidelines. Accessible in: http://www.kidney.org/professionals/KDOQI/guidelines_ckd/toc.htm

No conflict of interest

