

THE INCIDENCE OF AND RISK FACTORS FOR HIV-ASSOCIATED COGNITIVE-MOTOR COMPLEX IN HIV/AIDS PATIENTS: BELGRADE COHORT

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INTRODUCTION

- **Combination antiretroviral therapy (cART) has greatly reduced morbidity and mortality in patients with HIV-infection and significantly prolonged life expectancy. However, high rates of HIV-associated neurocognitive disorders (HAND) continue to be reported.**
- **CNS, as compartment, acts as a reservoir of the virus even during maximal treatment with antiretroviral drugs.**
- **This HIV replication compartmentalization in the CNS may be due to the poor penetration of antiretroviral drugs into the CNS and the maintenance of high therapeutic levels of these drugs has been the meter of concern.**

THE AIM

We conducted a cross-sectional study to determine the incidence and factors influencing cognitive/motor complex among our HIV-infected patients treated with cART.

MATERIALS AND METHODS

- **A cross-sectional study of 96 HIV-infected patients from the Serbian cohort on cART, at the HIV/AIDS Centre at the Institute of Infectious and Tropical Diseases in Belgrade.**
- **Inclusion criteria were: ≥ 18 yrs, confirmed HIV-infection and stable cART, good adherence and with no mental retardation.**
- **The clinical evaluation was performed including physical examination, neurological examination and HIV dementia scale (HDS).**
- **HDS score ≥ 26 : cognitively unimpaired subgroup**
- **HDS scores: 23 ± 25 minor cognitive dysfunction**
- **HDS scores: ≤ 22 HIV-associated dementia (HAD)**

MATERIALS AND METHODS

- **All analyses were performed using the electronic database organized in the SPSS (version 11.5) statistical package.**
- **The association between HAD and the type of response to HAART and other variables including baseline and end-point CD4+ T-cells count and pVL, type of cART regimen used and age over 40 yrs was assessed using the Chi-square test and logistic regression statistical analysis.**

RESULTS – PATIENTS CHARACTERISTICS

- **96 patients: 19 (19.8%) females and 77 (80.2%) males**
- **The mean age was 44.0 ± 12.1 years**
- **HIV transmission:**
 - 46 (47.9%) MSM**
 - 28 (29.2%) IVDUs**
 - 18 (18.8%) heterosexual subgroup**
 - 3 (3.1%) were hemophiliacs**
 - 1 (1%) vertically infected**
- **Clinical AIDS in 50 (51.6%) patients before HAART initiation**
- **HCV prevalence 32.6%**
- **Mean baseline CD4+ T-cells count 141.0 ± 126.8 cells/mm³**
- **In 53.2% pts. baseline CD4+ T-cells count was below 100 cells/mm³ (55.35 ± 41.9 cells/mm³), whereas in the remaining 46.8% pts it was 237.6 ± 116.32 cells/mm³**

REGISTERED ARVs IN SERBIA

6 CLASSES, 14 ANTIRETROVIRAL DRUGS IN SERBIA

NRTIs

- Abacavir
- Lamivudine
- Zidovudine
- Tenofovir

NNRTIs

- Efavirenz
- Nevirapine

Protease inhibitors

- Fosamprenavir
- Lopinavir
- Ritonavir
- Saquinavir
- Darunavir

• Fusion Inhibitors T20

- CCR5 Inhibitors
- Maraviroc
- Integrase Inhibitors
- Raltegravir

INITIAL cART IN SERBIA: WHAT TO START WITH?

4 CLASSES, 13 ANTIRETROVIRAL DRUGS IN SERBIA

NRTIs

- Abacavir
- Lamivudine
- Zidovudine

NNRTIs

- Efavirenz
- Nevirapine

Protease inhibitors

- Fosamprenavir
- Lopinavir
- Ritonavir
- Saquinavir

•Fusion Inhibitors

•CCR5 Inhibitors

•Integrase Inhibitors

RESULTS

cART regimens included:

2 NRTIs + 1 PI taken by 38.7 % pts.

2 NRTIs + NNRTI taken by 48.5 % pts.

all 3 classes 12.8 % pts.

RESULTS

- In our patient population, undetectable pVL was demonstrated in 81%. This achievement was not protective for minor cognitive impairment or HAD during treatment in almost half of the patients.
- The mean CD4+ T-cells count was at the time of HAD diagnosis 313.33 ± 145.5 cells/mm³ suggesting that systemic immune restoration have not protected CNS.
- Treatment failure and the dissociative immune response to HAART were associated with increased prevalence of minor cognitive and motor impairments, but not HAD (P=0.35, and P=0.55, respectively).

RESULTS

Table 1. Cognitive and motor impairments association

No. (%)				
	Unimpaired	Minor cognitive deficit	HAD	P
Cognition	56 (58.3 %)	27 (28.1 %)	13 (13.5 %)	-
Motor signs	21 (21.87 %)	12 (12.5 %)	6 (6.25 %)	0.47

After mean HAART duration of 47 months, unimpaired cognition, minor cognitive impairment, and HIV-associated dementia were recorded in 56 (58.3%), 27 (28.1%), and 13 (13.5%), respectively.

Motor abnormalities had 39 (40.6%) patients. Of these, 21 (21.87%) were with normal cognition, 12 (12.5%) with minor cognitive impairment and 6 (6.25%) patients belong to the subgroups with and HAD patients, respectively.

RESULTS

Table 2. Logistic regression analysis of factors predicting motor/cognitive impairment

	OR	95% CI	P
Age >40	3.7	1.07 ± 13.28	0.039
AIDS prior to HAART	14.9	1.76 ± 114.16	0.013
<i>Antiretrovirals used</i>			
EFV, NVP	0.18	0.046 ± 0.76	0.019
AZT	0.14	0.034 ± 0.6	0.008

CONCLUSION

- **Usage of PI based regimens in opposed to NNRTI ones was not protective for HAD development among our patients.**
- **The NNRTI nevirapine and efavirenz have been also shown to improve dementia. In our patient series it was more likely to remain cognitively unimpaired if AZT, NVP and EFV were composed in HAART regimen.**

THANK YOU!

