Prevalence over time and predictive factors of HIV-associated neurocognitive disorder (HAND) in HIV-positive patients

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BACKGROUND

- Despite benefits on morbidity and mortality due to combined antiretroviral therapy (cART), neurocognitive impairment (NCI) remains a great area of concern in HIV individuals.
- A clear improvement in neurological outcomes in the era of cART has been achieved with a significant drop in the rate of HIV-associated dementia but still high rates of mild-to-moderate NCI. Recently published longitudinal studies have showed that HAND is not a progressive condition and was not associated with its occurrence.
- Overall, the prevalence of HIV associated neurocognitive disorders (HAND) in the cART era needs to be still elucidated especially due to its variable rates in different cohorts.
- Several risk factors have been implicated with the evoluition of NCI including HIV- and non-HIV related characteristics.

Aim was to evaluate prevalence and predictive factors of HAND in more recent years

RESULTS

A total of 1,289 neuropsychological consecutive tests over 77 HIV-infected individuals were recorded during all 4 time periods (2002-2003, 2003-2004, 2013-2014 and 2014-2016): 447 patients contributed only one neurocognitive test, 207 patients 2 tests and 117 patients up to 5 tests. General characteristics of all individuals at NPA are described in Table 1.

Table 1. Characteristics of population

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<tr>
<td>Male gender, (%)</td>
<td>200 (56.4)</td>
<td>202 (56.2)</td>
<td>188 (52.8)</td>
<td>165 (55.3)</td>
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<td>Age, year (Median)</td>
<td>48 (range 21-56)</td>
<td>48 (range 21-61)</td>
<td>50 (range 20-58)</td>
<td>52 (range 20-60)</td>
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<tr>
<td>Median HIV load (in nM)</td>
<td>7,669 (range 37-210,793)</td>
<td>2,528 (range 37-111,878)</td>
<td>567 (range 37-31,426)</td>
<td>625 (range 37-160,217)</td>
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METHODS

- All individuals underwent neuropsychological assessment (NPA) by standardized battery of 13 tests on 5 different domains*.
- Subjects were classified as having HAND according to Frascati’s criteria**, excluding participants with specific conditions likely to contribute to NCI.
- Patients were defined “completing” or “not-completing” if a deficit of memory, attention or concentration was reported or not.
- Wilcoxon Mann-Whitney test and Spearman’s Rho correlation coefficient to compare continuous variables and Chi-square test for categorical variables; Chi-square to assess the presence of the trend over time; Multivariable logistic regression was fitted using as outcome the presence of HAND.

* Neuropsychological assessment (NPA): (a) at least one standard deviation (SD) below the mean for scores in at least two cognitive domains, without a potential confounder
** Prevalent neurocognitive disorder (HAND) as per NPA with at least mild interference in daily functioning

CONCLUSIONS

- A decreasing prevalence of HAND was observed in more recent years in the entire population and among patients without a cognitive complaint. When categorizing population according to age, mode of HIV transmission, current and nadir CD4 cell count and HIV RNA, the trend was similar except for serine patients (HIV RNA > 10,000/ml) whose prevalence remained stable over the years.
- HAND remained prevalent as compared to symptomatic stages (HAND-MD) during the entire period of study.
- In keeping with previous studies, both a better immunological status was correlated to a lower risk of HAND, while worse educational level and older age to a higher one.
- In order to properly identify individuals with HAND, it remains crucial to perform a neurological assessment of patients especially if they complain neurological symptoms or if they have such characteristics considered predictors of HAND. Besides HIV-related factors, patient characteristics, more than treatment-associated variables, affect risk of neurocognitive impairment. Cognitive complaint could be considered a predictor of the presence of HAND.

REFERENCES


Figure 1. HAND prevalence in all study population and in competing and not competing patients (Figure 3).

Figure 2. HAND prevalence over time

Figure 3. Hand prevalence according to calendar year of NPA

Figure 4. Hand prevalence according to calendar year of NPA and a) age, b) mode of HIV transmission, c) nadir CD4, d) CD4 at NPA, e) HIV-RNA at NPA

Figure 5. Prevalence of HAND in all study population and after distinguishing in competing and not-competing patients (Figure 3).