COGNITIVE REHABILITATION PROTOCOL IN HIV/AIDS OUTPATIENTS WITH ANI AND MND: A PILOT STUDY

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Background

HAND
(HIV- associated neurocognitive disorders)

- Asymptomatic Neurocognitive Impairment (ANI);
- Mild Neurocognitive Disorder (MND);
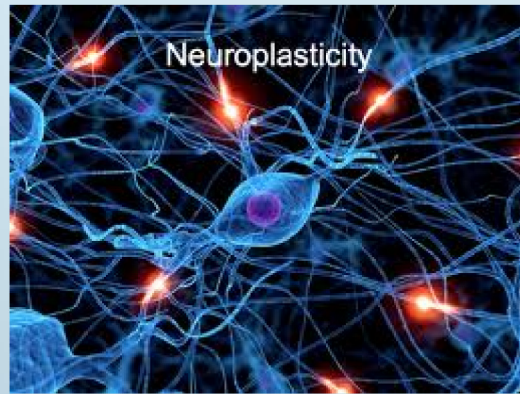- HIV-Associated Dementia (HAD).

ADHERENCE

CLINICAL OUTCOMES

QUALITY OF LIFE

Background

COGNITIVE REHABILITATION

Refers to a set of interventions that aim at improving a person's ability to perform cognitive tasks by re-training previously learned skills and teaching compensatory strategies.[1]

DNA repair and release
of neurotrophic factors

Functional reorganization
of the neural networks

Neurogenesis   Synaptogenesis

Our cognitive interventions incorporate both direct restorative interventions and compensatory strategy training to maximize treatment results and to enhance generalization of learned skills to daily activities.

1. Ladavass E. Paolucci S., Umiltà C. Eur J Phys Rehabil Med. 2011 Mar;47(1):91-9.

Materials and Methods

‣ Inclusion criteria: subjects receiving HAART for at least 12 months with suppressed viral load (plasma HIV RNA below 20 copies/ml since at least 6 months) and stable CD4+ T lymphocyte count (unchanged or increased CD4+ in the last 6 months);

‣ Exclusion criteria: patients with clinically severe comorbidities (opportunistic infections, neoplasia), psychiatric disorders, Alzheimer's disease, vascular or ischemic dementia, metabolic encephalopathy, current use of recreational drugs, abuse of psychoactive drugs, alcohol abuse, previous head trauma.

Materials and Methods

SCREENING: 3 QUESTIONS, MMSE AND IHDS

Patients presenting a MMSE score below 26 and/or a IHDS score below 10 were evaluated through a standardized neuropsychological tests battery (T0) by a neuropsychologist. The following test were used:

- Memory and verbal learning: Rey Auditory Verbal Learning Test;
- Attention/Working memory: Digit Span;
- Short-term verbal and visuo-spatial memory: Verbal span, Corsi Test;
- Speed information processing: WAIS-R Digit Symbol Test, Trial Making Test-A;
- Executive functions: Stroop Test-Abbreviated Version-, Trial Making Test-B, Tower of London Test -simplified version-, Frontal Assessment Battery (FAB);
- Language: Verbal fluency FAS;
- Visual Learning: Rey Complex Figure Test;
- Motor skills: Grooved Pegboard Test;
- IADL Instrumental Activities of Daily Living Questionaire-;
- Behavioral Scale: PHQ-9-Patient Health Questionnaire-Depression Scale, GAD-7-Generalized Anxiety Disorder-;

Patients with a diagnosis of HAND were clinically evaluated according to the Italian Guidelines (brain MRI and cerebrospinal fluid examination according the severity of neurocognitive disorders).

Materials and Methods

COGNITIVE REHABILITATION HAS PROVIDED FOR A
PERIOD OF 3 MONTHS FOR A TOTAL OF 36 SESSIONS

Individual training have been implemented through the use of computerized software:

➢ COG.I.T.O: is an open source platform for the rehabilitation
  of disorders of attention, memory, visual-spatial language;

➢ NeuroVR: is a virtual reality platform based
  on open source components, which allows
  non-experts to create and use a virtual
  environment.

Results

219 HIV+ OUTPATIENTS ENROLLED CONSECUTIVELY BETWEEN 09/2011 TO 09/2012

(163-74.4% male, 56-25.6% female, average age 49,5 HIV risk: 81 MSM, 39 IVDU, 97 ETERO, 2 transfused; CDC State: 71 A, 96 B, 52 C; median CD4 nadir count 241/µl).

- 28 (12.78%) patients with ANI;
- 7 (3.2%) patients with MND.

30 HAND patients divided into 2 groups:

- Experimental group (treatment N=15; 9 males, 6 females, median age 49 yrs, median CD4 nadir count 232/µl , all patients HIV-RNA undetectable, CDC disease stage was: 2 A, 4 B, 9 C);
- Control group (no-treatment N=15; 13 males, 2 females, median age 50 yrs, median CD4 nadir count 202/µl , all patients HIV-RNA undetectable, CDC disease stage was: 1 A, 9 B, 5 C).
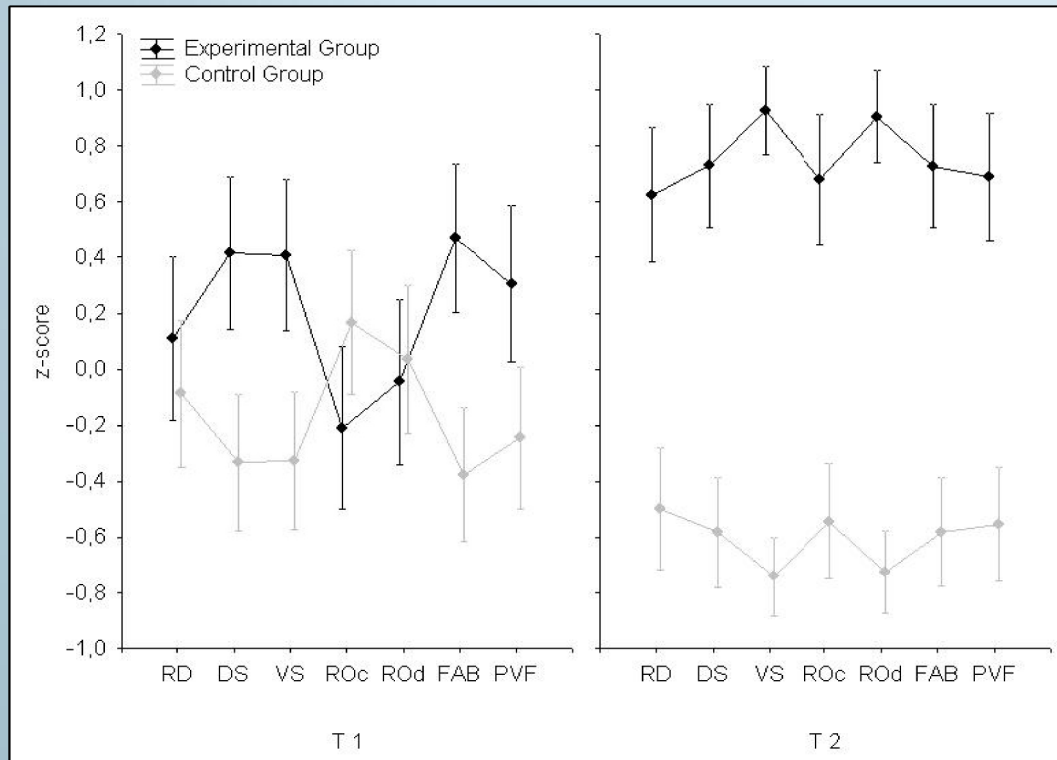
Results

To test the hypothesized differential improvement between the two groups, we compared the results of the two samples to the battery of standardized neuropsychological tests at T0 and T1 with a repeated measures ANOVA
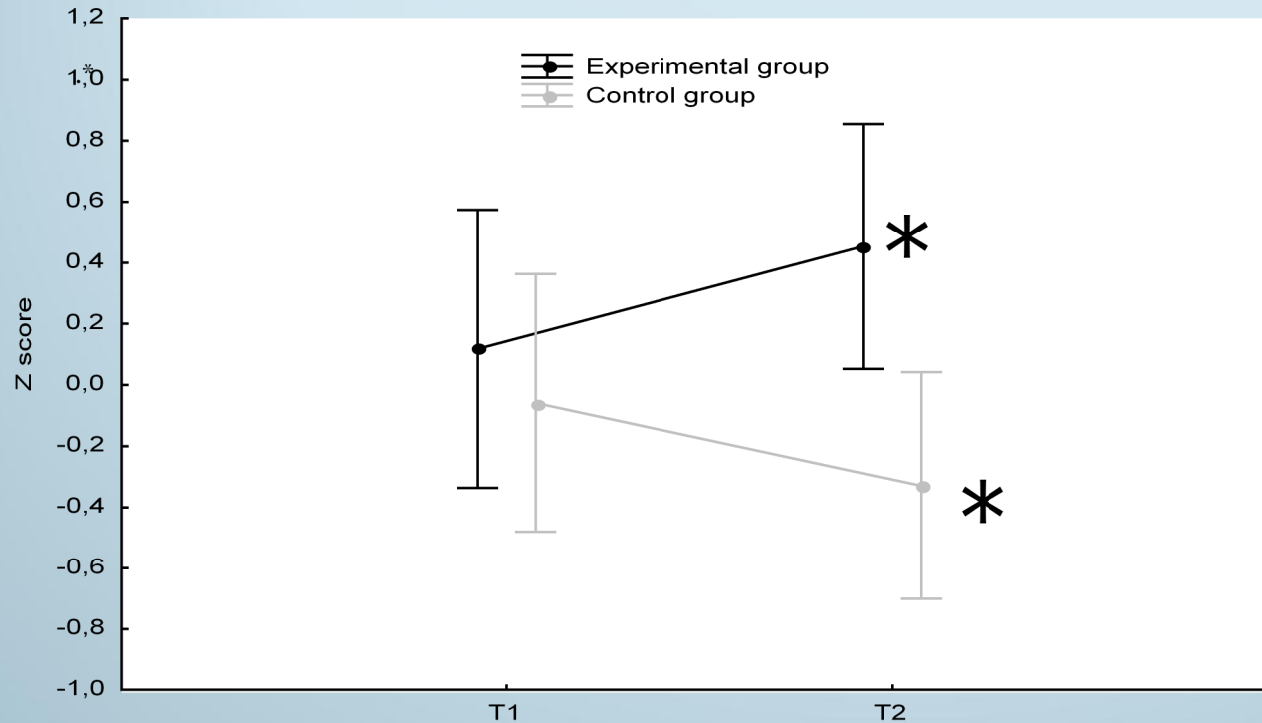
LEGEND: clinical evolution discordant between the two groups: the experimental group showed an improvement differential at T1, this improvement does not occur in the control group, which instead show a worsening of neurocognitive performance compared from T0 to T1.

Results

In 7 NP test was a significant difference between the 2 groups. The subjects treated no longer meets the criteria for the diagnosis of HAND into T1.

TEST	p	IC	
RD	>00.5	0.1	2.41
DS	0.01	0.1	2.51
VS	>0.01	0.46	2.87
RO c	0.01	0.01	2.43
RO d	>0.01	0.42	2.83
FAB	0.01	0.1	2.51
PVF	0.01	0.04	2.45

T1 BONFERRONI POST HOC BETWEEN GROUPS

The improvement occurred in T1 is persistent at follow-up.

Conclusions

- Data show the effectiveness of rehabilitation protocol, thus identifying an intervention strategy effective in the treatment of ANI and MND;

- The estimation and positive feedback of the rehabilitation protocol by patients, are further confirmation of the goodness and applicability of the protocol;

- Close cooperation between infectious diseases specialists and neuropsychologists proved to be the decisive factor for accurate diagnosis of HAND.