Pilot study: Cognitive functioning evaluation in spanish vertically HIV-infected children and adolescents

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Background

- The ART (antiretrovirals) have changed the course of paediatric HIV, increasing life expectancy and quality of life

- A previous study of Madrid cohort of adolescents showed troubles in academic performance.*

*The design of the present study is consequence of the results of a previous study executed by the group y financed by FIPSE (Nº Expediente: 24691/07)''Evaluación metabólica y psicológica de pacientes adolescentes con infección VIH por TV''IP :Gonzalez Tome MI

Method

- Descriptive and exploratory pilot study.

- Evaluate the cognitive deficits in a sample of pediatric spanish HIV-infected children and adolescents, followed in 5 major pediatric hospitals in Madrid.

- Patients were administered the Weschler Intelligence Scales (WISC-IV, WAIS).

Weschler Intelligence Scales (WAIS,WISC-IV)

- Most valid and reliable measures of intellectual ability used in Psychology.

- Translated, adapted and standardized to many languages, spanish inclusive.

- Individually administered.

WISC-IV and WAIS

- WISC-IV for ages of 6 and 16 inclusive.

- WAIS for ages of 16 and over.

- A total of five composite scores can be derived.

- Full Scale IQ (FSIQ) which represents overall cognitive ability, Verbal Comprehension index (VC), Perceptual Reasoning Index (PR), Processing Speed Index (PS) and Working Memory Index (WM).

Indexes

- **Verbal Comprehension**- measures conceptual and abstract reasoning skills.

- **Perceptual Reasoning**- nonverbal fluid reasoning skills,visual-motor integration, and the ability to learn new information.

- **Processing Speed**- evaluate the abilities to focus attention and quickly scan visual information. It requires persistence and planning ability.

- **Working Memory**- assesses the ability to hold new information in short-term memory, concentrate, and manipulate that information to produce some result or reasoning processes.

Method

- IQ classification (superior, high average, average, low average, extremely low) was used to execute de analysis

Classification	IQ Score
Very Superior	130-above
High Average	116-129
Average	85-116
Low Average	70-84
Extremely Low	69 and below

- The Extremely Low range refers to abnormalities or a slight mental retardation

Results- Population

- 28 vertically infected children and adolescents were included.

- 18 were women

- 10 men

- The median age: 17 years old.

- 21 were born in Spain

- **Median CD4**: 805 cel/mm3 (IRQ=300)
- **Viral load <20 copies**: 23 patients cop/ml (82,1%)
- **Median time of AR treatment**: 13,9 years (IRQ=6.1)
- **Median time of TARGA treatment**: 12,3 years (IRQ=5.4)
- **Encephalopathy:** 2 patients
- **AIDS category:** 6 patients

Full Scale IQ

IQ Classification	Valid Percentage	IQ scores
High Average	3,6	117
Average	45,4	85-106
Low Average	35,7	72-84
Extremely low	14,3	64-69

◆The 50% patients obtained a low average or extremely low score, presenting difficulties in the ability to think with words and the ability to reason without the use of words

Verbal Comprehension

IQ Classification	Valid Percentage	IQ scores
High Average	3,6	120
Average	42,9	86-104
Low Average	39,3	70-84
Extremely Low	14,3	58-68

◆The 53.3% of the patients obtained a low average or a extremely low score.

◆The IQ scores are near the minimum ranks.

◆This suggest that patients developed difficulties in the use of words and understanding their meaning.

Perceptual Reasoning

IQ Classification	Valid Percentage	IQ scores
High Average	3,6	123
Average	50,00	85-109
Low Average	39,3	74-83
Extremely Low	7,1	63-66

◆ Patients got fewer difficulties with typical skills in nonverbal reasoning, working well under time pressure, learn new information.

◆ In this index, the patients acquired a 46,4% in low average and very low results in the IQ scores.

Processing Speed

IQ Classification	Valid Percentage	IQ score
Average	57,1	87-115
Low Average	35,7	70-82
Extremely Low	7,1	63

◆The patients acquired 42,8% in a lower range. This can imply they have difficulties in reading a novel and understand it. The speed of comprehension is slower.

Working Memory

IQ Classification	Valid Percentage	IQ score
Average	57,1	85-114
Low Average	28,6	73-82
Extremely Low	14,3	54-65

- The patients perform poorly the working memory, obtaining a 42,9% in the lower scores and very low IQ scores.

Encephalopathy Group

- Two patients, 14 and 16 years old.
- Both had AIDS.

	PATIENT 1	PATIENT2
FS IQ	62	88
VC	80	84
PR	74	101
PS	64	99
WM	54	88

- Patient 1 obtained extremely low results in FS IQ, PS and in WM, and in VC and PR low average.

- Patient 2 obtained an average score in all of the indexes.

- It's interesting to observe the differences in the results of each patient.

- Its worth to mention that we included these results because patient 1 had a mild encephalopathy and patient 2 obtained an average result.

AIDS category

- Patients with AIDS (without including encephalopathy) two obtained an average score and two extremely low score.

- Half of patients presented difficulties in an approximately a 50% in the indexes. Only one patient acquired a extremely low score in the indexes WM and PS.

Global results

- We can observe that almost in all indexes, approximately 50% of patients obtained a low average or extremely low score, with cognitive difficulties and abnormalities

- They constitute part of the children and adolescents who are under the normal cognitive ability of the spanish population.

Conclusions

- This sample of vertically HIV-infected children presented high cognitive difficulties.

- An important limitation is that it´s a small sample.

- These findings made madrid cohort CoRISpeS start a national neurocognitive study with the whole population, with more specific measures and medical analysis*.

*Evaluación cognitiva y psicológica de una cohorte de niños y adolescentes con infección VIH, Mutua Madrileña 2012-2013.IP :Gonzalez Tome MI

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Thank you for your attention!