HIGH PREVALENCE OF NEUROCOGNITIVE IMPAIRMENT IN ADULTS WITH PERINATALLY ACQUIRED HIV INFECTION

Portilla-Tamarit, I.[1-4]; García-Rodríguez, G.[2-4]; Bernabéu-Sanz, A.[7] Concepción, L.[8]; Díez-Martínez, M.[2-4]; Carreres, M.[2-4]; Ferrer-Cascales, R[1]; Portilla, J.[2-4]

[1]University of Alicante, [2]ISABIAL-FISABIO Foundation, [3]Spanish AIDS Research Network, [4]Department of Infectious Diseases, General University Hospital of Alicante,[7]Inscanner S.L., [8]Radiodiagnosis Department, General University Hospital of Alicante. (SPAIN)

INTRODUCTION

Objectives. To analyze the prevalence of neurocognitive impairment (NCI), affected neurocognitive domains and damaged brain areas in HIV-adults with perinatally acquired HIV (PHIV).

METHODS

Design: observational, cross-sectional study.

Inclusion criteria: >18 years; perinatally acquired HIV; informed consent.

NCI was diagnosed using Frascati criteria. 7 neurocognitive domains were analyzed: attention and working memory, processing speed, long-term memory, learning, executive functions, verbal fluency and motor function.

Damaged brain areas were studied with Magnetic Resonance Imaging (MRI). We used a 3T clinical Magnet (Philips Achieva) employing a predefined protocol that included standard brain images (T2, FLAIR, SWI) as well as, diffusion tensor imaging (DTI) and isotropic T1 weighted images for tractography and volume calculations processed with commercially available software.

RESULTS

11/15(73%)patients of our PHIV-cohort were included. Mean age:23,9±3,5years;72,7%males;MeanCD4+:864,6±353,03 cells./µL.

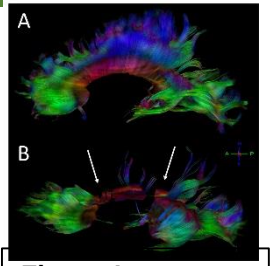

Figure 1. Tractography results of corpus callosum in S10 (A) and S7(B). The results show a significant myelin damage in patient (B) being affected the frontal and parietal projection and commissural fibres.

			NEUROCOGNITIVE EVALUATION								MR	TRACTOGRAPHY					
Subject (S)	Previous AIDS or Neurological Diseases	HIV-VL cop-ml	Attention and Working memory	Processing speed	Long term memory	Learning	Executive Function	Verbal Fluency	Motor function	NCI Frascati Criteral	White matter	Corpus Callosum	Inferior Longitudinal Fasciculus	Uncinate Fasciculus	Inferior Fronto-Occipital Fasciculus	Cingulum	Corticospinal Tract
1	NO	<50	0,37	-0,33	0,45	-0,4	0,55	-1,11	0,51		Normal	Damaged	Left	None	None	None	None
2	HIV-encephalopathy	<50	-1,06	-2,55	-0,95	-1,14	-0,81	-1	-5,83	HAD	Normal	Damaged	None	Left	Both	Both	None
3	Burkitt's lymphoma	<50	0,27	0,22	-1,22	0,27	-0,5	-0,83	0,5		Normal	Normal	Right	None	Right	None	Right
4	HIV-encephalopathy	<50	-0,42	-2,22	-0,35	1,99	-1,96	-1,94	-9,75	HAD	Normal	Damaged	None	None	None	None	left
5	NO	<50	-0,43	-1	0,08	2,05	-0,19	-0,66	0,99	ANI	Normal	Normal	Left	None	None	None	None
6	NO	2830	-0,33	-0,8	1,14	-0,93	-0,51	-0,88	-0,83		Normal	Damaged	Right	None	Both	None	None
7	HIV-myelopathy	142000	-1,43	-2,22	-1,7	-0,6	-2,9	-1,38	-2,65	HAD	Atrophia	Damaged	Left	None	Both	None	None
8	NO	8980	-0,13	-0,33	0,24	1,55	0,07	0,11	-0,01		Normal	Damaged	Left	None	None	Both	Both
9	HIV-encephalopathy	135	-1,96	-2,22	-2,48	-0,78	-3,06	-1,5	-5,96	HAD	Not Performed						
10	Burkitt's lymphoma	<50	-0,4	0,77	1,61	1,04	-0,78	-0,38	-0,03		Normal	Normal	Left	None	None	None	Both
11	NO	122	-0,1	-1	-1,77	-1,04	-0,51	-1,72	-3,2	HAD	Not Performed						

MR: Magnetic Resonance; NCI: Neurocognitive Impairment; ANI: Asymptomatic Neurocognitive Impairment; HAD: HIV-associated Dementia

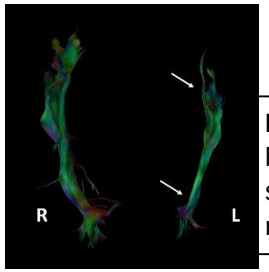

Figure 2. Tractography results of the inferior longitudinal fasciculus obtained in S7. The results show a significant asymmetry with lower number of myelinated fibres detected in the left hemisphere.

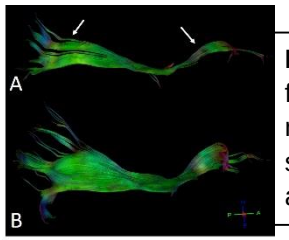

Figure 3. Tractography results of the inferior frontoccipital fasciculus in S2(A) and S1 (B). The results suggest significant myelin damage in subject A, being affected the anterior (frontal) and posterior (occipital) fibres.

CONCLUSIONS

We found a high prevalence of NCI in adults with PHIV. The most impaired cognitive domains were: long-term memory, verbal fluency and processing speed. These patients showed abnormalities in the inferior longitudinal fasciculus and alterations in white matter microstructure probably related to past disease severity. Neuropsychological outcome of these population is unknown.

irene.portilla@ua.es