NEUROPSYCHOLOGICAL ASSESSMENT AND PET/MRI STUDY OF PATIENTS WITH PERSISTENT COGNITIVE IMPAIRMENT FOLLOWING VGKC-COMPLEX ANTIBODIES LIMBIC ENCEPHALITIS

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BACKGROUND

VGKC-complex antibodies limbic encephalitis (LE) is characterized by subacute development of cognitive deficits targeting memory and attention, psychiatric features and temporal seizures. Usually it is considered a monophasic disease with a good response to immunotherapy. Only few reports investigated the degree and extent of cognitive impairment after the acute phase, describing deficits of memory, executive functions and language.

We aim to report the cognitive sequelae in a series of VGKC-complex LE patients and explore the relationship with brain structural and metabolic changes assessed with brain FDG-PET/MRI

MATERIALS AND METHODS

A series of 7 VGKC-complex LE patients (Tab. 1) were tested with a **neuropsychological battery** (Tab.2) evaluating memory, executive and visual-spatial abilities. Six patients were also studied with brain [**(18)F]FDG PET/MRI** to evaluate brain metabolism and the degree of atrophy or FLAIR hyperintensity of mesial-temporal lobes (MTLs)(Tab. 1).

RESULTS

Tab. 1 Demographic, clinical and imaging findings

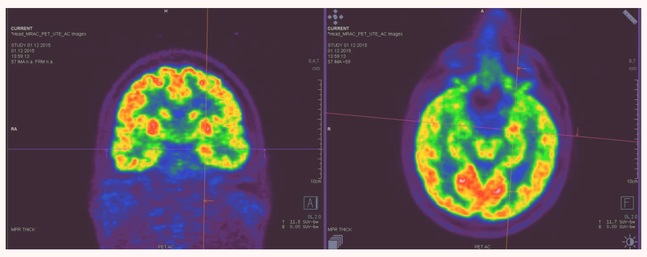
Case	Gender/ Age (yrs)	VGKC Abs	Clinical presentation	Months to PET MRI	MMSE/ Type of deficits	MRI findings	FDG PET findings
# 1	F/68	LGI 1	Facio-brachial seizures, anxiety/depression, mild memory deficits	6	30 , attention	Normal	Normal
# 2	M/55	LGI 1	Electric seizures, memory deficits and confusion	6	27, memory	Mild hippocampal atrophy, monolateral	Normal
# 3	M/61	LGI 1	Memory deficits, epileptic seizures	10	29 , memory	Mild hippocampal atrophy, monolateral	**Monolateral amygdala iperintensity**
# 4	F/65	LGI 1	Epileptic seizures, memory deficits	6	29, memory, confusion	Mild hippocampal atrophy, bilateral	**Bilateral amygdala and striatal iperintensity**
# 5	F/68	LGI 1	Epileptic seizures, cognitive multidomain deficits	54	19, multidomain cognitive deficits	*Not performed*	*Not performed*
# 6	M/63	CASPR 2	Temporal epileptic seizures, generalized seizures, memory and executive deficits	9	30, none	Mild hippocampal atrophy, monolateral	Normal
# 7	M/67	CASPR 2	Memory deficits, sleep disorders, psychiatric symtoms	17	27, memory and behaviour	Iperintensity in medial temporal lobe, mild bilateral hippocampal atrophy	Normal

Tab. 2 Summary of neuropsycological evaluation.

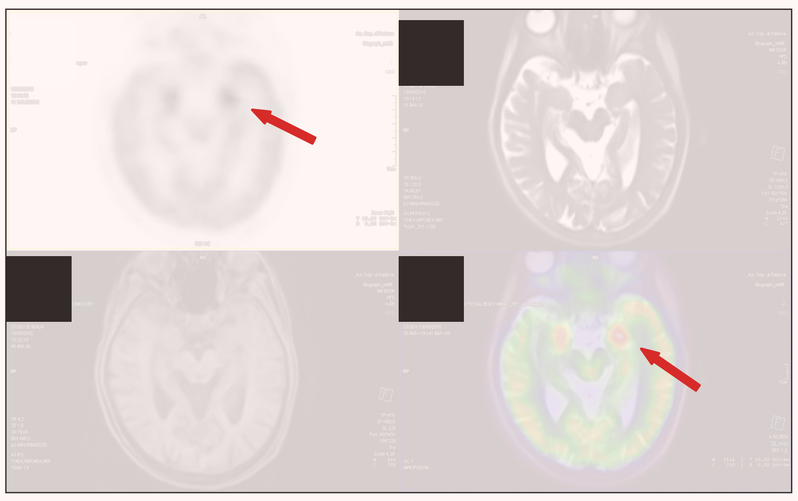
Neuropsychological evaluation	*No. of patients with deficits*
MMSE mean (range)	27,3 (19-30)
Verbal memory	2/6 (33 %)
Visuo-spatial memory	4/6 (66%)
Attention and Executive function	5/7 (71%)
Visuo-spatial ability	2/6 (33%)

Domain assessed and respective tests:
- *Verbal memory*: Free and Cued Selective Recall reminding Test or Rey's Auditory Verbal Learning Test, Digit Span Forward and Backward
- *Visuo-spatial memory*: Rey-Osterrieth Figure Recall
- *Attention and executive function*: Verbal Fluency on semantic and fonemic cue, Attentive Matrices, Trail Making Test A and B, Symbol Digit Modalities Test
- *Visuo-spatial ability*: Rey-Osterrieth Figure Copy, Clock Drawing Test

Box 1 PET MRI case 3



Box 2 PET MRI case 4



CONCLUSION

Patients affected by VGKC-complex LE develop frequently persistent cognitive impairment regarding not only memory and executive functions, as already reported, but also visual-spatial abilities and visual-spatial memory. In some cases it's difficult to establish if the deficits are due to persistent inflammatory process, then requiring a further course of immunotherapy. Our study suggests that in adjunction with usual clinical and paraclinical data (cerebrospinal fluid, EEG) combined structural and metabolic information obtained with brain PET/MRI could be useful to address that issue.

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