Impact of MRI activity on cognitive functions in Multiple Sclerosis

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OBJECTIVE:

Cognitive impairment concerns about 65% of patients affected by Multiple Sclerosis; the fields mainly involved are visuo-spatial and verbal memory, sustained attention, executive function and speed of processing information.
A transient impairment of cognitive performances was found in a previous study; this was identified as a transitory worsening of SDMT test, with a simultaneous presence of non-symptomatic gadolinium-enhancing lesions. We tried to assess a potential impact of non-symptomatic enhancing-lesions on cognitive performances.

MATERIALS AND METHODS:

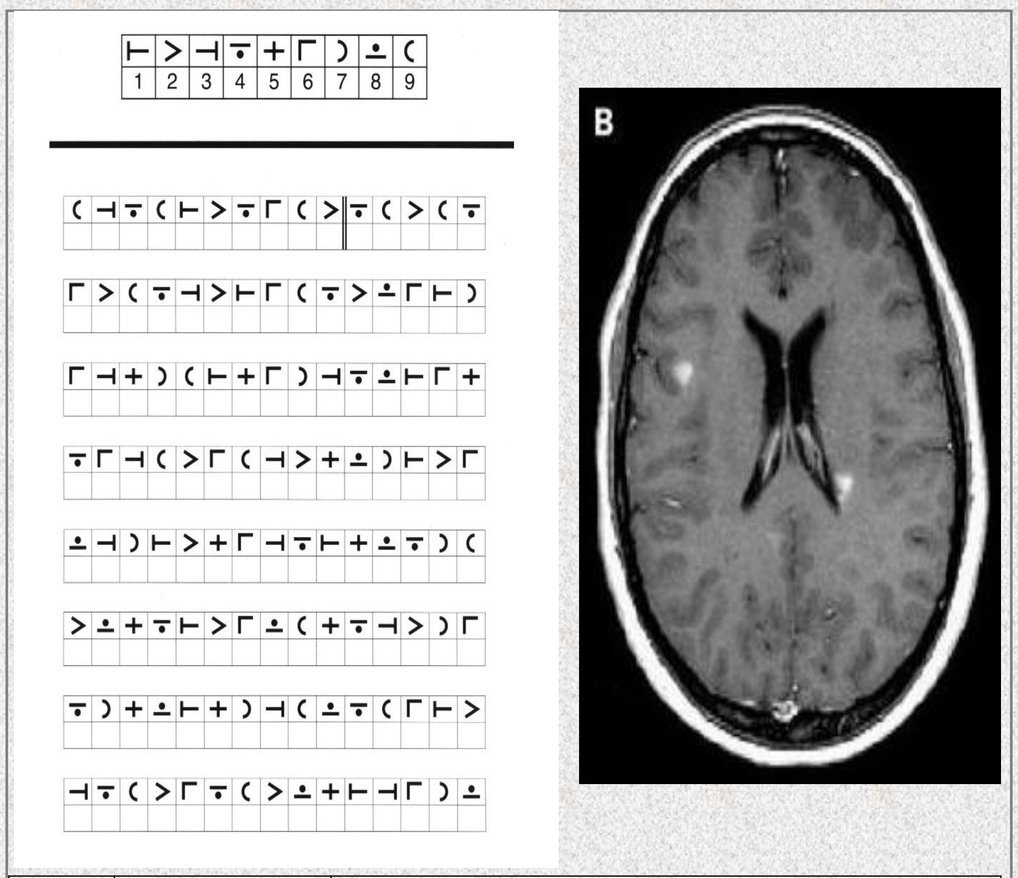
All included patients were undergone to neuropsychological evaluation using BICAMS battery with normative values for Italian population (BMC, Neurology 2014) and brain MRI acquisition with gadolinium administration. Baseline assessment with BICAMS (T0) was performed from 10 to 60 (mean: 39.44) days before brain MRI. A follow-up neuropsychological evaluation (T1) was done within 160 days after brain MRI (mean: 36.86). The main demographic (age, gender, education) and clinical (EDSS, disease duration) characteristics have been identified. Patients were classified in GD (presence of enhancing-lesions) and in NOGD (absence of enhancing-lesions). T-student test for independent sample for group analysis was used.

RESULTS:

We included 114 MS patients (mean age:42.7 ; gender: F:92/M 22; EDSS mean: 2.30). Cognitive impairment (at least 1 test under 35 T score) at T0 was detected in 51/114 patients (44.7%). The most often impaired was SDMT test (36 patients, 31,6%). On brain MRI 13/114 (11.4%) patients showed a Gd enhancing-lesion. T test for independent sample showed no difference in BICAMS Test t score between GD and NOGD patients at T0 and T1. None single patients showed a significant variation in cognitive performance between T0 and T1. However, an increase between T0 and T1 was observed in SDMT mean scores in all patients included (41.9 at T0 vs 46.7 at T1, One sample T test, p:0.000) This increase was significantly higher in NOGD patients compared to GD patients (mean increase 1.2 in GD versus 4.2 in NOGD patients, T Test for indipendent Sample (P: 0.003).

CONCLUSIONS:

Although our study does not contribute to defining the concept of isolated cognitive relapses in individual patients, it supports the possible impact of focal inflammatory activity on the cognitive functions of people with MS.
Further studies with longer observation can help to better define the transient worsening of cognitive functions as possible relapse of MS.



	Levene's Test		T Test		
	F	Sig.	t	df	Sig. (2-code)
SDMT T1-T0	9.131	0.004	-2.106	64	0.039
			-3.213	35.224	0.003
CVLT T1-T0	0.325	0.570	-0.118	65	0.907
			-0.110	15.226	0.913
BVMT T1-T0	0.239	0.627	0.545	65	0.588
			0.633	19.489	0.534
SDMT grezzo T1-T0	5.436	0.023	-1.476	65	0.145
			-2.110	29.140	0.044

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•*2. Goretti B, Fenu G, Cocco E, et al. The Brief International Cognitive Assessment for Multiple Sclerosis (BICAMS): normative values with gender, age and education corrections in the Italian population. BMC Neurol.2014.*

•*3. Amato MP, Razzolini L, Goretti B, et al. Cognitive reserve and cortical atrophy in multiple sclerosis: A longitudinal study. Neurology 2013; 80; 1728-33*