THE RELATIONSHIP BETWEEN CORTICAL LESIONS AND COGNITIVE IMPAIRMENT IN MULTIPLE SCLEROSIS. A CASE-CONTROL STUDY

E CURTI[1], S GRAZIUSO[2], E TSANTES[1], G CRISI[2], F GRANELLA[1]

1. Department of Neurosciences, University of Parma, Parma, Italy
2. Neuroradiology Unit, Department of Diagnostic, University Hospital of Parma, Parma, Italy

UNIVERSITÀ DEGLI STUDI DI PARMA

SERVIZIO SANITARIO REGIONALE
EMILIA-ROMAGNA
Azienda Ospedaliero - Universitaria di Parma

Background

❖ Grey matter (GM) damage has been widely recognized as a fundamental aspect of multiple sclerosis (MS).

❖ Among several measures of GM disease, cortical lesions (CLs) burden, which can be detected at MRI scans with double inversion recovery (DIR) sequences, has been demonstrated to correlate with cognitive impairment (CI), an important component of MS disability.

❖ **Aims**: to investigate the role of total and lobar CLs number in predicting CI in a cohort of relapsing-remitting and progressive MS patients.

Methods

❑ **Patients and MRI analysis:** Thirty consecutive MS patients presenting CLs (CL+) at high-field (3.0 T) MRI 3D-DIR sequences and an even group of MS patients without CLs (CL-) as a control, were enrolled. Total and lobar CLs number was computed in all patients.

❑ **Neuropsychological evaluation:** The Rao Brief Repeatable Battery of Neuropsychological Tests (BRB), Version A plus Stroop Test was performed in all patients.

❑ **Statistical analysis:**

• *Chi square and Student's t tests* to compare demographic and clinical features between CL+ and CL- patients.

• *Univariate analysis (Pearson correlation coefficient)* between MRI and neuropsychological variables.

• *Multivariate analysis (logistic regression)* between demographic (age and sex), clinical (EDSS, disease duration and MS type) and MRI (total CLs number) variables and pathologic single BRB test scores.

Conclusions

We confirmed the important role of CLs number, evaluated with a technique quite commonly available in clinical practice, in predicting CI in MS patients, in order to make an early diagnosis and monitor the evolution of CI and the potential neuroprotective effects of *disease modifying* drugs.

References

✓ Calabrese M, Rocca MA, Atzori M, Mattisi I, Bernardi V, Favaretto A, et al. Cortical lesions and atrophy associated with cognitive impairment in relapsing-remitting multiple sclerosis. Arch Neurol 2009;66:1144-50.

✓ Roosendaal SD, Moraal B, Pouwels PJ, et al. Accumulation of cortical lesions in MS: relation with cognitive impairment. Mult Scler 2009;15:708-14.

Results

Tab. 1 Demographic and clinical features of patients with (CL+) and without (CL-) cortical lesions

	CL+ (n=30)	CL- (n=30)	p
Mean age (yrs±SD)	39.5±12.61	39.6±9.64	ns
Gender (%female)	76.7	63.3	ns
Mean age at MS onset (yrs±SD)	29.5±10.70	31.9±7.71	ns
Mean EDSS	3.0	2.3	0.04
MS type (%)	RR 66.7 P 33.3	RR 90.0 P 10.0	0.03

Fig. 1 Total CLs burden (n=172) in CL+ patients

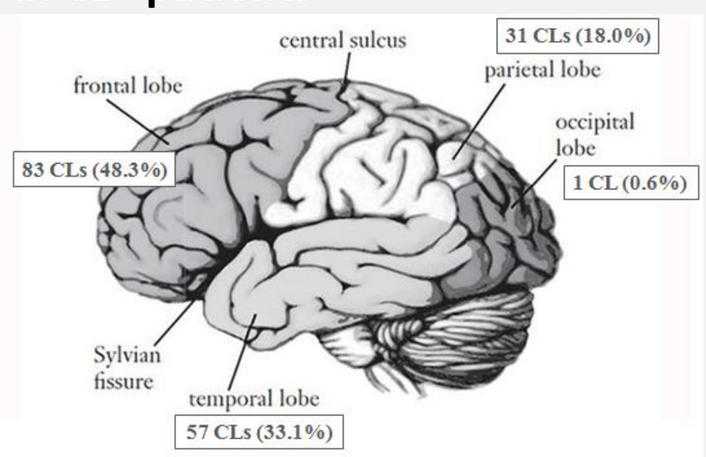
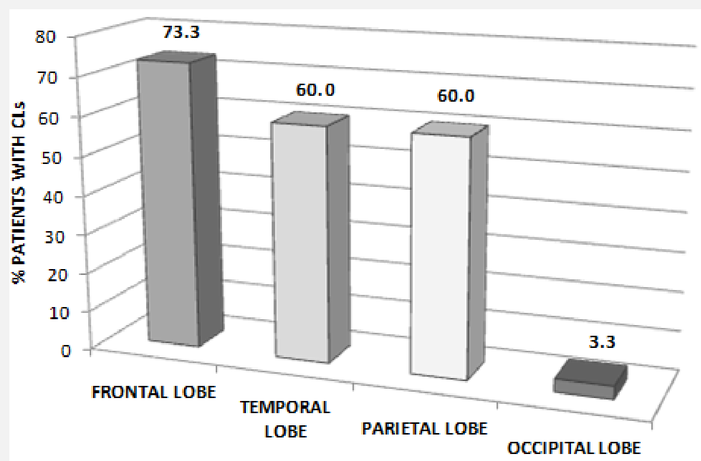


Fig. 2 Regional distribution of CLs



Tab. 2 Correlation between single BRB test scores and CLs number

	Univariate analysis				Multivariate analysis *
BRB test	**Frontal CLs (p)**	**Temporal CLs (p)**	**Parietal CLs (p)**	**Total CLs (p)**	**Total CLs (p)**
SRT-LTS	0.04	0.008	ns	0.02	0.01
SRT-CLTR	0.001	<0.001	ns	<0.001	ns
SPART	ns	ns	ns	ns	ns
SDMT	ns	ns	ns	ns	ns
PASAT 3	0.003	0.01	0.03	0.004	0.05
PASAT 2	ns	ns	ns	ns	ns
SRT-D	0.001	<0.001	ns	<0.001	ns
SPART-D	0.001	<0.001	ns	<0.001	ns
WLG	ns	ns	ns	ns	ns
STROOP TEST	ns	ns	ns	ns	ns

*Multivariate analysis also revealed a significant correlation between:

➢ age and pathologic scores at SRT-LTS (p=0.004), SRT-CLTR (p=0.002), SDMT (p<0.001), SRT-D (p=0.002) and SPART-D (p=0.002)

➢ disease duration and SRT-LTS (p=0.001)

➢ EDSS and SPART (p=0.003), PASAT 2 (p=0.02), WLG (p=0.04) and STROOP TEST (p= 0.003)

➢ MS type and SPART (p=0.009), PASAT 2 (p=0.01) and WLG (p=0.01)

Sin

XLVII CONGRESSO NAZIONALE
22-25 OTTOBRE 2016 – VENEZIA

WebPoster