Biological rhythms in MS patients with mood disorders: what impact on quality of life?

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Background. Multiple Sclerosis (MS) is a chronic neurological disease that mainly affects young adults, adversely impacting on many aspects of their life. Notoriously, mood disorders may be associated with abnormalities in biological rhythms (BR), with changes in sleeping and eating patterns as well as in social and daily activities. Psychiatric comorbidities are very common among MS patients (Carta et al., 2014), while the presence of dysregulation of BR has not been adequately explored.
This study aimed to investigate the relationships between circadian BR disturbance with MS clinical features and psychiatric comorbidity. In addition, we evaluated the weight of BR impairment on patients' quality of life (QoL).

Methods.
MS patients, according to McDonald criteria, were enrolled and clinical features were collected. DMS IV psychiatric diagnoses were determined by ANTAS-SCID interview (Carta et al., 2010). The Italian Version of the BRIAN questionnaire was used to assess abnormalities in BR (sleep, eating, activities and social rhythms) (Moro et al., 2010). QoL was evaluated with the Short Form Health Survey (SF-12) (Ware et al., 1996). Descriptive statistics, hierarchical regression analyses, t-test, and the Pearson's correlation were conducted.

Results.

The sample included 178 MS patients (61 male); of these 38/178 had progressive course. Mean value for the disease duration was 10.5 years, while mean EDSS was 2.5 (Table 1)

The diagnosis of unipolar depression was established in 43/178 (24.1%) patients, and bipolar spectrum disorders in 32/178 (17.9%).

Table 1.Clinical features of MS patients and correlation with BRIAN scores

	MS Patients (178)	p value
Sex (Male)	61/178 (34.2%)	ns
Course (Progressive)	38/178 (21.2%)	ns
Age (mean ± sd)	38.1 ±10.7	ns
Age at MS onset (mean ± sd)	30 ± 9.9	ns
Disease Duration (mean ± sd)	10.5±7.7	ns
EDSS (mean ± sd)	2.5±1.5	0.001

Logistic Regression Analysis
Dependent Variable: BRIAN score

- BRIAN scores were respectively 43.6 and 34.4 in patients with and without moods disorders (p <0.001).
- Psychiatric comorbidity, in particular bipolar disorder, was the strongest determinant of BR dysregulation (p <0.01), independently from MS clinical features (EDSS and disease duration)
- An association between BR impairment and EDSS score was observed (p <0.01)
- BRIAN score was negatively associated with SF-12 score (r= -0.529; p <0. 001)

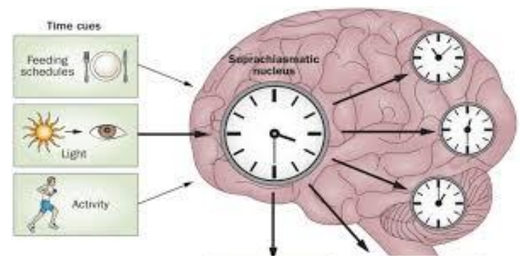

Table 2. Brian score in MS patients with or without DMS IV diagnosis

	Sleep	Activities	Social	Eating	BRIAN scores
Patients without mood disorders (103)	10,23	10,56	6,75	6,82	34,36
Unipolar depression (43)	12,86**	13,3*	7,98	7,49	41,63*
Major Depressive Disorder (MDD) (42)	12,86**	13,29*	7,98	7,48	41,6*
Dystymic Disorder (1)	13	14	8	8	43
Bipolar Spectrum Disorders (BD) (32)	13,09**	13,38*	9,34**	9,84**	45,66**
Bipolar Disorder I (5)	15*	14,4	10*	11,6**	51**
Bipolar Disorder II (16)	13,13*	14,56**	8,94*	8,56	45,19**
Cyclothymic Disorder (5)	12,6	10	9,2**	11,2**	43
Bipolar Disorder not otherwise specified (6)	11,83	12,17	10*	10,67**	44,67

T independent sample test

* P<0.05
** P<0.05

No difference in disease duration and EDSS between patients with and without DMS IV diagnosis

Table 3.

Pearson Correlation					
		BRIAN	EDSS	MDQ	SF12
BRIAN SCORE	Pearson Correlation	1	,466**	,262**	-,529**
	Sig. (2-tailed)		,000	,001	,000
	N	178	178	145	145
EDSS SCORE	Pearson Correlation	,466**	1	,102	-,457**
	Sig. (2-tailed)	,000		,222	,000
	N	178	178	145	145
MDQ SCORE	Pearson Correlation	,262**	,102	1	-,173*
	Sig. (2-tailed)	,001	,222		,037
	N	145	145	145	145
SF12 SCORE	Pearson Correlation	-,529**	-,457**	-,173*	1
	Sig. (2-tailed)	,000	,000	,037	
	N	145	145	145	145
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

Conclusions. Psychiatric comorbidities seem to strongly influence BR dysregulation in people living with MS. BRIAN questionnaire could be a useful tool in clinical practice to identify BR abnormalities also in MS, bearing in mind the impact of these abnormalities on QoL as well as their association with psychiatric comorbidities.