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BACKGROUND Psychiatric symptoms are a common and heterogeneous clinical feature in Multiple Sclerosis (MS). Increasing evidence suggests that these symptoms should be approached and interpreted in a biological framework and that a systematic screening of MS psychopathological manifestations should be regularly carried out at diagnosis and follow-up.

AIM To evaluate the prevalence, clinical correlates and longitudinal trajectories of affective symptoms in a cohort of newly diagnosed people with MS (PwMS).

METHODS PwMS were prospectively recruited between 2021 and 2023 during the diagnostic work-out and underwent a systematic psychiatric assessment, including: State and Trait Anxiety Inventory (STAI-Y1 and -Y2), Beck Depression Inventory - version II (BDI-II), brief Temperament Evaluation of Pisa, Memphis and San Diego - Munster version (briefTEMPS-M) within 30 days from CSF collection. Follow-up longitudinal data were collected for depression scales.

RESULTS The cohort consisted of 69 individuals with newly diagnosed relapsing-remitting MS (72.5% female; mean age: 32.6 ± 8.7 years; mean EDSS: 2.12 ± 0.94) [Table 1]. Clinically relevant depressive symptoms (BDI-II ≥ 14) were observed in 23.2%, state anxiety (STAI-Y1 > 40) in 42%, and trait anxiety (STAI-Y2 > 40) in 36.2% [Table 2; Figure 1]. Hyperthymic temperament had the highest mean score (20.75 ± 4.6). Personality disorders were diagnosed in 6 (8.7%) subjects in the sample. Specifically, cluster C (n=3, 4.3%) and B (n=3, 4.3%) personality disorders were the most represented. Additionally, 16 participants (23.2%) exhibited altered personality traits. Patients with clinically significant depression showed a higher prevalence of both state (86.7% vs. 32%, p=0.001) and trait anxiety (73.3% vs. 28%, p=0.004), along with higher scores for depressive (p=0.001) and cyclothymic (p=0.002) temperaments. One year follow-up data were available for 19 subjects. Among pwMS presenting at baseline with clinically significant depression, 3 (60%) were improved at follow-up; at the same time, among pwMS without depression at the time of MS diagnosis 3 (21.4%) developed clinically significant depressive symptoms [Table 3; Figure 2]. Depressive (p<0.001) and anxious (p=0.008) affective temperaments showed a strong association with depression onset during the follow-up.

Table 1.

Characteristics of patients	
Number	69
Gender (F:M)	3:1
Age (mean ± SD)	32.6 ± 8.7 years
EDSS (mean ± SD)	2.12 ± 0.94

Table 2.

Anxiety and depression scores	
BDI-II (mean ± SD)	8.60 ± 9.5 (range: 0-48)
STAI-Y1 (mean ± SD)	40.36 ± 12.6 (range 20-73)
STAI-Y2 (mean ± SD)	39.31 ± 11.9 (range 21-74)
PwMS with BDI-II ≥ 14 (n, %)	16 (23.2%)
PwMS with STAI-Y1 ≥ 40 (n, %)	29 (42%)
PwMS with STAI-Y2 ≥ 40 (n, %)	25 (36.2%)

Figure 1.

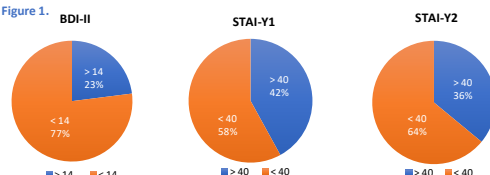


Table 3.

BDI-II trajectories t0/t1 (data available for 19 patients)			
BDI-II < 14 at t0	14 (73.7%)	BDI-II < 14 at t1	11 (78.6%)
		BDI-II ≥ 14 at t1	3 (21.4%)
BDI-II ≥ 14 at t0	5 (26.3%)	BDI-II < 14 at t1	3 (60%)
		BDI-II ≥ 14 at t1	2 (40%)

Figure 2. Trajectories of depressive symptoms.



DISCUSSION AND CONCLUSION

- Psychiatric symptoms, particularly **anxiety** and **depression**, are **highly prevalent** even at the earliest stages of MS.
- A **proportion of depressed PwMS** early intercepted through the screening **improved at one-year**, reinforcing the importance of a baseline systematic testing.
- A significant **proportion of non depressed** patients at baseline **developed depression** at follow-up. Further studies are needed to define whether this represents a fluctuation of the affective state or a biological consequence of the disease, through circuit disconnection mechanisms, in the form of relapse activity and/or psychiatric progression independent from relapse activity.
- Newly diagnosed pwMS with depressed or anxious affective temperaments should be strictly monitored, even in the absence of overt depression and/or anxiety.

*Menculini G, Mancini A, Gaetani L, Bellagacci L, Tortorella A, Parnetti L, Di Filippo M. Psychiatric symptoms in multiple sclerosis: a biological perspective on synaptic and network dysfunction. J Neurol Neurosurg Psychiatry. 2023 May;94(5):389-395. doi: 10.1136/jnnp-2022-329806. Epub 2023 Jan 18. PMID: 36653171.

*Sparaco M, Lavorata L, Bonavita S. Psychiatric disorders in multiple sclerosis. J Neurol. 2021 Jan;268(1):45-60. doi: 10.1007/s00415-019-09426-6. Epub 2019 Jun 13. PMID: 31197511.