



Impact of fatigue and depression on motor rehabilitation outcomes in progressive Multiple Sclerosis



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Background and Objectives

Motor disability, depression and fatigue often coexist in people with progressive Multiple Sclerosis (PMS), with negative consequences on their quality of life and their daily activities (Pokryszko-Dragan A et al., 2016).

Predisposing risks factors for depression in PMS could be represented by several psycho-social conditions such as inadequate coping strategies, insufficient social support, MS-related biological processes, such as brain tissue and functional changes and immunological and inflammatory pathways (Boeschoten RE et al., 2017).

We aimed at exploring the effect of pre-existing depressive symptoms on the outcome of intensive motor neurorehabilitation treatment in PMS.

Methods

Forty consecutive patients with PMS (22 F, age 48.52 ± 8.18 ; median EDSS=6) entering our Neurorehabilitation department and participating in a randomized trial on repetitive TMS coupled with intensive motor neurorehabilitation were recruited. They were tested using 10 meter walk test (10MW), 2 and 6 minutes walking test (6MWT), MS walking scale (MSWS); fatigue severity Scale (FSS); numerical rating scale (NRS) for spasticity and pain, functional independence measure (FIM), Beck depression inventory (BDI), and paced auditory serial addition test (PASAT), at baseline (T0) and at T3, after an intensive neurorehabilitation program twice a day, 5 days/week for 3 weeks.

Results

Baseline.

Baseline population characteristics were: EDSS (5.85 ± 0.62), 6MWT (175.33 ± 87.23), MSWS (42.86 ± 11.88), pain NRS (2.87 ± 2.63), FSS (42.69 ± 14.74), BDI (10.44 ± 9.23). There was a significant correlation between EDSS and pain NRS ($p=0.05$, $r=0.316$) and between FSS and BDI ($p<0.001$, $r=0.732$).

Eleven patients (28%, 4 female) had mild/severe depression (BDI > 14).

Compared with patients without depression, patients with depression had a worse FSS score ($p<0,001$), pain NRS ($p=0.031$) with U. Mann-Whitney Test; the other measures did not significantly differ between the two groups at baseline.

End of treatment.

Considering all patients, a significant improvement was found for:

-6 minute test (175.33 ± 87 vs 209.5 ± 102 ; $p < 0.001$)

-10 meter walk test (20.06 ± 11.83 vs 17.30 ± 11.70 , $p < 0.001$)

-MSWS (42.86 ± 11.88 vs 36.31 ± 11.76 , $p = 0.002$).

-NRS spasticity scale (5.54 ± 2.05 vs 4.57 ± 2.31 , $p = 0.004$)

-BDI (10.44 ± 9.23 vs 7.81 ± 8.17 , $p = 0.006$)

A trend of FSS improvement (42.69 ± 14.74 vs 37.78 ± 11.85 , $p = 0.083$) and PASAT test improvement (34.69 ± 13.96 vs 39.61 ± 10.32 , $p = 0.053$) were found

Compared with patients without depressive symptoms at baseline, patients with depression at baseline had a significantly better improvement in fatigue (Δ FSS 1.47 ± 1.8 vs 0.16 ± 9.7 ; $p=0.036$) and depression (Δ BDI 9.4 ± 9.6 vs 1.7 ± 3.2 ; $p=0.025$) at the end of the 3-week treatment **Figure 1**.

They also showed a trend to a greater improvement in 6MWT (55.3 ± 70 vs 19 ± 31.7 mt; $p = 0.06$), in MSWS (35.2 ± 34.7 vs 9.6 ± 21.2 ; $p = 0.054$) and in pain NRS (-1.000 ± 1.802 vs 0.105 ± 1.15 ; $p=0.059$) compared to the other group, despite these measures did not significantly differ between the two groups at baseline.

In addition, we also found a correlation between the recovery in 6MWT and in FSS in both the subgroups (Spearman -0.589 ; $p=0.002$) **Figure 2**.

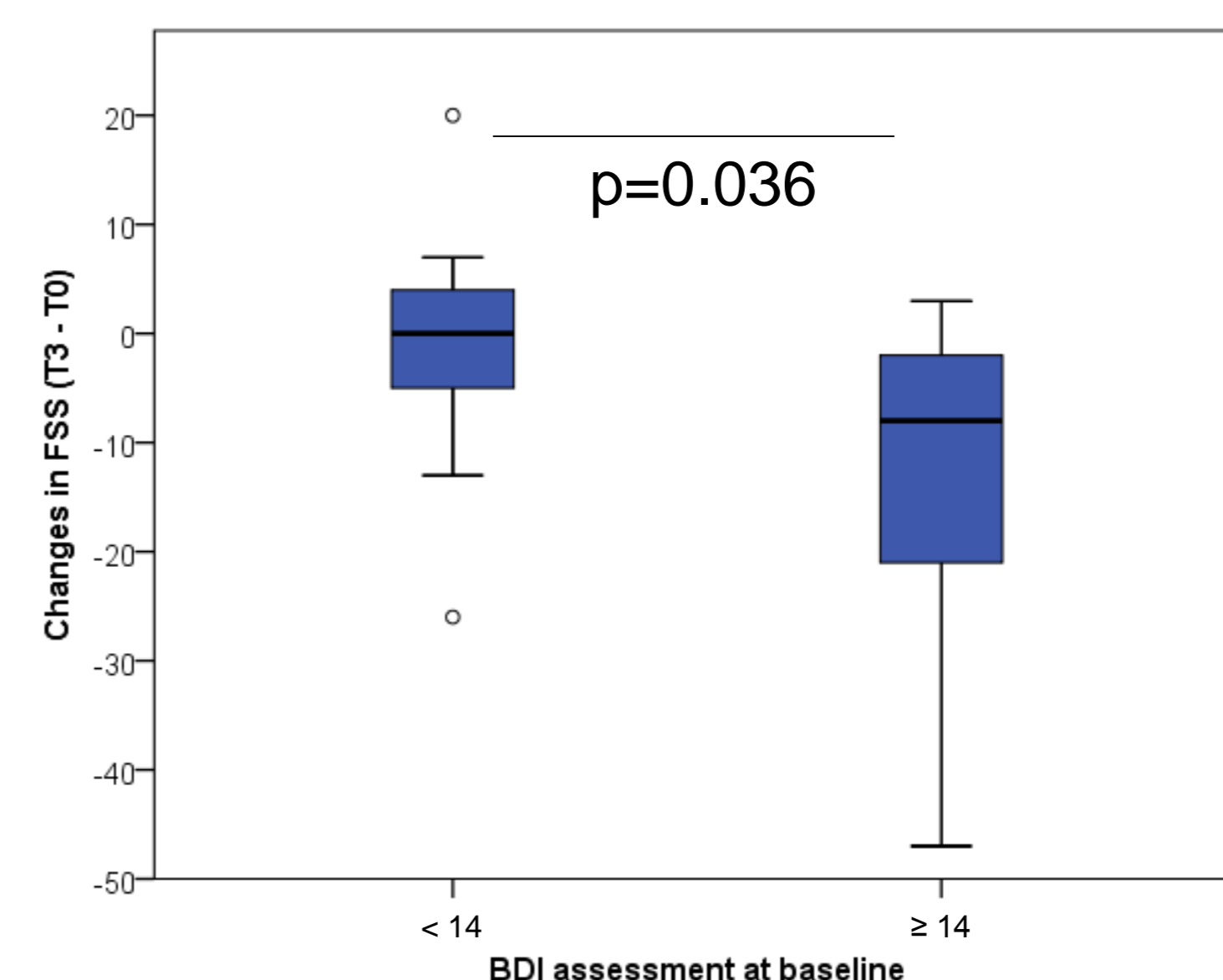


Figure 1: Changes in FSS between baseline and end of treatment in patients with (BDI score ≥ 14) and without (BDI score < 14) depression symptoms at baseline. $P=0.036$

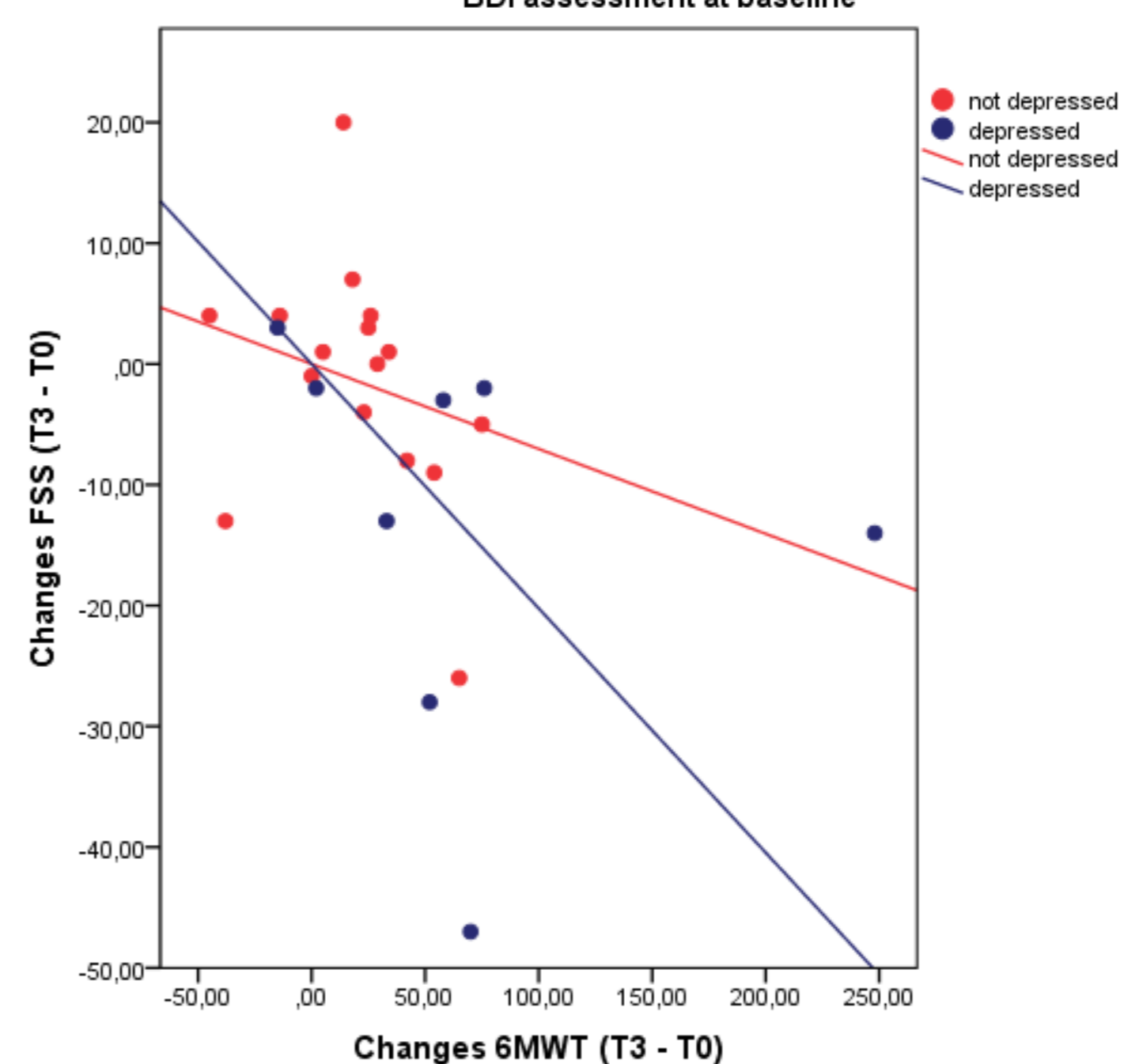


Figure 2: Correlation between changes in FSS scale and in 6MWT patients with (BDI score ≥ 14) and without (BDI score < 14) depression symptoms at baseline. $P=0.002$

Conclusions

We found a better improvement in fatigue and depression and a trend for motor and physical scales in people with MS with mild/moderate depression (BDI ≥ 14) compared with patients without depression at the start of an intensive neurorehabilitation program. These data are consistent with the view that underlying depression may confound motor and fatigue measures and stress the importance to address psychological factors to enhance the positive outcome of rehabilitation treatment and its maintenance (Ford H et al., 1998; Rietberg MB et al., 2011; Greeke EE et al., 2017). However it still remains to prove if the improvement in fatigue led depression to get better or if it was the improvement in depression that led to ameliorate in fatigue and motor measures. Nevertheless it is more likely that the perceived fatigue at baseline was distorted by the presence of mild/moderate depression symptomatology, and so it is the perception of fatigue itself that got better because of the improvement of depression.

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Disclosure

Congiu M, Pisa M, Gelibter S, Fichera M, Comola M: nothing to disclose

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