

Cognitive behavioural therapy and adjunctive physical activity for Functional movement disorders:

a pilot, single-blinded, randomized study



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INTRODUCTION

Functional Movement Disorders (FMD) are one of the commonest conditions seen in neurological practice [1], thus having a remarkable impact on the health care system. Nonetheless, there are no treatment recommendations and their prognosis is generally unfavourable [1]. Evidence supporting cognitive behavioural therapy (CBT) in FMD is scarce and two reviews concluded that caution is needed in assuming that CBT is necessarily beneficial [2,3]. Owing to preliminary suggestions that adjunctive physical activity (APA) might also be beneficial in FMD [2,3], we here aimed to test the feasibility and efficacy of CBT and APA in FMD.

RESULTS

Eight patients (27.6%) withdrew their consent and, hence, 21 patients in the active groups are described. ANOVA tests for repeated measures showed a significant improvement of all outcomes over time for both active groups (all, $p < 0.001$) but not for the control one (all, $p > 0.05$). Moreover, there were no differences between the two active groups (all, $p > 0.05$). Then, regression analyses were run to explore which features could influence the primary outcome. Higher motor severity ($p = 0.045$) and longer disease duration ($p = 0.043$) were significantly associated with a poorer outcome.

Table 1. Clinical outcomes at baseline (T0) and post-treatment (T1). Values are expressed as mean \pm standard deviation (CBT: cognitive behavioural therapy; APA: adjunctive physical activity; SMC: standard medical care; PMDRS: Psychogenic movement disorder rating scale; PMDRS-s: motor severity PMDRS subscore; PMDRS-f: functional impairment PMDRS subscore; HDS: Hamilton depression scale; BAI: Beck Anxiety Inventory; PHQ-15: Physical Health Questionnaire-15.)

	CBT alone (T0)	CBT alone (T1)	CBT+APA (T0)	CBT+APA (T1)	SMC (T0)	SMC (T1)
N=	11	-	10	-	8	-
Sex (M/F)	2/9	-	4/6	-	2/6	-
Age (years)	34.7 \pm 10.1	-	33.7 \pm 7.9	-	32.9 \pm 9.8	-
Disease duration (months)	17.1 \pm 12.9	-	20.7 \pm 10.5	-	19.5 \pm 11.8	-
Duration from first diagnosis (months)	8.9 \pm 5.8	-	10.3 \pm 9.5	-	9.8 \pm 7.6	-
PMDRS	71.5 \pm 21.4	33.2 \pm 30.2 ^{a,b}	76.7 \pm 16.6	38.8 \pm 18.1 ^{a,b}	72.4 \pm 22.3	69.8 \pm 20.8 ^b
PMDRS-s	62.6 \pm 19.1	28.5 \pm 27.4 ^{a,b}	68.6 \pm 15.4	34.2 \pm 16.7 ^{a,b}	66.4 \pm 13.5	71.3 \pm 12.9 ^b
PMDRS-f	8.9 \pm 3.6	4.6 \pm 2.9 ^{a,b}	8.1 \pm 1.7	4.6 \pm 1.7 ^{a,b}	9.1 \pm 1.9	8.3 \pm 2.2 ^b
HDS	14.9 \pm 3.4	7.6 \pm 3.5 ^{a,b}	12.6 \pm 3.9	7.1 \pm 3.1 ^{a,b}	13.6 \pm 3.4	12.9 \pm 3.2 ^b
BAI	27.6 \pm 6.8	18.6 \pm 6.5 ^{a,b}	27.5 \pm 6.6	15.2 \pm 4.1 ^{a,b}	28.2 \pm 5.9	26.9 \pm 6.2 ^b
PHQ-15	19.8 \pm 4.4	8.7 \pm 7.1 ^{a,b}	20.9 \pm 3.3	10.6 \pm 3.8 ^{a,b}	19.3 \pm 5.6	21.1 \pm 6.4 ^b

a: T1 vs T0 (within groups): $p < 0.001$

b: T1 vs T1 (between groups): CBT alone vs SMT, $p < 0.001$; CBT+APA vs SMT, $p < 0.001$.

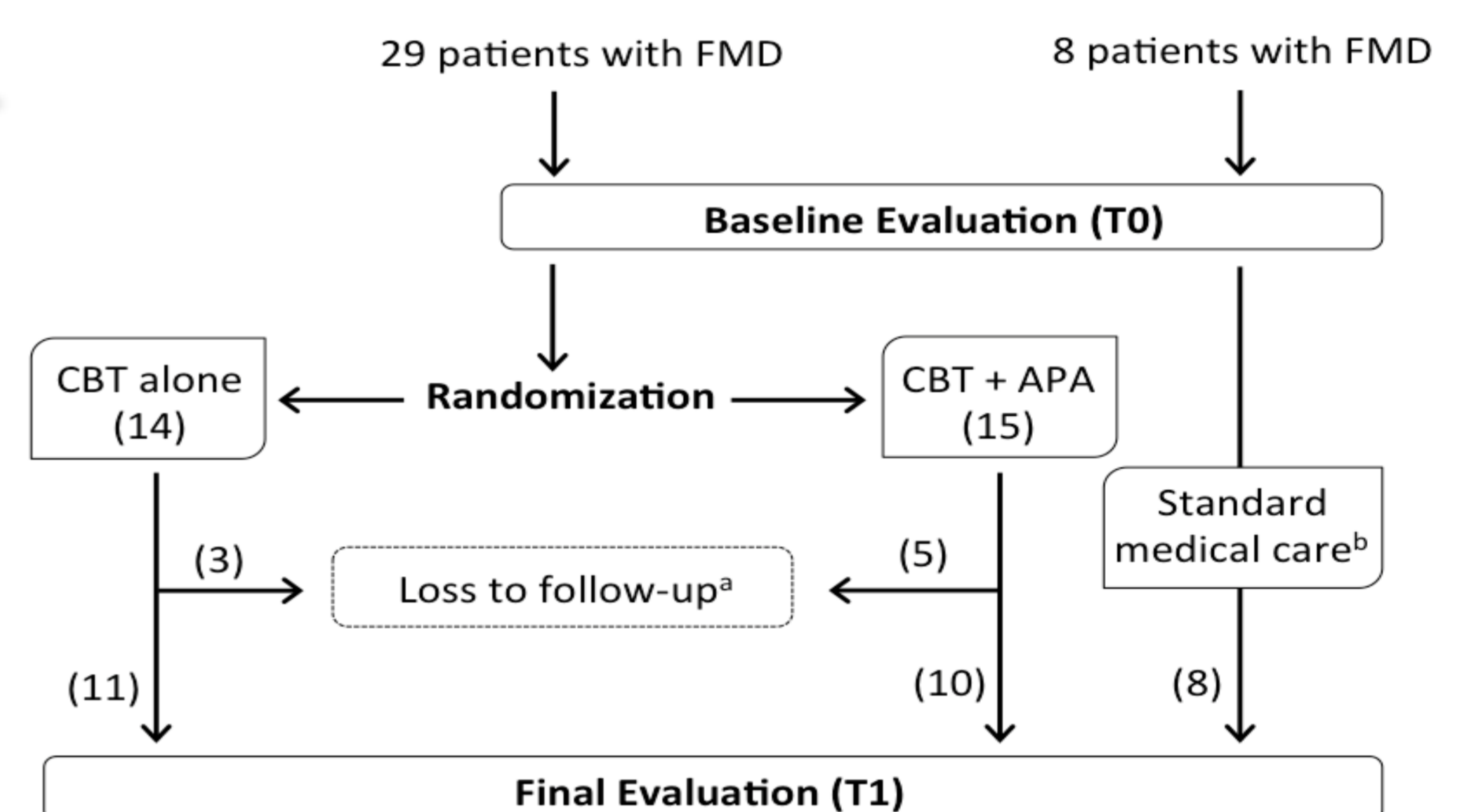
DISCUSSION

Both active groups significantly improved over time with no differences between the two of them. This indicates that CBT is feasible (compliance over 70%) and effective in improving the specific motor symptoms in patients with FMD. Moreover, CBT was also effective in ameliorating depressive symptoms and anxiety. However, the improvement in the primary outcome (e.g., the specific motor disorder) was not directly driven by the amelioration of affective symptoms. The only factors influencing the outcome were in fact a severer motor phenotype at baseline, but also longer disease duration. The latter strongly remarks the need avoiding delay in diagnosis and referral to appropriate treatments.

We failed to find a beneficial effect of APA on any outcomes, at variance with previous studies. We believe such a discrepancy owes to the specific motor phenotype of our patients. Indeed, they were mostly affected with tremor (approximately 75%), whereas previous cohort included far more patients with dystonia and gait disturbances. Hence, the possible confounding role of the specific motor phenotype should be considered in future trials.

MATERIALS AND METHODS

Consecutive patients were randomized to receive CBT alone (90min-session, once a week) or CBT+APA (60min-session, twice a week). As a control group, we enrolled 8 patients under standard medical care. Patients were assessed at baseline (T0) and at 12 weeks (T1). The primary outcome was the PMDRS total score. Secondary outcomes included the Hamilton depression scale and the Beck anxiety inventory.



CBT focused on identifying somatic misinterpretations, negative thoughts and mood changes. Distraction techniques were adopted. The APA consisted of structured low-moderate intensity walking to be conducted at a country track.

Demographic and motor features of the patients included in the analysis. Case 1 to 11 have been randomized to CBT alone; case 12 to 21 to CBT+APA

Case number	Gender	Age (years)	Disease duration (months)	Motor phenotype (main/additional)
1	F	34	12	Tremor/gait disorder
2	F	25	18	Gait disorder/-
3	F	26	20	Tremor/dystonia
4	M	40	32	Tremor/-
5	M	51	12	Tremor/-
6	F	29	44	Dystonia/gait disorder
7	F	33	9	Tremor/myoclonic jerks
8	M	36	16	Tremor/slowness
9	F	37	24	Tremor/speech disorder
10	F	26	20	Gait disorder
11	F	24	18	Tremor/speech disorder
12	F	35	10	Tremor
13	M	22	30	Tremor/myoclonic jerks
14	M	39	3	Tremor
15	F	53	12	Tremor/dystonia
16	F	35	48	Gait disorder
17	F	43	8	Tremor/gait disorder
18	M	24	15	Tremor/slowness
19	F	47	6	Tremor/myoclonic jerks
20	F	27	24	Myoclonic jerks/dystonia
21	F	33	14	Gait disorder/tremor

TAKE HOME MESSAGE

While preliminary, our results show that CBT is highly effective in FMD. APA should instead be recommended only for those patients with functional gait/postural disturbances.

REFERENCES

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