CLINICAL EVIDENCE OF TASK SPECIFIC TREMOR IN SWEDD PATIENTS

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INTRODUCTION

Asymmetric rest tremor is one of the main features of patients diagnosed with scans without evidence of dopaminergic deficit (SWEDD). Clinical and neurophysiological evidence suggests a dystonic origin of this tremor, although the underlying pathophysiology is still unclear. Dystonic tremor has a great tendency to vary with different postures or voluntary motor tasks. In this study, we characterized tremor in patients with SWEDD. To this aim, we assessed the tremor during voluntary motor tasks. In particular, we observed the occurrence and the severity of writing tremor (WT) in patients with SWEDD compared to a sample of tremor-dominant PD patients.

SUBJECTS AND METHODS

Patients with SWEDD had adult onset (>40 years) of asymmetric arm tremor with a rest component; a previous diagnosis of PD made by their neurologist; a subsequent normal DaT-SPECT (at least one) and structural MRI. Patients with possible other causes of tremor (psychogenic, neuropathic, drug-induced) were excluded.
PD patients were diagnosed according to the UKPDS-Brain Bank criteria and confirmed by DaT-SPECT. All PD patients had tremor-dominant PD with asymmetric rest tremor (H & Y Scale< 2.5).

Tremor Rating Scale (TRS) scale specifically assesses tremor while writing and drawing. We calculated the total TRS score and the TRS sub-scores for writing (item 10, dominant hand) and drawing (items 11-13, for each hand) as specific measure of WT. Patients were further assessed with **UPDRS III** and **MMSE.**
The **Wilcoxon-Mann-Whitney** test was used to compare clinical scores of the two groups (MMSE, UPDRS III, total TRS score, item 10 of TRS, items 11-13 for each hand of TRS). The significance level was set at $p<0.05$. Data are expressed as mean±SD.

RESULTS

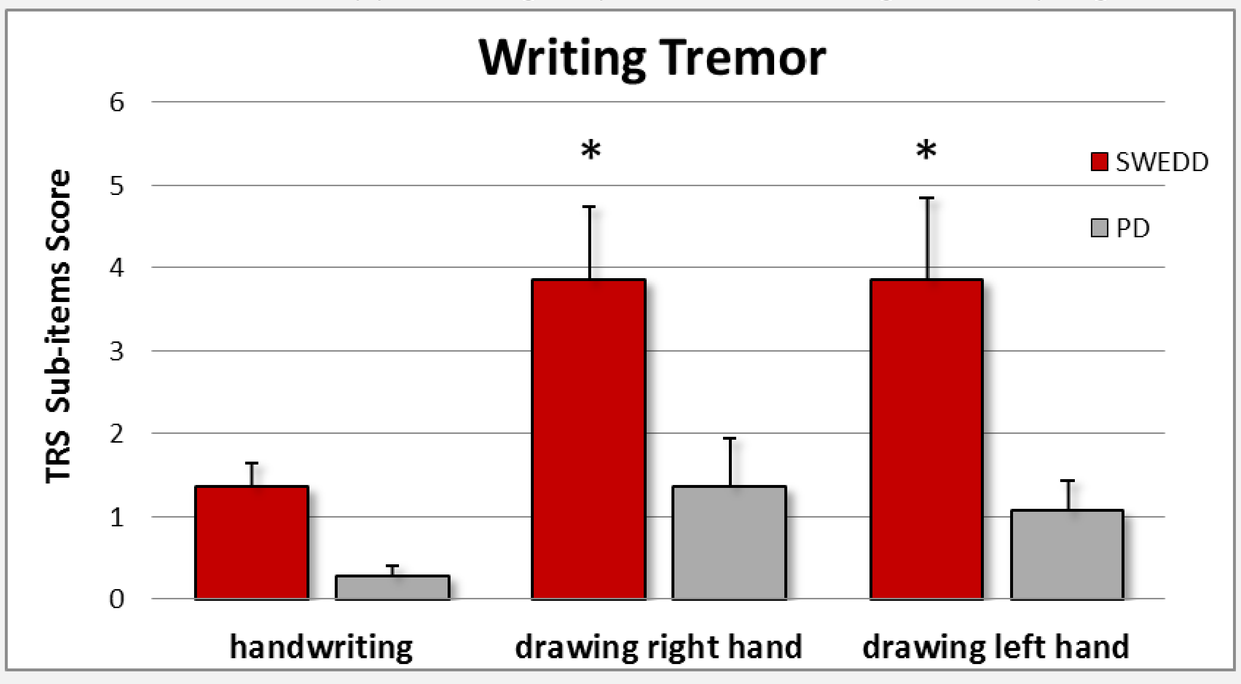
SWEDD

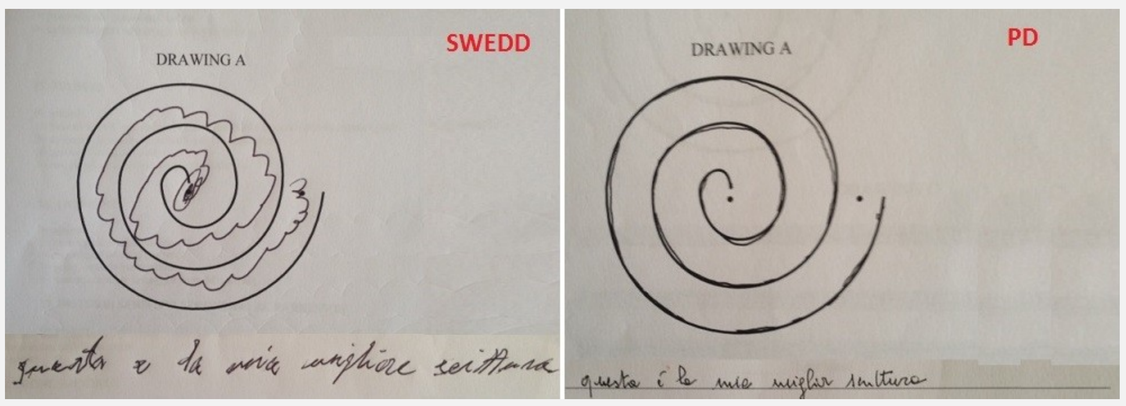
	gender	age	most affected side	UPDRS III	MMSE	TRS	Handwriting	right h. drawing	left h. drawing
1	M	68	R	10	30	12	1	1	4
2	M	74	L	9	30	11	0	0	0
3	F	67	R	13	30	17	1	4	1
4	F	73	R	18	25,7	31	1	3	3
5	M	67	L	8	25,2	34	1	3	6
6	F	72	L	9	27	30	2	4	6
7	M	67	R	13	30	50	4	12	12
8	F	57	R	5	30	17	2	5	0
9	M	69	R	5	30	8	1	2	0
10	M	69	R	6	30	37	3	9	9
11	M	69	R	14	30	29	1	4	3
12	F	68	L	10	30	15	1	2	3
13	F	49	R	8	30	3	0	0	0
14	F	69	L	6	26,2	28	1	5	7
Mean		*67,0*		*9,6*	*28,9*	*23,0*	*1,4*	*3,9*	*3,9*
SD		*6,5*		*3,8*	*1,9*	*13,1*	*1,1*	*3,3*	*3,7*

PD

	gender	age	most affected side	UPDRS III	MMSE	TRS	Handwriting	right h. drawing	left h. drawing
1	M	51	R	19	30	6	0	0	0
2	F	57	R	21	28,7	5	0	0	0
3	M	61	L	38	30	21	1	3	5
4	M	68	L	12	30	5	0	0	0
5	F	68	L	24	30	13	0	0	1
6	F	79	R	38	27,7	12	1	1	0
7	F	68	L	22	26,4	25	1	3	2
8	F	72	L	25	30	15	0	1	1
9	M	72	R	26	30	11	0	0	0
10	M	73	R	38	27,4	9	0	0	2
11	F	59	R	24	30	35	1	8	0
12	M	53	L	20	30	10	0	0	1
13	M	58	L	35	28	15	0	2	2
14	F	71	L	26	30	15	0	1	1
Mean		*65,0*		*26,3*	*29,2*	*14,1*	*0,3*	*1,4*	*1,1*
SD		*8,4*		*8,1*	*1,3*	*8,3*	*0,5*	*2,2*	*1,4*

MMSE scores overlapped in 2 groups. PD showed significantly higher score in UPDRS III ($p<0.01$), whereas did not differ in TRS total score.





During handwriting test, tremor of patients with SWEDD was significantly more severe than in PD patients ($p<0.01$). Also in drawing with both hands separately, patients with SWEDD presented a significantly worse tremor than PD patients ($p=0.01$ with the right-dominant hand and $p<0.05$ with the left hand).

DISCUSSION

The acronym SWEDD refers to the absence of an imaging abnormality in patients clinically presumed to have PD. Although several clinical conditions may underlie this radiological finding, many of these patients present asymmetric rest tremor with peculiar features (position-specificity, task-specificity, unresponsiveness to levodopa), which suggest a dystonic origin of such tremor. In this study we found that **among patients with SWEDD, compared to PD patients, WT is more severe and impairs both handwriting and drawing** . We thus noticed in this population of patients with SWEDD affected by asymmetric motor disturbances, also **a bilateral action tremor occurres during specific motor tasks.** Our data add further elements in the description of tremor observed in patients with SWEDD but are not sufficient to support its dystonic nature. However, here we suggests that **a simple handwriting and/or drawing test may indicate which patients with asymmetric rest tremor and uncertain diagnosis could have a normal scan.**

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