ROBOTHERAPY IN moderate DEMENTIA: pilot study

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OBJECTIVE

- Robots may help in therapy of patients with dementia.
- Present study describes the early results of a pilot study using robots for cognitive therapy in institutionalized patients with moderate dementia.

METHODS

Cognitive therapy and physiotherapy sessions, 2 days/week during 3 months in two groups of patients with moderate dementia: conventional therapy (n=15) vs. therapy with a humanoid robot (n=15). Cognitive therapy included music therapy, recreative activities and language sessions. Evaluation at baseline and follow-up was carried out with Global Deterioration Scale (GDS), Neuropsychiatric Inventory (NPI), Apathy Scale for Institutionalized Patients with Dementia (APADEM-NH) and Quality of Life in Late-Stage Dementia Scale (QUALID). Blood pressure, heart rate and weight were recorded.

RESULTS

Characteristics of the sample

- GDS in the sample was: GDS 3: 3.4%, GDS 4: 24.1%, GDS 5: 41.4% and GDS 6: 31% (Figure 1).
- Mean age 86.2 years (range: 74-100); 83.34 % woman.
- There were no significant differences between robotherapy and control groups at baseline.

Change from baseline to follow-up

- Blood pressure, heart rate, weight and QUALID showed no statistical significant change between groups at follow-up.
- GDS increased (worsened) significantly in controls but not in the robotherapy group (Fisher's exact =0.004).
- In the robotherapy group, agitation and depression showed a trend to improvement whereas hallucinations impaired (p=0.02-0.04).(Table 1 & Figure 2)
- Total NPI total score increased threefold in control group compared to treatment group (p=0.16). (Table 1)
- APADEM-NH score was 1.73±14.92 for the control group vs. -3.66±15.69 (p=0.54) in the treated group.

Table 1

VARIABLE	USUAL TREAT (mean of change ± SD)	ROBOT TREAT (mean of change ± SD)	P
NPI TOTAL	10.53 ± 16.56	3.33 ± 14.52	0.16
DELUSIONS	-0.13 ± 1.59	0 ± 1.51	0.67
HALLUCINATIONS	-0.53 ± 1.18	0.13 ± 0.51	**0.04**
AGITATION/AGGRESSION	1.33 ± 2.55	-0.66 ± 1.44	**0.02**
DEPRESSION/ DYSPHORIA	1.4 ± 2.94	-0.13 ± 1.18	**0.04**
ANXIETY	2.2 ± 2.88	0.93 ± 3.45	0.25
ELATION/EUPHORIA	0 ± 0	0 ± 0	-
APATHY/ INDIFFERENCE	1.46 ± 2.66	1.13 ± 4.15	1
DIS-INHIBITION	0.26 ± 1.03	0 ± 0	0.31
IRRITABILITY/LABILITY	2.46 ± 3.85	-0.26 ± 2.31	0.08
ABERRANT MOTOR ACTIVITY	0.53 ± 2.44	0.93 ± 2.12	0.53
NIGHT-TIME BEHAVIOR DISTURBANCES	1.4 ± 3.01	0.06 ± 4.41	0.10
APPETITE/ EATING	0.26 ± 2.73	0.93 ± 3.76	0.55

Figure 2

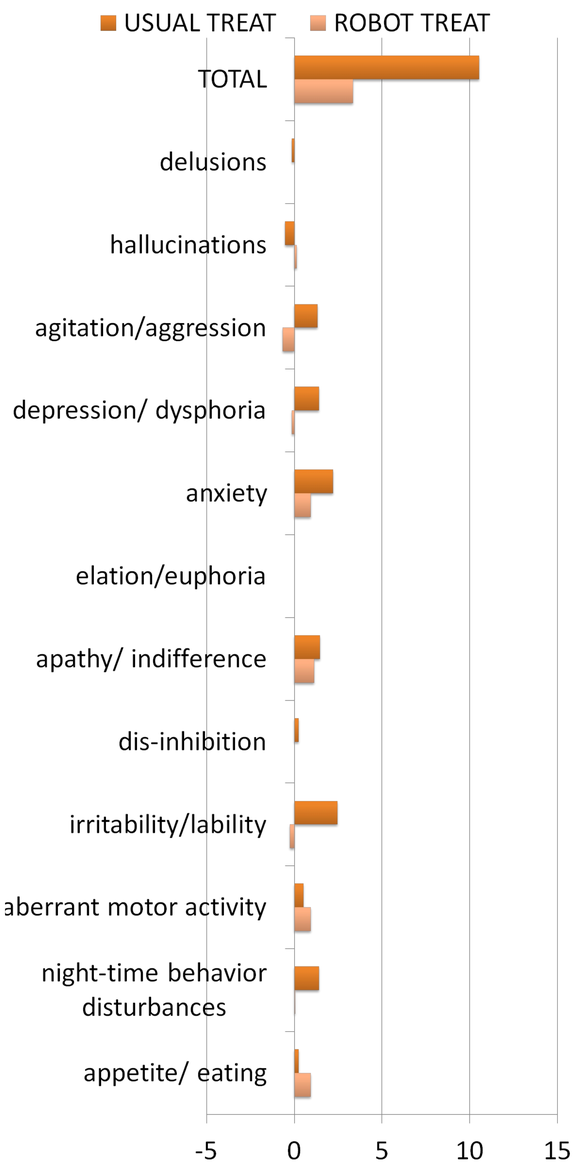


Figure 1

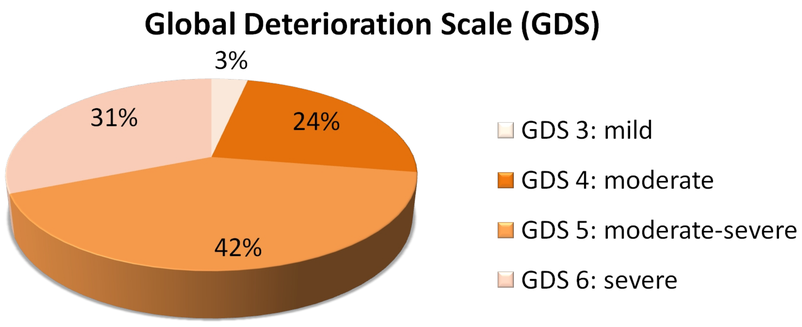
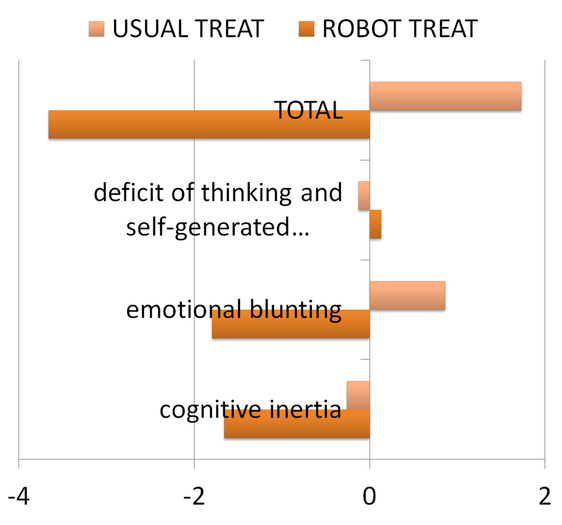


Table 2

VARIABLE	USUAL TREAT (mean of change ± SD)	ROBOT TREAT (mean of change ± SD)	P
TOTAL	1.73 ± 14.92	-3.66 ± 15.69	0.54
DEFICIT OF THINKING AND SELF-GENERATED BEHAVIORS	-0.13 ± 0.63	0.13 ± 0.63	0.25
EMOTIONAL BLUNTING	0.86 ± 3.92	-1.8 ± 4.31	0.09
COGNITIVE INERTIA	-0.26 ± 3.76	-1.66 ± 6.16	0.83

Figure 3



CONCLUSIONS

Neuropsychiatric symptoms and apathy tended to improve after robotherapy in patients with moderate dementia.

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FIS Code: PI10/02567