

Robot-assisted hand training (Amadeo) compared with conventional physiotherapy techniques in chronic ischemic stroke patients: a pilot study.

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INTRODUCTION

Stroke is considered one of the leading causes of neurologic disability in adulthood. Our objective was to compare the effects of robot-assisted movement training (Amadeo) with conventional techniques for the rehabilitation of hand-motor-function after stroke.

DESIGN and METHODS

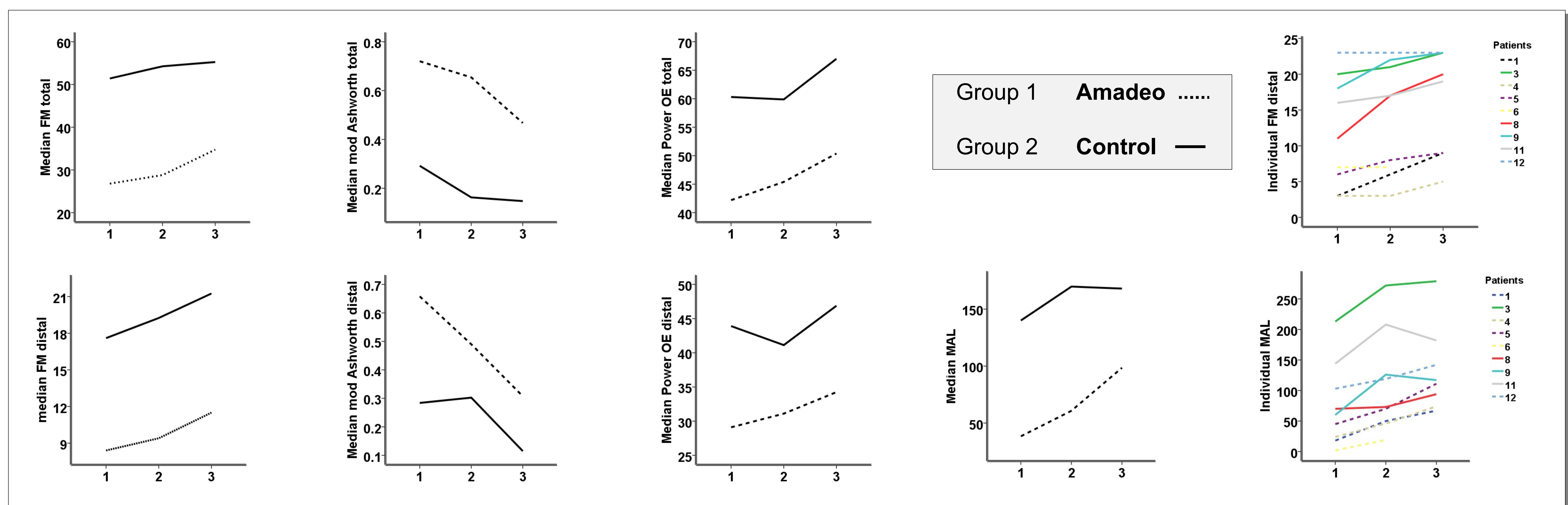
This prospective randomized controlled pilot-study is currently ongoing at a university hospital. All patients followed a structured protocol (45min/session, 3 sessions/wk for 8wks), which was approved by the IRB. Subjects in the robot-group (Amadeo) practiced active-assisted, passive and task-oriented repetitive hand/finger training. Patients randomly assigned to the control group underwent conventional Bobath physiotherapy by specially trained therapists. Clinical arm/hand motor-function (Fugl-Meyer score [FM], Modified Ashworth Scale, finger range of motion [ROM], motor activity log [MAL]), were used as outcome measures. Clinical evaluations were performed by a therapist blinded to group assignments.



RESULTS

Patient demographics are shown in Table. No major side effects occurred. Preliminary data analysis includes 12 (of 40 expected) patients, with 8 having completed (4/4). Arm function of all patients improved, with FM total [distal] scores increasing from 15-to-24 [3-to-9], 20-to-28 [3-to-5], 22-to-31 [6-to-9], and 55-to-56 [23-to-23] in the Amadeo-group, and 44-to-58 [11-to-20], 46-to-52 [16-to-19], 47-to-49 [18-to-23] and 58-to-62 [20-to-23] in the controls. Modified Ashworth Scale improved in all patients besides two, who did not have spasticity at baseline. The MAL improved in all patients (39-66 points in robot group and 27-66 in the conventional therapy group) as did ROM.

Patient	group	age	gender	Duration since ischemia (months)	MCA Infarct	Neglect	Apraxia
1	1	63	M	90	L	N	N
2	1	59	M	108	L	N	N
3	2	68	M	30	L	N	N
4	1	53	M	11	L	N	Y
5	1	64	M	19	R	Y	N
6	1	70	M	120	R	N	N
7	2	52	M	12	L	N	N
8	2	20	F	36	R	N	N
9	2	67	M	8	R	N	N
10	2	69	F	16	L	Y	Y
11	2	61	M	48	R	N	N
12	1	61	M	30	L	N	N



CONCLUSION

Improving hand function is a major component of post-stroke rehabilitation. Our preliminary results demonstrate that both, conventional physiotherapy and this hand-robotic-device, may improve motor-function of the hand. So far no statistical comparison can be made. The Amadeo is safe, and easy to use in a clinical setting. Both therapies may have an impact on activities of daily living

CORRESPONDANCE

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